

Vol. 28, No.6 June, 2017



ISSN 1029 - 385 X

# MEDICAL FORUM MONTHLY

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*Journal of all Specialities*

“Medical Forum” Monthly Recognised and Indexed by

- ☞ PMDC with Index Pakistan No. 48 Since 1998
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- ☞ EXCERPTA MEDICA, Netherlands Since 2000
- ☞ EMBASE SCOPUS Database Since 2008
- ☞ Registered with International Serials Data System of France bearing ISSN No. 1029-385X Since 1992
- ☞ Registered with Press Registrar Govt. of Pak bearing No. 1221-B Copr. Since 2009
- ☞ ABC Certification Since 1992
- ☞ On Central Media List Since 1995
- ☞ Med. Forum Published from Lahore Since 1989
- ☞ Peer Review & Online Journal
- ☞ Electronic Publication of Journal Now Available on website: [www.medforum.pk](http://www.medforum.pk)

# MEDICAL FORUM MONTHLY

ISSN 1029 - 385 X (Print)

ISSN 2519 - 7134 (Online)

**APNS**  
Member

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Peer Review Journal

Online Journal

Published Since 1989

e-journal available on: [www.medforum.pk](http://www.medforum.pk)

## Medical Forum Recognized and Indexed by

PMDC-IP-0048 (1998), HEC-Y-Category (2009), Pastic and PSA, Isd (200C), Medlip, Karachi (2000), NLP, Isd (2000), Pakmedinet, Isd (2011), Excerpta Medica, Netherlands (2000), EMASE Scopus Database (2008), Index Medicus (MEMR) WHO (1997), ABC Certification, Govt. of Pak. (1992), Central Media list, Govt. of Pak (1995), Press Reg. No.1221-B Copr (2009)

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E-mail: med\_forum@hotmail.com, medicalforum@gmail.com

Website: www.medforum.pk

Syed Ajmal Hussain

Naqui Brothers Printing Press, Darbar Market, Lahore

Rs.1500.00

Annually

Pakistan \_\_\_\_\_ Rs.1500.00

USA &amp; Canada \_\_\_\_\_ USS 500.00

China &amp; Japan \_\_\_\_\_ USS 450.00

United Kingdom \_\_\_\_\_ USS 450.00

Middle East \_\_\_\_\_ USS 400.00

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**Guidelines and Instructions to Authors** \_\_\_\_\_ i

**Editorial****The Human Psyche Around Pets****Mohsin Masud Jan**

Editor

Today, continuing with an older editorial piece I wrote, let's bring the talk back to our four legged friends, and rather than confining it to just the canine variety, let's expand it to include the feline one too. The impact pets have on our mental and psychological health is profound. Over the last few decades. Several studies have observed the positive effects that keeping and caring for a pet can have on the human brain.

Dog owners are less likely to suffer from depression than those without pets.

People with dogs have lower blood pressure in stressful situations than those without pets. One study even found that when people with borderline hypertension adopted dogs from a shelter, their blood pressure declined significantly within five months.

Playing with a dog or cat can elevate levels of serotonin and dopamine, which calm and relax.

Pet owners have lower triglyceride and cholesterol levels (indicators of heart disease) than those without pets.

Heart attack patients with dogs survive longer than those without.

Pet owners over age 65 make 30 percent fewer visits to their doctors than those without pets.

These are just a handful of observations made by different studies, but to narrow it down to our subject for today, these are the 6 main effects pets can have on you:

**Pets offer a soothing presence:** Studies indicate that merely watching fish lowers blood pressure and muscle tension in people about to undergo oral surgery. Other research shows that pet owners have significantly lower blood pressure and heart rate both before and while performing stressful mental tasks — like, say, performing a family intervention or supervising kids' homework. Finally, persons recovering from heart attacks recover more quickly and survive longer when there is a pet at home. It seems as though their mere presence is beneficial.

**Pets offer unconditional love and acceptance:** As far as we know, pets are without opinions, critiques, and verdicts. Even if you smell like their poop, they will snuggle up next to you. In other words, at times we prefer our four-legged friends to our mouthy pals because we can divulge our innermost thoughts and not be judged, and that could be a magical stress reliever.

**Pets alter our behavior:** Now, here's a typical scenario. You come home through the door in the

evening and you're annoyed. At what, I don't know. A million little snafus that happened throughout the day. And you're dangerously close to taking it out on someone. However, before you could do that, your Lab walks up to you, pats you, wanting some attention. So you kneel down and pet her. And Voila! She altered your behavior. Chances are much better that someone will not become a casualty of your frustrations. We tend to calm down when we are with our dogs and cats. We slow our breath, our speech, our minds. We don't hit as many people or use as many curse words as we might like to.

**Pets distract:** Pets are like riveting movies and books. They take us out of our heads and into another reality — one that only involves food, water, affection, and maybe an animal butt — for as long as we can allow. I've found distraction to be the only effective therapy when you've hit a point where there is no getting your head back. It's tough to ruminate about how awful you feel and will feel forever when your dog is breathing in your face.

**Pets promote touch:** The healing power of touch is undisputed. Research indicates a 45-minute massage can decrease levels of the stress hormone cortisol and optimize your immune system by building white blood cells. Hugging floods our bodies with oxytocin, a hormone that reduces stress, and lowers blood pressure and heart rates. The touch can actually stop certain regions of the brain from responding to threat clues. It's not surprising, then, that stroking a dog or cat can lower blood pressure and heart rate and boost levels of serotonin and dopamine.

**Pets make us responsible:** With pets comes great responsibility, and responsibility — according to depression research — promotes mental health. Positive psychologists assert that we build our self-esteem by taking ownership of a task, by applying our skills to a job. When we succeed — i.e., the pet is still alive the next day — we reinforce to ourselves that we are capable of caring for another creature as well as ourselves. That's why chores are so important in teaching adolescents self-mastery and independence.

And so, to keep it simple, pets have a positive impact on our lives, mentally, psychologically, physiologically and even physically. So go out there and get yourselves a four legged friend.

# Caregiver Burden in Relatives of Patients with Schizophrenia: A Cross Sectional Study at Government Khawaja Muhammad Safdar Medical College Sialkot

Rana Mozammil Shamsheer Khan<sup>1</sup>, Muhammad Qasim Butt<sup>1</sup>, Ansar Latif<sup>2</sup> and Kalsoom Nawaz<sup>1</sup>

## ABSTRACT

**Objective:** The objective of the current study was to assess caregiver burden in relatives of patients with schizophrenia.

**Study Design:** Cross sectional study.

**Place and Duration of Study:** This study was conducted at the Department of Psychiatry & Behavioural Sciences Govt. KMS Medical College Sialkot, Pakistan from March to May 2016.

**Materials and Methods:** 100 adult consenting patients of schizophrenia and their primary care givers coming to OPD were included through non-probability convenience sampling technique after psychiatric assessment. Demographic information was recorded. Zarit Burden Interview (ZBI) was administered to the caregivers to assess burden. The results were analyzed using SPSS version 21.

**Results:** The mean age of the caregivers was  $41.17 \pm 12.37$  years with range from 18-63 years. The mean age of patients was  $31.89 \pm 10.11$  years with age range of 18-62 years. There were 50 (50%) males and 50 (50%) females as caregivers. Out of the 100 caregivers 45 (45%) had no burden. 20 (20%) had mild to moderate burden, 26 (26%) had moderate to severe burden while 9 (9%) had severe burden. The mean caregiver burden was  $45.23 \pm 11.37$  on ZBI. 48% males and 62% females were experiencing burden. 33% of the caregivers above 40 years of age had burden as compared to 22% of the caregivers with age below 40 years. It was equal (24%) in single and married caregivers. Caregivers with lower income and education had more burden.

**Conclusion:** 55% of the relatives of patients with schizophrenia were experiencing caregiver burden. Caregivers with female gender, older age, lower educational and economic status were experiencing more burden.

**Key Words:** Caregiver burden, schizophrenia, psychiatric outpatients

**Citation of article:** Khan RMS, Butt MQ, Latif A, Nawaz K. Caregiver Burden in Relatives of Patients with Schizophrenia: A Cross Sectional Study at Government Khawaja Muhammad Safdar Medical College Sialkot. Med Forum 2017;28(6):2-5.

## INTRODUCTION

Families play a vital role to support their family members in the community who are having major psychiatric illness<sup>1</sup>. The major mental disorders like schizophrenia adversely not only impact on an individual's life but also influence their family members especially for those who act as family caregivers<sup>2</sup>. As literature depicts the global ratio of schizophrenia is 1 out of 100 people<sup>3</sup>. A number of studies have shown the 90% of people who are having

mental disorders living with their families or relatives that are giving them long term practical social support frequently experience some sort of burden<sup>4</sup>. As earliest studies indicated that mental illness impacts on number of aspects in the family life as income, work hours, leisure activities, mental and physical health because the difference in the behaviors of caregivers and mentally ill person e.g., needs and wishes. Individuals with schizophrenia require more supervision than the healthy people<sup>5</sup>.

Family burden is defined as caregivers have to cost the illness in different forms like social segregation, financial hardships and mental strain. Burden is considered as an emotional response of demanding care situation<sup>6</sup>. Burden on the caregiver is one of the correlates and important element effecting cognitive and affective domains of the individuals caring for patients with schizophrenia. It also hinders the coping of the caregivers. It has adverse effects when an individual is nonpaid and facing the number of

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unexpected responsibilities that cause the mental health issues in caregiver<sup>7</sup>.

The term burden is used as an embracing because of the entire need of patient depends on caregiver in which physical care, economic support, psychological and social support are included. In other studies they have shown some objections and they are using the term “burden” as positive emotion when caregiver plays a vital role to fulfill the needs of patients and uplifting them in their life<sup>8-9</sup>. In the under developed countries, there are few mental health services with inadequate facilities, ineffective formal setups, no community based programs to accommodate the requirements of patients with schizophrenia. Therefore, the responsibility shifts to caregiver after shorter stay in hospitals from formal and trained caregivers to informal untrained caregiver at home. Taking care of a patient with schizophrenia is huge and many caregivers feel a lot of burden in providing continuous and unrelenting care to their patients who is usually their family member. Care giving and burden has many facets and roles to be played by the caregivers. There are many differences of opinion on the definition of burden. One example is subjective and objective burden. There is a long debate on this concept. Caregiver burden is described as psychological conditions that precede the number of factors like physical, social, emotional pressure and psychological transactions that are concerned during this procedure<sup>10</sup>.

No research till to date has been carried out in our hospital on caregiver burden in schizophrenia. The objective of the current study was to assess caregiver burden in relatives of patients with schizophrenia.

## MATERIALS AND METHODS

The study was conducted in Psychiatry OPD of Government KMS Medical College Sialkot Pakistan from March to May 2016. Guidelines related to research involving humans in the declaration of Helsinki were followed. It was a cross sectional study. Non-probability convenience sampling technique was applied. Inclusion criteria for patients were age 18 years or above, having schizophrenia for at least 1 year. Exclusion criteria for patients was those having other psychiatric illnesses, substance induced or general medical condition effecting brain, sever co-morbid physical illness and severe cognitive impairment. Caregiver aged 18 years or above who had stayed with the index patient for most of the time during the last 1 year, providing informal care for at least 35 hours per week and identified by the patient to be primary caregiver was included. Exclusion criteria for caregiver were those suffering from any current or past psychiatric illness, on current psychotropic medication, having severe physical illness, taking care of another patient with chronic physical or psychiatric illness. 100 patients and their primary caregivers meeting inclusion and exclusion criteria were include in the study. Title and purpose of the study were explained to caregiver of

the patients. They were assured of the confidentiality and anonymity of their data. Written informed consent was taken from both patients and caregivers.

Socio-demographic data of patients of caregivers was collected on a data sheet. Age, gender, years of education, marital and economic status was recorded. A consultant Psychiatrist conducted the detailed clinical assessment to confirm the diagnosis of schizophrenia according to ICD-10 criteria in all patients.

Zarit Burden Interview (ZBI)<sup>11</sup> was then administered to the caregivers. ZBI has 22 items and has been used as self rated questionnaire as well as in form of an interview. It was translated into Urdu language using standard procedure. Five bi-lingual qualified psychologists were involved in the forward and then backward translation process. Emphasis was given to conceptual rather than literal translation and ambiguities were removed between the translators and the authors after detailed discussion on each item of the ZBI. The inter-rater reliability after pilot testing on 20 caregivers was .89. For illiterate caregivers data collectors read out the items and the responses were recorded according to the consent of the caregivers. ZBI was developed to assess burden in caregivers of dementia but over the years it has been used in schizophrenia research in South America, Asia and Africa<sup>10</sup> because of its good psychometric properties, adjustability in different cultures and ease of use. It has questions like “Do you feel that your relative asks for more help than he/she needs? “which are scored on a Likert scale from (0=never to 4=almost always). Range of scores is 0-88. It is interpreted in two ways. In first method higher scores means higher burden. In second method it is scored in categories. 0-20, 21-40, 41-60 and 61-88 indicating little or no burden, mild to moderate burden, moderate to severe burden and severe burden respectively. We used both methods. The cronbach’s alpha for current study was .89. Data was analyzed using SPSS version 21. For continuous variables Mean $\pm$ SD while frequency and percentages were calculated for categorical variables.

## RESULTS

There were 100 caregivers in the sample. The mean age of the caregivers was 41.17 $\pm$ 12.37 years with range from 18-63 years. The mean age of patients was 31.89 $\pm$ 10.11 years with age range of 18-62 years. There were 50 (50%) males and 50 (50%) females as caregiver from the sample taken while 57 (57%) males and 43 (43%) females were in the patient sample. Most of the caregivers were from low and middle income categories. 31% were illiterate while 43% had 10 years of education. More than half were married. The details are shown in table 1.

Out of the 100 caregivers 45 (45%) had no burden. 20 (20%) had mild to moderate burden, 26 (26%) had moderate to severe burden while 9 (9%) had severe burden. The mean caregiver burden was 45.23 $\pm$ 11.37 on ZBI. In total 55% of the caregivers were experiencing burden as seen in table 2.

**Table No.1: Demographic details of the caregivers N=100**

Variables	Caregivers Frequency (%age)
<b>Gender</b>	
Male	50 (50%)
Female	50 (50%)
<b>Age in years</b>	
18-30	32 (32%)
31-40	30 (30%)
41-60	25 (25%)
> 60	13 (13%)
<b>Marital status</b>	
Single	35 (35%)
Married	54 (54%)
Widowed	7 (7%)
Divorced	4 (4%)
<b>Economic status</b>	
Low	41 (41%)
Middle	47 (47%)
High	12 (12%)
<b>Education</b>	
Illiterate	31 (31%)
10 years	43 (43%)
11-12 years	19 (19%)
>12 years	7 (7%)

**Table No.2: Frequency of burden in caregivers N=100**

Variable	Frequency	Percentage
No burden	45	45%
Mild to moderate burden	20	20%
Moderate to severe burden	26	26%
Severe burden	9	9%

**Table No.3: Frequency of caregiver burden according to demographic variables**

Variable	No Burden n (%)	Mild to Moderate Burden n (%)	Moderate to Severe Burden n (%)	Severe Burden n (%)
<b>Gender</b>				
Male	26 (26%)	9 (9%)	11 (11%)	4 (4%)
Female	19 (19%)	11 (11%)	15 (15%)	5 (5%)
<b>Age</b>				
18-30	15 (15%)	3 (3%)	4 (4%)	2 (2%)
31-40	17 (17%)	5 (5%)	6 (6%)	2 (2%)
41-60	10 (10%)	9 (9%)	11 (11%)	4 (4%)
> 60	3 (3%)	3 (3%)	5 (5%)	1(1%)
<b>Marital status</b>				
Single	19 (19%)	9 (9%)	11 (11%)	4 (4%)
Married	22 (22%)	8 (8%)	13 (13%)	3 (3%)
Widowed	3 (3%)	2 (2%)	1 (1%)	1 (1%)
Divorced	1 (1%)	1 (1%)	1 (1%)	1 (1%)
<b>Economic status</b>				
Low	20 (20%)	10 (10%)	12 (12%)	4 (4%)
Middle	21 (21%)	7 (7%)	10 (10%)	3 (3%)
High	4 (4%)	3 (3%)	3 (3%)	2(2%)
<b>Education</b>				
Illiterate	15 (15%)	5 (5%)	7 (7%)	4 (4%)
10 years	19 (19%)	9 (9%)	14 (14%)	1 (1%)
11-12 years	7 (7%)	5 (5%)	4 (4%)	3 (3%)
> 12 years	4 (4%)	1 (1%)	1 (1%)	1(1%)

When burden was further analyzed keeping in view the demographic variables of the caregivers mild to

moderate burden, moderate to severe burden and severe burden was seen in 9%, 11% and 4% in male caregivers while it was 11%, 15% and 5% in female caregivers respectively. 33% of the caregivers with age more than 40 years had burden as compared to 22% of the caregivers with age below 40 years. Caregiver burden was equal in single and married caregivers. Both groups showing 24% burden each. Caregivers from lower and middle income groups had more burden. The same was the case with educational status. Caregivers with lower education were experiencing more burden. The details are shown in table 3.

## DISCUSSION

Caring for a patient with schizophrenia in a cultural setting in a low and middle income country like Pakistan is largely by one or the other family members. The objective of the current study was to assess caregiver burden in relatives who are primary and informal caregivers in a setting where community mental health services are non-existing. The first finding from current study was that 55% of the caregivers were experiencing some sort of burden. In 20% it was mild to moderate, 26% had moderate to severe and 9% had severe burden. This is in accordance with studies carried elsewhere which show similar burden.<sup>10</sup>

When gender of the caregivers was analyzed more female caregivers were experiencing burden as compared to males n=31 Vs 24 (62% Vs 48%). This may be because of factors related to local culture where there is higher expectation from females to take care of any person who becomes ill. Females have to provide care to the person with illness in addition to the responsibilities related to her domestic work. There might be a perception that females accept care giving responsibilities more easily than males in local culture. The findings of our study are supported by a study carried out in Nigeria which has similar social and cultural profile as of Pakistan.<sup>10</sup>

Caregivers with older age had more burden than caregivers with younger age. In our study out of the 55% caregivers who were experiencing burden, 33% were more than 40 years old and 22% were less than 40 years old. This is in corroboration with studies carried out elsewhere.<sup>12</sup> Marital status showed no difference in burden in our study. In studies carried out elsewhere mixed results have been reported. Some studies report higher burden in married caregivers and some studies report higher burden in unmarried caregivers while some studies do not show any difference.<sup>10,12,13</sup> The caregiver burden was higher in relatives who belonged to lower and middle income categories as compared to higher income category. Studies carried out elsewhere have also shown similar findings. Caregiver with financial strains and low income may experience higher burden.<sup>14</sup> In Pakistan there is no or little health insurance leading to expenses of care and medicine being paid by the caregiver or family. This finding

corroborates with findings from other studies.<sup>15</sup> Out of the 55% caregivers who were experiencing burden 40% were either illiterate or educated up till 10 years, while 15% had more than 10 years of education. Caregivers with lesser education experience more burden than caregivers with higher education. There are many studies that support this finding in our study.<sup>16,17</sup> Some authors are of the opinion that higher educational achievement leads to better social and economic status, wider and better social support networks reducing the effect of burden of care giving.

Our study has some strengths and limitations. The strength of the study is that it is one of the few studies carried out in Pakistan. Caregivers were responding on a Likert scale. It reduces choices and may be considered a limitation. Small sample size which was only hospital based, cross sectional nature of the study design are also limitations of the current study. Future studies needs to address patients and caregivers who were admitted in the hospital and prospective in nature.

## CONCLUSION

55% of the relatives of patients with schizophrenia were experiencing caregiver burden. Caregivers with female gender, older age, lower educational and economic status were experiencing more burden.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Comparison of Onset of Sensory Block with the Combination of Magnesium Sulphate and Lignocaine versus Lignocaine Alone in Hand and Forearm Surgeries under Intravenous Regional Anesthesia

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## ABSTRACT

**Objective:** To compare the mean time of onset of sensory block with the combination of magnesium sulphate and lignocaine versus lignocaine alone in hand and forearm surgeries under intravenous regional anesthesia.

**Study Design:** Randomized Controlled Trial study.

**Place and Duration of Study:** This study was conducted at the Department of Anaesthesiology, DHQ Teaching Hospital Sargodha and Department of Anaesthesiology, Jinnah Hospital Lahore from January 2016 to June 2016.

**Materials and Methods:** Following informed consent, 60 subjects fulfilling the inclusion criteria were selected for the study through non-probability purposive sampling. Subject was randomly assigned to two different anesthetic regimes by using random tables. The experimental group (M) was given lignocaine plus magnesium sulphate as an adjunct and control group (L) was given lignocaine alone for IVRA. The injection was given in 90 seconds by an anesthesiologist blinded to the drug and was to follow up the patient. The sensory block was evaluated every 30 seconds after injection of the drug using a standardized pin-prick technique with a 22-gauge short beveled needle, on a stop watch. The time of onset of complete sensory block in all the dermatomes were noted. The data was collected and analyzed in SPSS version 13.0. T-test was used to compare the mean time for the onset of sensory block in both groups. P-value  $\leq 0.05$  was significant.

**Results:** The mean age of the patients was noted as  $37.97 \pm 9.52$  years. The mean onset time of sensory block of the patients was noted as  $6.58 \pm 2.61$  minutes. The mean onset time of sensory block in MgSO<sub>4</sub> group was noted as  $4.13 \pm 0.79$  minutes whereas the mean onset time of sensory block in Lignocaine group was noted as  $9.03 \pm 0.94$  minutes. Statistically there is highly significant difference between the study groups i.e. p-value=0.000\*.

**Conclusion:** It was concluded from results of this study that addition of MgSO<sub>4</sub> to lidocaine for intravenous regional anesthesia is beneficial. So in future we will recommend its use along with lidocaine for intravenous regional anesthesia.

**Key Words:** Magnesium Sulphate, Lignocaine, Regional Anesthesia, Sensory block nerve

**Citation of article:** Farrukh R, Ather S, Imran H. Comparison of Onset of Sensory Block with the Combination of Magnesium Sulphate and Lignocaine versus Lignocaine Alone in Hand and Forearm Surgeries under Intravenous Regional Anesthesia. Med Forum 2017;28(6):6-9

## INTRODUCTION

Intravenous regional anesthesia (IVRA) is a simple, reliable, cost-effective and one of the safest forms of regional anesthesia, ideal for short procedures on upper extremity.<sup>1</sup> Its limitations include slow onset, tourniquet pain and minimal post-operative analgesia.<sup>2</sup>

To improve block quality, post-operative analgesia and decrease tourniquet pain different additives have been combined with local anesthetics, with limited success.<sup>3,4</sup> Magnesium sulphate is one potential additive.<sup>5</sup>

The antinociceptive effect of magnesium include inhibition of calcium influx (calcium channel blocker) and antagonism of NMDA receptors.<sup>6</sup>

Use of magnesium sulphate has been shown to be successful in acute and chronic pain management, in reduction of peri-operative and post-operative pain and analgesic requirement, in spinal and epidural blocks to reduce anesthetic requirement, for peripheral nerve blocks providing prolongation of sensory and motor block and reducing intraoperative and postoperative analgesic requirement. However pain with injection of magnesium was the limitation of this technique, with similar results in other reports.<sup>7</sup>

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As the duration of surgery is limited by the time during which tourniquet is safe (30-40 min), by decreasing the time of onset of sensory block, more time was available for the surgery and discomfort of proximal tourniquet for the patients was also less.<sup>8,9</sup> One of the studies reported sensory block onset time with lignocaine alone ( $6.20 \pm 2.35$  min) and statistically shorter ( $4.10 \pm 2.22$  min) compared to lignocaine with magnesium sulphate group ( $p < 0.05$ ).<sup>10</sup>

As magnesium sulphate is associated with decreased onset of sensory block, the purpose of this study is to evaluate the effect of magnesium sulphate when added as an adjuvant to lidocaine in IVRA for elective upper limb surgery in shortening the time of onset of sensory block which can allow us more time for the surgery and decreased discomfort to the patient due to proximal tourniquet. Many International studies are available but no local study on the aspect of shortening the onset of sensory block in IVRA is available.

## MATERIALS AND METHODS

After approval from DHQ Teaching hospital Sargodha and Jinnah Hospital Lahore ethical committee and informed written consent 60 subjects fulfilling the inclusion criteria were selected for the study. Patients were randomly assigned to two different anesthetic regimes by using random tables. The experimental group (M) was given lignocaine plus magnesium sulphate as an adjunct and control group (L) was given lignocaine alone for IVRA. Mean arterial blood pressure (MAP), oxygen saturation ( $SpO_2$ ) and heart rate (HR) were monitored. Before setting up the anesthetic block, two cannulas were placed; one was in the most peripheral vein on the dorsum of the operative hand and the other in the opposite hand. The operative arm was raised for 3 minutes, and then exsanguinated with an Esmarch bandage. Two pneumatic tourniquets were applied and the proximal cuff was inflated to 100 mmHg above systolic blood pressure. Circulatory isolation of the arm was confirmed by inspection, lack of radial pulse, and failure of pulse oximetry tracing of the ipsilateral index finger. IVRA was accomplished using 20 ml lignocaine 1% diluted with 20 ml saline to a total of 40ml in group L ( $n=30$ ) or 7.5 ml magnesium sulphate 20% plus 20ml lignocaine 1% diluted with 12.5ml saline to a total of 40ml in group M ( $n=30$ ). The injection was given in 90 seconds by an anesthesiologist blinded to the drug and followed up the patient. The sensory block was evaluated every 30 seconds after injection of the drug using a standardized pin-prick technique with a 22-gauge short beveled needle, on a stop watch. The patient's response was evaluated in the dermatomal sensory distribution of the medial and lateral ante-brachial cutaneous, ulnar, median and radial nerves. The time of onset of complete sensory block in all the dermatomes were

noted. Intravenous analgesics were not given to avoid confounding factors.

Subsequent to accomplishment of sensory and motor blocks, surgery was allowed to start. MAP, HR and  $SpO_2$  were monitored before and after tourniquet use, at every 2 minutes after the beginning of anesthesia. All this procedure was done by researcher himself. All the relevant data was recorded on prescribed Proforma (attached).

**Data Analysis:** The data was collected and analyzed in SPSS version 13.0. Quantitative variables like age, sensory block onset time were measured in the form of mean  $\pm$  SD. Qualitative variables like gender was measured in the form of frequency and percentage. T-test was used to compare the mean time for the onset of sensory block in both groups.  $P$ -value  $\leq 0.05$  was significant.

## RESULTS

The mean age of the patients was noted as  $37.97 \pm 9.52$  years with minimum and maximum ages of 20 and 59 years respectively. In this study 66.67% cases were males whereas 33.33% cases were females. Out of 60 patients 40 were males in which 24 were from MgSo4 group and 16 were from Lignocaine group, similarly 20 patients were females in which 6 were from MgSo4 group and 14 were from Lignocaine group.

The mean onset time of sensory block of the patients was noted as  $6.58 \pm 2.61$  minutes with minimum and maximum values of 2.45 and 10.55 minutes respectively.

The mean onset time of sensory block in MgSo4 group was noted as  $4.13 \pm 0.79$  minutes whereas the mean onset time of sensory block in Lignocaine group was noted as  $9.03 \pm 0.94$  minutes. Statistically there is highly significant difference between the study groups i.e.  $p$ -value = 0.000\*. Table 1.

Among male patients, the mean onset time of sensory block in MgSo4 group was 4.200.66 minutes whereas the mean onset time of sensory block in Lignocaine group was noted as 9.220.84 minutes. Males in MgSO4 group has significantly less onset time as compared to Lidocaine group i.e.  $p$ -value = 0.000\*. Among female patients, the mean onset time of sensory block in MgSo4 group was 3.861.26 minutes whereas the mean onset time of sensory block in Lignocaine group was noted as 8.811.05 minutes. Females in MgSO4 group has significantly less onset time as compared to Lidocaine group i.e.  $p$ -value = 0.000\*. Table 2.

In MgSO4 group, the mean onset time of sensory block in males was 4.200.66 minutes whereas in females was 3.861.26 minutes. There was insignificant difference observed between both genders for mean onset of sensory block i.e.  $p$ -value = 0.174. In Lidocaine group, the mean onset time of sensory block in males was  $9.22 \pm 0.84$  minutes whereas in females was  $8.81 \pm 1.05$  minutes. There was insignificant

difference observed between both genders for mean onset of sensory block i.e. p-value = 0.107. Table 3.

**Table No.1: Descriptive statistics of onset time of sensory block with respect to study groups**

Onset Time (minutes)	Study Groups	
	MgSO <sub>4</sub>	Lignocaine
n	30	30
Mean	4.13	9.03
SD	0.79	0.94

p-value= 0.000 (Significant)

**Table No.2: Descriptive statistics of onset time of sensory block in both gender with respect to study groups**

		Study Groups		P-value	Significance
		MgSO <sub>4</sub>	Lignocaine		
Onset Time (minutes)	Male	4.200.66	9.220.84	0.000	Significant
	Female	3.861.26	8.811.05	0.000	Significant

**Table No.3: Descriptive statistics of onset time of sensory block in both study groups with respect to gender**

		Study Groups		P-value	Significance
		Male	Female		
Onset Time (minutes)	MgSO <sub>4</sub>	4.20±0.66	3.86±1.26	0.174	Insignificant
	Lignocaine	9.22±0.84	8.81±1.05	0.107	Insignificant

## DISCUSSION

Intravenous Regional Anaesthesia (IVRA) is a simple and effective technique for upper limb distal surgery. Regional analgesia has been introduced as better analgesic technique compared to using systemic analgesic agents, and it may decrease the adverse effects of them and increase the degree of satisfaction. The use of intravenous regional anesthesia (IVRA) was first described by Karl August Bier in Berlin, Germany in 1908, hence its name, Bier's Block. The block is simple to perform often by non-anesthesiologist, effective and cheap.<sup>11</sup>

The use of magnesium as an adjuvant in perioperative analgesia is unique. Intravenous regional anesthesia (IVRA) is one of the safest and most consistent modes of regional anesthesia for short procedures on upper extremity.<sup>12</sup>

Our study showed that adding magnesium to lidocaine for IVRA enhances the speed of onset and the quality of anesthesia. Various adjuncts have been used with lignocaine to decrease tourniquet pain and prolong post-operative analgesia during intravenous regional anesthesia. Calcium-channel blockers potentiate the analgesic effect of local anesthetics.<sup>13</sup>

Our study results showed that the mean onset time of sensory block in MgSo<sub>4</sub> group was noted as 4.13±0.79 minutes whereas the mean onset time of sensory block in Lignocaine group was noted as 9.03±0.94 minutes.

Statistically there is highly significant difference between the study groups i.e. p-value=0.000\*. Tramer and Glynn used magnesium for the treatment of chronic limb pain in IVRA and showed that the addition of magnesium to lidocaine increases the quality of the block, lengthens the analgesia and decreases the overall failure rate.<sup>14</sup>

Narang S et al., concluded that magnesium sulphate added as an adjuvant to lignocaine hastens the onset of sensory and motor block and decreases tourniquet pain. They assessed in their study that the response to injection of drug; sensory and motor block and tourniquet pain. The mean time of onset of sensory block was 12.40 and 3.47 minutes in groups L and M respectively (P < 0.001). The average times of onset of motor block in groups L and M were 17 and six minutes respectively (P < 0.001).<sup>15</sup> Reuben et al., showed that the addition of magnesium to lidocaine for IVRA improves the speed of onset and quality of analgesia.<sup>16</sup>

ParvizKashefi et al., concluded that adding magnesium to lidocaine in IVRA demonstrated reduced intraoperative fentanyl use and pain associated with the tourniquet. It also shortened sensory and motor block onset times and made better the quality of anesthesia while prolonged the time to the first postoperative analgesic requirement.(10) Turan and his coworkers used magnesium for decreased pain associated with injection of rocuronium.(17)

A Puttappa et al concluded that using the combination the dose of lignocaine for IVRA can be reduced to a non-toxic level for the same quality of analgesia and at the same time not offer any post analgesic benefit as all study patients were required supplement of analgesics post operatively after about 50-60 minutes.(18)

One of the studies reported sensory block onset time with lignocaine alone (6.20±2.35min) and statistically shorter (4.10±2.22min) compared to lignocaine with magnesium sulphate group (p<0.05).(19)

The duration of surgery is limited by the time during which tourniquet is safe (30-40 min) by decreasing the time of onset of sensory block, more time will be available for the surgery and discomfort of proximal tourniquet for the patient will also be less.(8)

The present study showed that the mean onset time of sensory block of the patients was noted as 6.58±2.61 minutes. Michael F et al showed that for most outpatient surgical procedures, the use of 1.5% lidocaine or mepivacaine provide adequate surgical anesthesia and analgesia for 4 to 6 hours.(20)

Studies have shown that time to two dermatome regression for 50 mg and 75 mg doses of hyperbaric 5% lidocaine are 50 ± 16 and 75 ± 4 minutes, respectively, and resolution of sensory block 123 ± 21 and 136 ± 6 minutes, respectively.(21)

In our study, we stratified data for gender and compared mean onset of sensory block between male and female

patients. In MgSO<sub>4</sub> group, the mean onset time of sensory block in males was 4.200.66 minutes whereas in females was 3.861.26 minutes. In Lidocaine group same pattern was observed. The mean onset time of sensory block in males was 9.22±0.84 minutes whereas in females was 8.81±1.05 minutes. There was insignificant difference observed between both genders for mean onset of sensory block i.e. p-value >0.05. But it was observed that male patients require more time for onset of sensory block as compared to females.

## CONCLUSION

It was concluded from results of this study that addition of MgSO<sub>4</sub> to lidocaine for regional anesthesia is beneficial. So in future we will recommend its use along with lidocaine for regional anesthetics magnesium sulphate is associated with decreased onset of sensory block as it has been proved through our study.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Demographic and Social Factors in Relation with Occurrence of Orofacial Defects

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## ABSTRACT

**Objective:** To determine the association of various demographic and social factors and the risk of orofacial defects in the children. To give recommendations to reduce the incidence of various orofacial defects.

**Study Design:** Observational / descriptive study.

**Place and Duration of Study:** This study was conducted at the Cleft Hospital (Ayisha Bashir Hospital) and Aziz Bhatti Teaching Hospital Gujrat for a period of six months from July to December 2016.

**Materials and Methods:** A particular performa was made to interview the parents of the children who presented with these orofacial defects. The patients with minor degrees of defects were excluded from the study. This was not a funded study.

**Results:** Total number of the patients included in this study was 81 out of which ten had cleft lips and ten had palates but 70.07% had both cleft lip and palates. About 49.38% of the fathers were between 25-34 years, very young and old ones did not have these children. However about 71% of the mothers were less than thirty years of the age. Male children were the most affected. Majority of the parents and children belonged to the middle class. Para 2 and 3 were the ones who had these children. Majority belonged to the non hilly and Northern Punjab Pakistan.

**Conclusion:** The results of this study regarding parental age and orofacial defects were contrary to other such studies, in which advanced parental age was found as a determinant. Similarly increased parity did not have any association, but yet there was an increase after fifth birth of a child, so it is recommended that further studies and bigger samples should be assessed to confirm a positive association.

**Key Words:** Demographic, Orofacial, Cleft lip, cleft palate, social

**Citation of article:** Ahmad R, Aziz FN, Humayun H, Ayub A, Bashir I. Demographic and Social Factors in Relation with Occurrence of Orofacial Defects. Med Forum 2017;28(6):10-13.

## INTRODUCTION

Oral clefts are a heterogeneous group of congenital defects with prevalence of one in in 600-1000 among newborns. It could be syndrome or non syndromic. The different types of the defects are cleft (CL), cleft palate (CP) and cleft lip and palate.

About 70% of all the cases are isolated in such cases non-syndromic involving several genetic and environmental risk factors and then multifactorial threshold model of inheritance, familial recurrence is important in such cases; about six hundred syndromes have already been recognized.

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Received: April 24, 2017; Accepted: May 18, 2017

Mental retardation may be an important association with other congenital defects with chromosomal association the most important. Among them 22q.2 deletion syndrome is important.

Laura L and associates<sup>1</sup> found in their study that children with chromosomal and other structural birth defects are at a substantially increased risk of mental retardation by seven years of age as compared to children born without birth defects. Children with birth defects are especially at an increased risk of having severe mental retardation and mental retardation occurring independently of other developmental disabilities.

The association between demographic factors and occurrence of orofacial defects is important. The various important demographic factors are parental age, the parity of the mother, social status of the parents and the gender of patients.

Daniela and associates<sup>2</sup> in their study concluded that there was an association between the maternal age and increased risk for CLP. They found an important interval of 26-35 years and above 35 years with a reduced risk of CLP, compared to women younger than 25 years of age, however paternal age was not associated.

Camille Belle et al<sup>3</sup> also found in their study that high maternal and paternal age was associated with cleft lip

with or without cleft palate. High paternal but not the maternal age increased the risk of cleft palate only. The same finding of increased paternal age and increased risk of cleft palate was supported by Rigley Fisk in his study.<sup>4</sup>

Andrea Louiza<sup>5</sup> concluded in his study that male gender is the most affected and 0-4 years was the most frequent group. Transincisive foramen cleft type was most frequently encountered. In a similar study Ege Dogan<sup>6</sup> and associates found that among the affected group 49.6% were females and 50.4% males. In male babies left sided complete primer seconder is seen more, in female babies seconder cleft is seen more.

The social status and urban or rural habitat does affect the occurrence of orofacial defects. Prerana Agarwal and associates found in their study<sup>7</sup> that majority 68.4% of their patients came from the rural areas. The distribution of CLAP types differed significantly between rural areas and urban population with the frequency of cleft lip and palate higher in the rural population (p less than 0.05)

P during et al found a positive relationship between orofacial defects and maternal deprivation<sup>8</sup>

The higher the parity higher the risk of birth defects among children. Mohammed Jaffer Gollalipur and others (9, 10) confirmed that high parity is significantly associated with an increased risk of an oral cleft and also the low intake of folic acid.

## MATERIALS AND METHODS

This study is a descriptive observational one done for a period of six months during the year 2016 at cleft hospital GT road Gujarat and Aziz Bhatti Hospital affiliated with NSMC Gujrat. The Cleft Hospital specifically caters from the diagnosis of orofacial defects to the surgical and rehabilitation services of such children. A particular Performa was made for the assessment of various demographic risk factors for various types of CL and CLAP and other anomalies. The parents and the attendants were interviewed to collect the data. The patients with very minor degrees of defects were excluded from the study. This study was not funded and the data was analyzed on SPSS 16.

## RESULTS

The total no of the patients included in this study was=81. Isolated cleft lip and cleft palate were 10 and 11 respectively, but 74.07 were cleft palate and lip combined. This classification is important regarding the further surgical and rehabilitation therapy. About 49.38% of the children's fathers were between 25-34 years of age however very young and ageing did not father these children. But this was contrary to the mother's age in which about 71% of the patients belonged to the mothers less than thirty years of age. Total no the patients=81.

**Table No.1: The types of the defects who presented in the hospital**

Type of the defect	Frequency	Percentage
Cleft Lip	11	13.58%
Cleft Palate	10	12.34%
CLEFT LIP&PALATE	60	74.07%

**Table No.2 : Parental age(Maternal and Paternal) in relation with orofacial defects**

Age of the father	Frequency	Percentage
More than 25	18	22.22%
25-34	40	49.38%
35-44	18	22.22
45-55	5	6.17
More than55	0	0
Age of the mother		
<18	01	
18-24	30	
25-29	30	
30-34	11	
35-40	08	
41-45	01	
>45	nil	

**Table No.3: Gender and parity of the patient and orofacial defects. Total no. of Cases =81**

Gender	No of patients	Percentage
Males	47	58.02
Females	34	41.97
Parity		
P1	19	23.45
P2	20	24.69
P3	15	18.51
P4	11	13.58
P5	2	2.46
>P5	14	17.28

**Table No. 4: Age at the time of presentation. Ttotal no the patients=81**

Age at the time of presentation	Frequency	Percentage
<1 Week	0	0
<1 Month	0	0
1-6 Months	24	29.62
7-12 Months	35	43.20
1-5 Year	19	23.45
>5-10 Years	0	0
>15	0	0

Males were more affected than the female children in this study but the frequency reduced as the parity increased but again there was increase when the mothers were more than Para 5.

Majority of the patients belonged to the middle class,. Majority of the patients belonged to the non-hilly areas and they were from the North Punjab, however this may

be because of the proximity of Gujarat city to these particular areas.

**Table No. 5: Social class and residential area of the patients. Total no of the patients=81**

Social class	Frequ-ency	%age	Area of the living	Frequ-ency	%age
Upper	0	0	Hilly	16	19.5
middle	61	75.30	Non hilly	65	80.24
Low	20	24.69	Central Punjab	12	14.81
Very low	0	0	Southern Punjab	04	4.93
			North	55	67.9
			Kashmir	10	12.34

## DISCUSSION

The various demographic factors do affect the occurrence of the cleft lips, palates, both or other orofacial defects. Most of the times the cleft lips and palates are associated with each other, as was obvious in this study that majority of the children have a combination of these two defects.

Parental age is an important demographic factor in association with orofacial defects. In this study very young fathers were not having these children, however majority of the mothers were less than thirty years of age. Almost the same results were found in his study by Balgir RS that young mothers are at higher risk of getting a child with congenital oral clefts than the older, above thirty years of age<sup>11,12</sup>.

However this was contrary to the study by Berg E and associates<sup>13</sup>, they found that borderline risk of isolated cleft lip was 1.15 per 1000, the risk increased with the age of both parents with risk estimates of 1.27 per 1000 and higher for children of patients at an advanced stage. The same was supported by Belle C and associates

In their study they concluded that both high maternal and paternal age were associated with cleft lip with or without cleft palate. High paternal but not the maternal age increased the risk of cleft palates only<sup>14</sup>. The same facts were supported in another study<sup>15</sup> that mothers aged forty years or over were 1.56 times are more likely to have a newborn with cleft lip with or without palate compared to those age between 20 and 29 years, no evidence of early maternal or paternal age association was found.

In this it was found that male gender was more associated with the orofacial defects. This was supported by other studies<sup>16,17</sup> in which there was a statistical analysis difference between syndromic and non syndromic groups regarding gender ( $p < 0.55$ ) maternal age of 35 years and above ( $p < 0.50$ ), alcohol, tobacco consumption, consanguinity and recurrence.

The social status of the parents does affect occurrence of the congenital defects because of the lack of education, underutilization of health facilities, lack of genetic counseling and drugs used in pregnancy.

It was found in this study that middle class was the most affected and none belonged to the upper class. Young et al in their study<sup>18</sup> found that subjects with the lowest SESC (socioeconomic index) had the greatest risk of all selected birth defects TOFs. This study revealed constantly increased risk of selected birth defects with household SES, but not the individual ones. Regarding the association of parity and orofacial defects, the incidence of orofacial defects was 23.45% and 24.69% in para 1 and Para 2 respectively, then it decreased and increased after Para 5.

Ana Thereza et al found in their study that there was a significant association between parity (second on ward, maternal smoking and the occurrence of CL and /or palate in this population<sup>19,20</sup>.

## CONCLUSION

Demographic and social factors do affect the incidence of the orofacial defects in association with genetic, environmental but also independent of these risk factors also. Parental age does affect the development of these defects. It was found in this study that very young parents did not have these children, but in contrast to other international studies high parental age was not associated with such defects. Male gender was the most affected ones were found in other studies. Middle class was the most affected one, however it may be because of the health seeking behavior also. High parity is another factor which may be associated with the occurrence of the orofacial defects, but was not supported by this study, because majority of the mothers were Para two and three however the incidence increased after Para five. It is suggested that further studies with bigger samples and these factors independent of the other risk factors should be studied.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Nailing in Femur Shaft Fractures in Children with Age 5 to 15 Years

Abdul Moez, Shoaib Umar, Erum Sultan and Shahid Riaz

## ABSTRACT

**Objective:** To determine the efficacy of closed intramedullary elastic nailing in femur shaft fractures in children with age 5 to 15 years.

**Study Design:** Descriptive cases series study.

**Place and Duration of Study:** This study was conducted at the Department of Orthopaedics, Sheikh Zayed Hospital, Rahim Yar Khan from 01-01-2016 to 31-12-2016.

**Materials and Methods:** there were total 50 cases of both genders with age range of 5 to 15 years with femur shaft fracture of simple type. These cases underwent intramedullary nailing of titanium material and were then followed at 1,2 and after 3 months. The efficacy was labelled as yes when there was complete union over x ray and the angulation was not more than 15 degrees.

**Results:** In this study there were total 50 cases out of which 32 (64%) were males and 18 (36%) females with mean age of  $9.57 \pm 2.13$  years. Mean duration of fracture was  $3.87 \pm 1.18$  days. The efficacy of intramedullary nailing was seen in 45 (90%) of cases. The efficacy was slightly better in younger age group of 5 to 10 years, where the successful reunion was observed in 30 (93.75%) out of 32 cases with  $p=0.17$ . Efficacy was also better where the cases presented within 3 days of fracture where it was seen in 23 (95.83%) out of 24 cases with  $p=0.09$ .

**Conclusion:** The efficacy of intramedullary nailing in femur shaft fracture is good as every 9 out of 10 cases reveal it. The cases that report within 3 days have almost significant association with this.

**Key Words:** Femore shaft fracture, intramedullary nailing, efficacy, union

**Citation of article:** Moez A, Umar S, Sultan E, Riaz S. Closed Intramedullary Elastic Nailing in Femur Shaft Fractures in Children with Age 5 to 15 Years. Med Forum 2017;28(6):14-16.

## INTRODUCTION

Children and young population often come across the accidents and among them the femoral shaft fractures is very common. It can be caused by various modes of trauma and the blunt trauma is the most common etiology. More than two third cases of femur fracture suffer the shaft fracture. The incidence in USA comprises almost 20 cases per 100,000 traumas in children.<sup>1</sup>

X rays of the bone are the main diagnostic tools and after that both the surgical and non-surgical modalities have been tried in the past regarding this context to repair the fracture and healing of the injured bones. The guideline in young children to manage such cases are not well devised and always under controversy. Local recommendations are made to deal with such situation for which decisions are individually tailored.

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Received: April 02, 2017; Accepted: May 05, 2017

In the very young age groups Spica casts and closed reduction are the mainstay of the treatment but this intervention can result in other complication like shortening of length and malunion in intermediate teen age group. On the other hand the traditional procedures like traction for 2-3 weeks prior to the application of the cast can help decrease the above mentioned complication but the long term immobility slows the healing process and adds to complications rates.<sup>2</sup> Therefore, various operative strategies have been used with the aim of avoiding the adverse physical, social, psychological, and financial consequences associated with prolonged immobilization.<sup>3</sup> Those methods include flexible intramedullary and antegrade solid nails, external fixation, plates and screws. Each procedure carries the risk of certain complications, particularly pin track infection and re-fracture after external fixation removal or osteonecrosis after fixation with a solid antegrade intramedullary nail (IMN). Intramedullary elastic nails are under extensive discussion. But their success is different globally ranging from 82% to 97%.<sup>5-6</sup>

## MATERIALS AND METHODS

This descriptive cases series study was conducted at the Department of Orthopaedics, Sheikh Zayed Hospital, Rahim Yar Khan from 01-01-2016 to 31-12-2016.

In this descriptive cases series study there were total 50 cases enrolled of femur shaft fracture of simple type. Detailed socio-demographic data was collected and other clinical information like type and duration of fracture was also noted. Then these cases underwent intramedullary nailing of titanium material with required appropriate size according to the age and height of the cases. The cases were then followed and assessed at 1,2 and after 3 months after the intervention, where final outcome was seen and then the efficacy was labelled as yes when there was complete union over x ray done in PA and lateral views and the angulation was not more than 15 degrees.

**Inclusion criteria:**

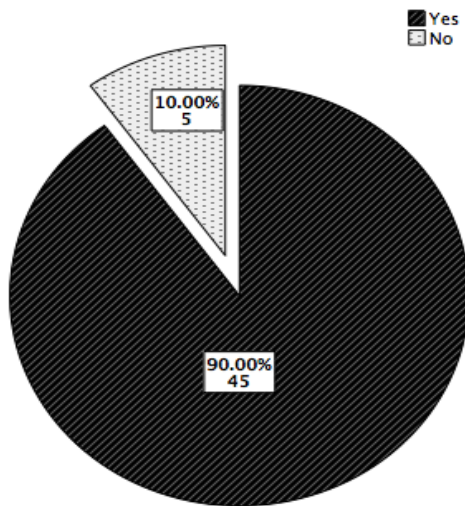
1. Both genders
2. Age 5 to 15 years
3. Cases of femur shaft fracture of simple type (assessed on X rays) presenting within one week of the injury.

**Exclusion Criteria:**

1. Cases with open surgical wounds and compound fractures
2. Documented cases of fracture secondary to metabolic cause.
3. Cases with end stage liver, renal or cardiac disease.

**Statistical analysis;** The data was entered and analysed by using SPSS-21. Quantitative variables were presented as mean ±SD (standard deviation) and qualitative variables as frequencies and percentages. Stratification was done to deal with effect modifier. Post stratification chi-square test was applied and p ≤0.05 was taken as significant.

**RESULTS**



**Figure No.1: Efficacy of intramedullary y nailing n= 50**

In this study there were total 50 cases out of which 32 (64%) were males and 18 (36%) females with mean age of 9.57±2.13 years. Mean duration of fracture was

3.87±1.18 days. The efficacy of intramedullary nailing was seen in 45 (90%) of cases as in figure 01. There was no significant difference in terms of efficacy between both genders with p= 0.84 (table 1). The efficacy was slightly better in younger age group of 5 to 10 years, where the successful reunion was observed in 30 (93.75%) out of 32 cases with p= 0.17 (table 2). Efficacy was also better where the cases presented within 3 days of fracture where it was seen in 23 (95.83%) out of 24 cases as compared to 22 (84.61%) out of 26 cases presenting later than this with p= 0.09 (table 3).

**Table No.1: Efficacy of intramedullary nailing with respect to gender n= 50**

Gender	Efficacy		Total
	Yes	No	
Male	29 (90.63%)	3 (9.37%)	32 (100%)
Female	16 (88.89%)	2 (11.11%)	18 (100%)
<b>Total</b>	<b>45 (90%)</b>	<b>5 (10%)</b>	<b>50 (100%)</b>

p= 0.84

**Table No. 2: Efficacy of intramedullary nailing with respect to age groups n= 50**

Age groups (years)	Efficacy		Total
	Yes	No	
5-10	30 (93.75%)	2 (6.25%)	32 (100%)
11-15	15 (83.33%)	3 (16.67%)	18 (100%)
<b>Total</b>	<b>45 (90%)</b>	<b>5 (10%)</b>	<b>50 (100%)</b>

P= 0.17

**Table No. 3: Efficacy of intramedullary nailing with respect to duration of presentation n= 50**

Duration of presentation	Efficacy		Total
	Yes	No	
1-3 days	23 (95.83%)	1 (4.17%)	24 (100%)
4-7 days	22 (84.61%)	4 (15.39%)	26 (100%)
<b>Total</b>	<b>45 (90%)</b>	<b>5 (10%)</b>	<b>50 (100%)</b>

P= 0.09

**DISCUSSION**

The efficacy of intramedullary nailing in cases with femur shaft fracture in the present study was seen in 45 (90%) of cases. A study was conducted by Lohiya et al revealed that out of their 73 cases, 83% had fracture union and the rest of the 17% cases had either non-union or the degree of angulation was more than 15 degree, which they labelled as malunion and

considered the re surgery in such cases.<sup>7</sup> Another study carried out by Sela et al on 212 patients demonstrated the solid union in all the 100 % of their cases but in their study 10 (4.72%) cases had a malunion i.e. more than 15 degrees of angulation and needed re intervention.<sup>8</sup> The results of our study were almost similar to the previous ones with slightly lower rate, which can be explained by the poor socioeconomic status of the country in contrast to those countries that are developed. Poor nutrition can delay and hinder in the process of healing.

The efficacy rate in the form of re union was also better where the cases presented within 3 days where it was seen in 23 (95.83%) out of 24 cases as compared to 22 (84.61%) out of 26 cases with  $p= 0.09$ . Why is the success rate better in cases that reported early? This can be due to the reason that the cases that report early had better chance to manipulate and led to good result. Contrary to this, the cases that reported later, they were either complicated or their malunion could have occurred or they had open wound or secondary infection at wound sites; hence union in such cases was slightly lower which was also observed by the other studies that also found good results in early reporting.<sup>9-11</sup>

## CONCLUSION

The efficacy of intramedullary nailing in femur shaft fracture is good as every 9 out of 10 cases reveal it. The cases that report within 3 days have almost significant association with this.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# A Prospective Study on Efficacy of Bevacizumab for Retinal Vein Occlusion

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## ABSTRACT

**Objective:** To evaluate the efficacy of intravitreal Bevacizumab for branch retinal vein occlusion and central retinal vein occlusion.

**Study Design:** A prospective, non-randomized interventional trial.

**Place and Duration of Study:** This study was conducted at the Eye Department, Multan Medical and Dental College in collaboration with Bodla Eye Care, Multan from June 2014 till May 2016.

**Materials and Methods:** This study was conducted on patients who presented with central or branch retinal vein occlusion. They had intravitreal bevacizumab in operating room settings.

**Results:** A total of 43 patients were recruited in the study starting from June 2014 till May 2016. 21 were diagnosed to have Branch Retinal Vein Occlusion BRVO and 22 had Central Retinal Vein Occlusion CRVO. Drop outs (lost to follow up) were excluded from the study. Patients were followed for twelve months. By the end BRVO patients improved a mean of 9.7 ( $p < 0.05$ ) ETDRS letters, while CRVO improved by a mean of 1.6 letters ( $p = 0.50$ ). The percentage of patients who lost  $> 15$  ETDRS letters were 45.4% in CRVO group, while 9.5% in BRVO group. A reduction of mean central macular thickness was noted in both groups over a period of twelve months. In CRVO group mean reduction was 231 microns ( $p < 0.001$ ) in CRVO and 214 microns ( $p < 0.001$ ) in BRVO group. However it was noticed that anatomical reduction in foveal thickness did not translated into improvement in visual acuity.

**Conclusion:** Our study looked at the effect of Bevacizumab in clinical practice on retinal vein occlusion. There was significant improvement in BRVO group in terms of visual acuity as well as reduction in CMT central macular thickness. In CRVO group, however Bevacizumab failed to show any significant improvement in terms of improvement in visual acuity despite of clinically significant reduction in macular thickness.

**Key Words:** Central Retinal Vein Occlusion, Branch Retinal Vein Occlusion, Bevacizumab.

**Citation of article:** Bodla AA, Bodla MA. A Prospective Study on efficacy of Bevacizumab for Retinal Vein Occlusion. Med Forum 2017;28(6):17-20.

## INTRODUCTION

Retinal vein occlusion, as the name applies results from occlusion of one of the main retinal vein tributaries resulting in central or branch retinal vein occlusion.<sup>1,2</sup> Changes in retinal blood flow leads to exudations resulting in macular oedema.<sup>2,3</sup> This can lead to a significant reduction in visual acuity, providing that macula gets involved.<sup>4</sup> Central retinal vein occlusion CRVO carries a relatively guarded prognosis.<sup>2,5</sup> It is not uncommon to develop further complications as rubeotic glaucoma from the primary pathology.<sup>1,3</sup> Visual acuity seldom improves following treatment in CRVO. Contrary to this, BRVO carries relatively promising prognosis with treatment.<sup>5,6</sup> There has been several case reports of spontaneous improvement of visual acuity in BRVO.<sup>6</sup>

The primary challenge in the pathology is management of macular oedema. For a long time, macular grid laser was the main stay of treatment in BRVO while no options were there for CRVO.<sup>7</sup> Studies revealed that vascular endothelial growth factors were found to be markedly increased in patients who had retinal vein occlusion.<sup>1,7</sup> With the availability of commercially produced Anti vascular endothelial growth factor Anti-VEGF as Bevacizumab and Ranibizumab the scenario appears to have changed altogether with Anti-VEGF as the main stay for treatment.<sup>2,6</sup> There has been two large randomized, multicentre studies CRUISE and BRAVO carried out in last few years and have found Ranibizumab as beneficial for the treatment of retinal vein occlusions.<sup>1,4,8</sup> Since Ranibizumab cannot be the drug of choice in underprivileged, developed part of the world as South Punjab, authors decided to look into effects of Bevacizumab, Anti-VEGF on retinal vein occlusion. Bevacizumab is widely available at a fraction of cost in our part of the world. We designed a non randomized trial with prospective data collection looking into efficacy of Bevacizumab. Patients were recruited from two sites i.e. Multan Medical and Dental College and Bodla Eye Care, Multan, both tertiary eye care facilities in private sector.

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## MATERIALS AND METHODS

Patients were recruited for a period of two years starting from June 2014 till May 2016. Patients who lost to follow up were excluded from the study data base. Exclusion criterias included diabetics with macular oedema, patients with apparent vitreomacular tractions, patients who had triamcinolone intravitreally or any who underwent cataract surgery during follow up. Patients had a detailed informed consent at the time of recruitment. They underwent a comprehensive ophthalmic assessment. Visual acuity was noted on ETDRS charts. Patients had a slit lamp assessment of anterior and posterior segment. Intraocular pressures were measured using Goldmann applanation tonometry. Patients underwent optical coherence tomography on Zeiss Stratus OCT machine. Hemiretinal vein occlusion was taken as a branch retinal vein occlusion.

All patients with macular oedema and reduced visual acuity had intravitreal bevacizumab. Bevacizumab was initiated as three serial injection four to five weeks apart. Patients had a detailed ophthalmic assessment with repeat OCT, four weeks following their third injection. Decision of further injections were made if macular oedema was still present in the form of cysts, intraretinal fluid. Reasons for discontinuation were unchanged or worsening of visual acuity as well as refractory macular oedema as confirmed on OCT scan. Panretinal photocoagulation was reserved only for those patients who had confirmed development of neovascularization.

All patients had the standard dose of bevacizumab (1.25 mg/0.05 mL) provided by a single local supplier. Source of injections were certified compounding pharmacies based in Lahore. All injections were administered under the sterile conditions in operating theatre. Surgeon used mask, sterile gloves, theatre gowns and had surgical scrub prior to the procedure. Patients had topical anaesthetic drops (Alcaine manufactured by Alcon) preoperatively for local anaesthesia. Injections were administered using standard prefilled insulin syringes with 30 gauge needles on them. Prefilled syringes however, as provided by the local supplier were non sterile as is the common practice in our country. All patients had a thorough cleaning of periocular tissue and lids using 5-10% povidone iodine. Same drops were instilled in the eyes to be operated for two to three minutes in order to achieve the maximum possible sterility. Patients had a self-adhesive surgical drape covering periocular tissue, nose and part of face prior to the procedure. Patients had a sterile speculum inserted followed by the intravitreal injection. Injections were performed in the inferotemporal quadrant. Needle was inserted 3.5mm from the limbus for phakic and 3.5mm for pseudophakic and aphakic patients. Following the procedure, speculum was removed and patients had a

single drop of ofloxacin eye drops combined with a single drop of povidone iodine solution. All patients had a sterile eye pad and were instructed to remove it 2-3 hours post procedure. No topical antibiotics were used preoperatively. All patients were prescribed with topical ofloxacin eye drops. Clear written instructions in native language were provided to them for the use of topical antibiotic drops to be used four times a day for five days in the operated eye, starting on the same day following eye pad removal.

A paired students t-test was used to analyze the data collected. Best corrected visual acuity and central retinal thickness was analyzed from day of presentation till end of study. A p value of less than 0.005 was considered to be significant.

## RESULTS

A total of 43 patients were included in the study since they met all the inclusion criterias. Nine patients were excluded with diabetic macular oedema as the primary reason. Two patients had vitreomacular traction and one had intravitreal triamcinolone. All patients included in the study were followed for a period of one year. Mean age (years) in the BRVO group was 66 and in CRVO group was 72. 20 were male while 23 patients were females. Mean duration of symptoms were 2 months for BRVO and 3 months for CRVO group. Mean intraocular pressure at the time of recruitment was 15 mm of Hg for BRVO and 19mm of Hg for CRVO group. Coming to best corrected visual acuity mean number of ETDRS letters for BRVO group was 54.1 and 46.7 for the CRVO group. Mean central macular thickness for BRVO group was 521 um and 529 um for CRVO group.

Analysis of treatment outcome revealed BRVO patients improved a mean of 9.1 letters at four and 9.7 ( $p < 0.05$ ) ETDRS letters at twelve months, while CRVO improved by a mean of 1.1 letters at four and 1.6 letters ( $p = 0.50$ ) by twelve months. Ten out of twenty two, 45.5% patients in CRVO group lost their vision from baseline. Such a percentage was not observed in the BRVO group i.e. 9.5%.

Evaluation of central macular thickness revealed a reduction of mean central macular thickness in both groups over a period of twelve months. In CRVO group mean reduction was 211 um at four months and 231 microns ( $p < 0.001$ ) in twelve months. In BRVO central macular thickness reduced by 196 um in four and upto 214 microns ( $p < 0.001$ ) in twelve months. Comparing the anatomical success with functional improvement it was obvious the functionality in terms of best corrected visual acuity BCVA did not get translated nor was proportional to reduction in central macular thickness.

## DISCUSSION

CRUISE and BRAVO studies were the bench mark in designing and conducting this particular study.<sup>1,4</sup> As

mentioned authors were interested in looking at the effect of Bevacizumab as compared to Ranibizumab on retinal vein occlusion for specific reasons. Ranibizumab simply cannot be the drug of choice in our part of the world due to financial constraints. Our results from BRVO group were in comparison to BRAVO study, while CRVO group performed below expectations in comparison with CRUISE study. This can be argued upon since we used Bevacizumab instead of Ranibizumab, however Brynskov et al have reported findings similar to us in their study on retinal vein occlusion. Reduction in central macular thickness CMT was significant in both groups with use of Bevacizumab but the improvement in macular thickness was not in proportion to improvement in visual acuity.

We believe there can be more than one reason in having results contrary to CRUISE study. We used Bevacizumab instead of Ranibizumab. Their inclusion criteria did not include patients with BCVA above 70 ETDRS letters, apparently a group with lesser potential to improve.<sup>9,10</sup> Moreover patients with visual acuity worse than 6/60 were also excluded from the study and these carry a limited chance to improve by 15 ETDRS letters due to intensified pathology.<sup>11</sup> Moreover our exclusion criteria did not include the pupillary response as is the case in the study performed by Brynskov et al. Patients with relative afferent pupillary defect are likely to have ischemic central retinal vein occlusion and carry minimal chance to improve.<sup>12,13</sup> Since the criteria were not in place, and it is not possible to quantify the response, our study had different results. In our study fluorescein angiography was not the part of necessary assessments; hence it was not possible to quantify the level of ischemia.<sup>15</sup> Being a rural community with majority of patients presenting late, it can be hypothesized that severity of disease in our cohort was worse than what clinicians commonly come across in the west. The other main difference lied in the intervention. We went for a series of three injections followed by a minimal period of eight weeks without any intervention, again model followed by Brynskov et al. Contrary to this in CRUISE and BRAVO, six consecutive injections were administered a month apart followed by further intervention on as required bases.<sup>16,17</sup> Since we administered three injections only, this could have led to recurrence of macular oedema. Authors believe that above mentioned differences satisfy the contrary results we had from CRUISE study.<sup>18</sup> Authors are of the view that inclusion and exclusion criteria's were designed keeping in view the local pathology and logistics of the management patterns in rural Punjab.

Our results failed to show any significant improvement in terms of BCVA in our CRVO group. This is disappointing but characterizes the severity of disease in our cohort. Our patients in this group had a mean age above seventy years. Moreover visual acuity at time of

presentation was lower than the BRVO group. This also signifies the possibility of co morbidities as hypertension, hypercholesterolemia and diabetes in our cohort.<sup>19,20</sup>

In the BRVO group however there was a significant improvement in best corrected visual acuity following bevacizumab injections.<sup>4,6</sup> These patients presented with a better BBCVA and a 15 letter or more improvement was identified on ETDRS scale. These findings correlate to what was found in the BRAVO study.<sup>21</sup>

Our patients had a mean 6.7 injections during the twelve months study. This number is less than documented in other trials.<sup>22</sup> Authors subjective assessment could have influenced the results especially in CRVO group.

Looking at the complications, none of our patients encountered endophthalmitis, vitreous haemorrhage or retinal detachment. Two patients developed uveitis following the injections and were treated with topical steroids and cycloplegics. None of the patients developed any thromboembolic episode during the study.<sup>23</sup> Our safety levels were found to be at par with the west.

Main limitation of the study is sample size. Moreover fundus fluorescein angiography which was omitted due to lack of resources and logistics would have provided a detailed assessment of level of retinal ischemia. This could have made easier differentiating ischemic from non ischemic retinal vein occlusion.<sup>24</sup> This study confirms the efficacy of Bevacizumab for use in retinal vein occlusion in our rural South Punjab settings. Authors believe that Bevacizumab is a safe and effective substitute for Ranibizumab to be used in economically deprived parts of the world as ours. Authors recommend further studies on the pattern of BRAVO and CRUISE trial using Bevacizumab to further confirm its efficacy.

## CONCLUSION

Our study looked at the effect of Bevacizumab in clinical practice on retinal vein occlusion. There was significant improvement in BRVO group in terms of visual acuity as well as reduction in CMT central macular thickness. In CRVO group, however Bevacizumab failed to show any significant improvement in terms of improvement in visual acuity despite of clinically significant reduction in macular thickness.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Sero-Positive Rate of Hepatitis-C Viral Infection in Patients of Communicable and Non-Communicable Diseases in Rural Communities of Punjab Pakistan

HCV in  
Communicable  
and non  
Communicable  
Diseases in Rural  
Population

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## ABSTRACT

**Objective:** To estimate the prevalence rate of hepatitis-C (HCV) viral infection in terms of detection of serum antibodies in the patients of different categories of communicable and non-communicable diseases in the communities of rural Punjab, Pakistan.

**Study Design:** Observational / descriptive / cross sectional study.

**Place and Duration of Study:** This study was conducted at the Institute of Public Health, the University of Lahore from 1<sup>st</sup> January 2015 to 31<sup>st</sup> December 2015.

**Materials and Methods:** A total of 3830 patients from Southern, Central and Northern Punjab were selected. Method of probability based random sampling was employed. For this purpose 5ml of blood was collected and subsequently serum was separated for testing the sero-positivity rate against the antibodies of hepatitis C virus. In non-communicable disease category, patients belonged to illnesses of cardiovascular system, diabetes mellitus, dental diseases, minor and major surgical interventions, gynaecological, obstetrical, blood transfusion, accidental wounds, and injectables given with glass syringes at multiple occasions. In the communicable disease category, patients belonged to diseases of malaria, dengue fever and typhoid fever.

**Results:** Maximum seropositivity rates of 46% and 43% were observed in the patients who were given injectables parenterally with non-disposable glass syringes and dental patients respectively, then 39% obstetrical and blood transfused patients. A sero-positivity rate of 37% and 34% was observed in the surgical patients, cardiovascular disease patients respectively. Sero-positivity rate in descending order in other categories was 30% in minor surgery patients, 30% in diabetes patients, 20% in malarial patients, 17% in gynaecological patients, 10% in typhoid patients and 17% in dengue fever patients.

**Conclusion:** High prevalence rate of hepatitis-c virus was found in patients who were injected with glass syringes frequently and dental patients residing in rural Punjab, Pakistan.

**Key Words:** Seropositivity, prevalence rate, hepatitis C viral infection, antibodies against HCV

**Citation of article:** Gilani SA, Khan MA, Malik AA, Burq AI. Sero-Positive Rate of Hepatitis-C Viral Infection in Patients of Communicable and Non-Communicable Diseases in Rural Communities of Punjab Pakistan. Med Forum 2017;28(6):21-23.

## INTRODUCTION

Among hepatitides, hepatitis C viral infection (HCV) is a disease of Public Health importance, spreading from person to person through a vehicle of blood. It is distributed worldwide and the rate of spread is higher in developing countries as compared to developed nations of the globe<sup>1</sup>.

Internationally the disease appears to be in the form of a pandemic because of two main risk factors. Firstly lack of awareness and secondly in the absence of a vaccine.

Incidence as well as the prevalence rates is increasing day by day thus pooling of the diseases patients throughout the world. According to an estimate 185 million people around the globe with a cumulative prevalence rate of 2.5-3% have been reported while suffering from chronic liver disease or cirrhosis of liver<sup>2</sup>.

Currently cumulative prevalence rate 7.6% has been reported in Pakistan. It has been projected that 14.5 million people will suffer from chronic liver disease in 2025<sup>3</sup>.

The major risk factors include HCV infected blood donors, intravenous drug users, blood transfusions without screening, infected surgical instruments, use of non-disposable glass syringes which are not sterilized adequately<sup>4</sup>.

In Pakistan, during the last two decades, prevalence of various infectious diseases has been continuously increased. Among all infectious diseases, most notable diseases are hepatitis-B and hepatitis-C. In developing countries, rising incidence of infectious diseases is not

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being controlled due lack of political commitment and health prioritization. Infrastructure of various health facilities, especially in rural areas is at compromised stage. Qualified medical staff and sufficient medical equipments for diagnosis and treatment of the diseases are deficient in rural health centers and basic health units. Lack of adequate monitoring system has diminished the provision of quality care. Community representatives belonging to rural areas have become less proactive. Migration of medical doctors and nurses to overseas has further reduced the available health professionals in rural areas. High cost involved in the diagnostic laboratory tests has further minimized the capacity of poor population living in rural areas for taking preventive and curative measures for the control of hepatitis-B and hepatitis-C viral infections.

## MATERIALS AND METHODS

A descriptive epidemiological study was conducted to capture the accurate picture of hepatitis C viral infection from the representative population of rural communities of the Punjab province of Pakistan. Study was conducted during the period from 1<sup>st</sup> January 2015 to 31<sup>st</sup> December 2015. Out of 36 district of Punjab, three districts were randomly selected each from Southern, Central and Northern rural Punjab

A passive surveillance was conducted in all the rural health centers (RHC), basic health units (BHU), Tehsil

Headquarter hospitals (THQ) and District Headquarter hospitals (DHQ), in the administrative territory of nine districts located in Southern, Central and Northern rural communities of Punjab. A total of 4113 patients were identified from which 3830 consented for hepatitis-C viral testing, in the category of communicable diseases like malaria, dengue fever and typhoid fever. Informed consent was taken. 5ml of blood sample from each individual was collected and subsequently serum was separated for testing the sero-positivity rate against the antibodies of hepatitis C virus. Seropositivity in terms of sero-prevalence rate was estimated as mentioned above. Data was analyzed by using SPSS version 22.

## RESULTS

Maximum seropositivity rates of 46% and 43% were observed in the patients who were given injectables parenterally with non-disposable glass syringes and dental patients respectively, then 39% obstetrical and blood transfused patients.

A sero-positivity rate of 37% and 34% was observed in the surgical patients, cardiovascular disease patients respectively. Sero-positivity rate in descending order in other categories was 30% in minor surgery patients, 30% in diabetes patients, 20% in malarial patients, 17% in gynaecological patients, 10% in typhoid patients and 17% in dengue fever patients.

**Table No.1: Prevalence of anti HCV antibodies in patients of surgical intervention, gynaecology obstetrics, blood transfusion and accidental injured patients in hospitals of rural Punjab.**

Category	Punjab							
	Southern		Central		Northern		Total	
	Numbers Tested	HCV Positive (%)	Numbers Tested	HCV Positive (%)	Numbers Tested	HCV Positive (%)	Numbers Tested	HCV Positive (%)
Surgical intervention $\geq$ 2 times	100	39(39) <sup>c</sup>	100	28(28) <sup>c</sup>	100	35(35) <sup>c</sup>	300	102(34) <sup>c</sup>
Gynaecology	100	15(15) <sup>b</sup>	100	7(7) <sup>a</sup>	100	30(30) <sup>c</sup>	300	52(17.3) <sup>b</sup>
Obstetrics	100	32(32) <sup>c</sup>	100	40(40) <sup>d</sup>	100	45(45) <sup>d</sup>	300	117(39.0) <sup>c</sup>
Blood transfused once	100	40(40) <sup>c</sup>	100	21(21) <sup>b</sup>	100	57(57) <sup>d</sup>	300	118(39.3) <sup>c</sup>
Blood transfused $\geq$ 2 times	100	38(38) <sup>c</sup>	100	30(30) <sup>c</sup>	100	49(49) <sup>d</sup>	300	117(39.0) <sup>c</sup>
Accidental wound $\geq$ 2 times	100	15(15) <sup>b</sup>	100	45(45) <sup>b</sup>	100	51(51) <sup>d</sup>	300	111(37.0) <sup>c</sup>
Injectables with glass syringe multiple	100	47(47) <sup>b</sup>	100	32(32) <sup>c</sup>	100	59(59) <sup>d</sup>	300	138(46) <sup>d</sup>
Total	700	226(32.2) <sup>c</sup>	700	203(29) <sup>c</sup>	700	326(46.5) <sup>d</sup>	2100	755(40) <sup>d</sup>

Different superscripts show statistical significant difference between two values of percentage at an alpha level of 0.05%.

**Table No.2: Prevalence of anti HCV antibodies in patients of cardiovascular disease, diabetes mellitus, dental, minor surgery, malaria, dengue fever and typhoid in rural Punjab.**

PUNJAB								
Category	Southern		Central		Northern		Total	
	Numbers Tested	HCV Positive %	Numbers Tested	HCV Positive %	Numbers Tested	HCV Positive %	Numbers Tested	HCV Positive %
Cardiovascular disease	100	8(8) <sup>a</sup>	100	11(11) <sup>a</sup>	100	15(15) <sup>a</sup>	300	34(11.3) <sup>a</sup>
Diabetes Mellitus	100	25(25) <sup>b</sup>	100	37(37) <sup>c</sup>	100	28(28) <sup>b</sup>	300	90(30) <sup>b</sup>
Dental treatment	100	39(39) <sup>b</sup>	100	42(42) <sup>c</sup>	100	48(48) <sup>c</sup>	300	129(43) <sup>c</sup>
Minor Surgery	100	17(17) <sup>b</sup>	100	29(29) <sup>b</sup>	100	43(43) <sup>c</sup>	300	89(29.6) <sup>b</sup>
Malaria	50	15(30) <sup>b</sup>	50	20(40) <sup>c</sup>	50	25(50) <sup>c</sup>	150	60(20) <sup>b</sup>
Dengue fever	100	3(3) <sup>a</sup>	100	2(2) <sup>a</sup>	100	1(1) <sup>a</sup>	300	6(2.0) <sup>a</sup>
Typhoid	20	2(10) <sup>a</sup>	30	1(3.3) <sup>a</sup>	30	5(16.6) <sup>b</sup>	80	8(10) <sup>a</sup>
Total	570	109(19.1) <sup>b</sup>	580	142(24.4) <sup>b</sup>	580	165(28.4) <sup>b</sup>	1730	416(22.1) <sup>b</sup>

The different superscripts different superscripts percentages shown a statistical significant diffuse between at an & level of 0.5%

## DISCUSSION

A cross sectional descriptive epidemiological study was designed to know the prevalence rate of hepatitis-C virus in the rural population of Punjab. Many studies on the prevalence of anti HCV antibodies in the population residing in urban areas were conducted because of availability of the resources and data but very few such studies had been conducted in rural areas of Punjab Pakistan. People living in the rural areas are poor, without facility of advanced hospitals and laboratories. Another logic behind conducting this study was that some studies had been reported high prevalence of HCV antibodies level up to 40% in peri-urban and rural areas of Sindh Pakistan<sup>5</sup>.

The other risk factors are poverty, lack of education, blood transfusions without screening and re-use of infected glass syringes by the quacks. Health facility providers, policy makers, administrators and politicians are responsible for public health at large<sup>6</sup>.

Health providers have been failed to take care of the patients neither for the treatment nor for the prevention purpose. It has been reported that 30% health workers were found infected with hepatitis-C virus<sup>7</sup>.

Similarly in blood transfusion centers the blood screening is very defective due to lack of quality reagents and giving rise to inaccurate results. The risk factors include negligence in disinfecting dialysis equipments and financial constraints<sup>8</sup>.

Similarly housekeeping staff in the health facilities while collecting the garbage get sharp pricks resulting into infection of hepatitis C and B viruses<sup>9</sup>.

Being low literacy rate, high poverty and lack of advanced public health awareness campaigns in rural areas, people in general remain ignorant of the potential risk factors<sup>10</sup>.

## CONCLUSION

High prevalence rate of hepatitis-c virus was found in patients who were injected with glass syringes frequently and dental patients residing in rural Punjab, Pakistan.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Evaluate the Changes in Blood Chemistry and Types of Addiction during the Treatment of Patients of Head and Neck Cancer at Nuclear Institute of Medicine Radiotherapy, Jamshoro

Changes in Blood Chemistry and Types of Addiction during the Treatment of Cancer

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## ABSTRACT

**Objective:** To evaluate the Changes in Blood Chemistry and Types of Addiction during the Treatment of Patients of Head and Neck Cancer at Nuclear Institute of Medicine Radiotherapy, Jamshoro.

**Study Design:** Observational / descriptive study.

**Place and Duration of Study:** This study was conducted at the Institute of Biochemistry, University of Sindh, Jamshoro in coordination with NIMRA and Ghulam Muhammad Mahar Medical Sukkur from June 2014 to December 2016.

**Materials and Methods:** Total 102 patients were selected with Head and Neck Cancer of grad III & IV. Specially designed questionnaire was used to collect the data, included age, sex, risk factors, sign symptoms, personal history, family history and histological diagnosis. Blood samples were collected and all parameters of Complete Blood Count (CBC) and Liver Function Test were performed.

**Results:** Majority of patients were between 41 to 50 years of age. 66.7% (n=68) patients 68 were male and 33.3% (n=34) were females founded, 65% (n=66) patients founded labor categories as occupation. Cheek was the most common site that affected as 44(43.1%) and second affected site was Tongue with 22 (21.6%) in all. Pain was most usually observed in 89 (87%) patients in Head and Neck region. Complete Blood Count (CBC) parameters were also disturbed during treatment as Lymphocytes, Monocytes, Basophils and Platelet Volume were ( $p < 0.05$ ) statistically significant. There was no significant variation ( $p > 0.05$ ) in Liver Function Test (LFT).

**Conclusion:** Due to lack of education and trend of tobacco used like Mainpuri and Naswaretc which slowly affect the health and most common cause. Efficiency of treatment and chance of persistence must be equally managed with latent practical and excellence of life time results. Patient's general situation and his or her capacity to bear forceful therapy must be considered by the cure team.

**Key Words:** Head and Neck Cancer, Chewing tobacco, Biochemical analysis

**Citation of article:** Shaheen S, Shah AM, Samoo AH, Leghari NA, Kalhoro MA, Qamar R, Adeel A. Evaluate the Changes in Blood Chemistry and Types of Addiction during the Treatment of Patients of Head and Neck Cancer at Nuclear Institute of Medicine Radiotherapy, Jamshoro. Med Forum 2017;28(6):24-28.

## INTRODUCTION

Head and neck cancers are an inclusive class of cancers that arise in the head and neck region. Cancer can happen in any tissue or organ in the head and neck. It is best generally found now days. Head and neck cancer area affected Para nasal depression, mouth cavity, larynx, nasal cavity and pharynx<sup>1</sup>.

Alcohol and tobacco usage (chewing and snuff tobacco) are recorded vital hazardous causes in head and neck cancers, especially cancers of the pharynx and mouth cavity<sup>2,3</sup>.

Chewing tobacco a form of smokeless tobacco product devoured by keeping a lot of the tobacco between the cheek and upper lip, teeth and gum and then for discharge savor and nicotine it was physically squashed with the teeth. Then annoying juices are expectorated<sup>4</sup>. It is mostly addicted by people. Oral cancer, dental disease, esophagus cancer, pancreas cancer, antagonistic reproductive effects plus abortion, premature birth and low birth weight are highly adverse effects correlated with smokeless tobacco<sup>5</sup>. Chewing tobacco contains black bull it can be smoke but mostly people chew it and Snuff. The tobacco which breathe in or "snuffed" into the nasal cavity called Snuff tobacco. Buttery snuff, a mixture of fluid tobacco promoted as a dental hygiene. Naswaris Afghan tobacco is alike to sinking tobacco, Gutka, a combination of tobacco, areca nut, Tobacco secretion, a type of chewing gum

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Received: April 16, 2017;

Accepted: May 15, 2017

enclosing tobacco, and numerous essences retailed in South Asia<sup>6</sup>. Another kind of chewing tobacco is dissolved tobacco which fully liquefies in the mouth. Tobacco prepared in North Africa, East Africa, and the Arabian Peninsula is Toombak and shammah<sup>7</sup>.

Globally more than 300 million people are using smokeless tobacco. Smokeless tobacco products differ expansively worldwide in both formula and health risks, with more or less clearly toxic<sup>8</sup>. It was observed that the major reason of Oral Leukoplakia (OL) and Oral sub mucous fibrosis (OSF) is the chewing of Betel quid. As earlier publicized in Pakistan, Taiwan, India, and Continental China that threats increased with the period and regularity of the habit<sup>9</sup>. Oral cancer risk was highly notable with betel quid eating with tobacco than betel quid eating without tobacco, and the proof for OL was also same. High risk of these cancers raises more in people who equally practice alcohol and tobacco than the people who take any one habit<sup>10, 11</sup>.

Infection with carcinogenic kinds of human papillomavirus (HPV-16) is a dangerous cause for head and neck cancers, mostly pharyngeal cancers that include the base of tongue and tonsillar<sup>12, 13</sup>. The use of pan is toughly connected with a greater and danger risk of mouth cancer in the refugees of South Asia so they must be attentive<sup>14</sup>.

Eating Paraguay tea (mate) like brewis related with a high cause of cancers of the larynx, throat, mouth cavity and esophagus. It routinely used by South Americans<sup>15</sup>. Some saline and well-maintained food's ingesting throughout babyhood is a danger factor for palatine tonsils cancer<sup>16, 17</sup>. The frail hazardous factor for the cancers of mouth cavity may be lost of teeth and less oral hygiene. High amount of alcoholic mouth washer is a probable risk for cancers of the mouth cavity but not recognized<sup>18</sup>.

The danger factor for nasopharyngeal cancer is wood dust exposure related to work and profession<sup>19</sup>. A high risk of laryngeal cancer may have to the people of some jobs like metal, construction, painting, textile, earthenware and nutrition industries<sup>20</sup>. The dangerous cause of nasal cavity and Para nasal sinuses cancer is the Manufacturing contact to nickel powder or wood and formaldehyde. Radiation to the head and neck, for noncancerous conditions or cancer, is a risk factor for cancer of the salivary glands<sup>20, 21</sup>. Salivary glands cancer and nasopharyngeal cancer are also caused by the contamination of the Epstein-Barr virus. In Asia the high risk of nasopharyngeal cancer occur in Chinese<sup>22</sup>. The painful throat and swelling may be the marks of head and neck cancers that do not set right trouble in swallowing and a variation in the voice. The red or white spots in the mouth are the symptoms that may disturb particular parts of the head and neck; Dentures patient feels unwell or become painful due to the swelling of the jaw; cause rare flow of blood or highly pain in the mouth. The swelling around the jawbone

and in the chin, coolness or paralysis of the muscles and pain in the face, but the neck and the chin doesn't affect<sup>22, 23</sup>. In the United States about 3 percent of all cancers apology for head and neck cancers. It diagnosed extra frequently having more in elders than younger ones. In 2012 further than 52,000 women and men in this country would be identified with head and neck cancers observed by the researchers<sup>24</sup>. Doctors assesses an individual's health history, instruction diagnostic tests and carry out a bodily investigation to find out the reasons of the problem in head and neck region. Blood, other substances from the body and urine samples are observed by the laboratory investigators. To ratify the diagnosis of cancer it is necessary to examine the tissue samples under the microscope<sup>24, 25</sup>. For the treatment plan individual's age, the stage of tumor, exact location of the cancer and the complete health are observed. Treatment of Head and Neck cancer includes Radiation therapy, Surgery, Targeted therapy, Chemotherapy, or a mixture of these treatments. Teeth may be dented or need to be removed before Radiation therapy can be done. Earaches, disturb nutrition and reduce appetite are due to loss of the sense of taste during treatment this problem happen. Swelling, sagging and changes in the texture of the skin in chin also are noticed by patients. After treatment patient may not be capable to open his mouth due to jaw inflexibility<sup>26</sup>. People who drink alcohol and practice tobacco are at the higher risk of second prime cancer at the original site of cancer<sup>26, 27</sup>. In this part of research work demographic characters, type of addictions, site and stage of cancer, Complete Blood Count (CBC), Liver Function Test were performed who seeking treatment at Nuclear Institute of Medicine and Radiotherapy(NIMRA), Jamshoro, Sindh, Pakistan.

## MATERIALS AND METHODS

Study is conducted at Institute of Biochemistry, University, Jamshoro and Nuclear Institute of Medicine and Radio Therapy (NIMRA) Jamshoro, Sindh, Pakistan. For entry of the required data of patients, specially designed questionnaire was used. Data include age, sex, risk factors, sign symptoms, personal history, family history and histological diagnosis. Blood samples were also collected and Complete Blood Count (CBC) and Liver Function Test (LFT) was determined in patients with Head and Neck cancer of grad II and grad III during treatment at NIMRA hospital Jamshoro, Sindh, Pakistan.

## RESULTS

The highest 36.3% (n=37) infected age group was 41-50 years was 37 (), showed in table no.1. In all patients 66.7 % (n=68) were male and 34 (33.3%) females were found. In all patients 80 (78.4%) were married. 14 (13.7%) were educated were bound in this disease. Figure 1. Most of the patients belonged to Hyderabad

and adjoining areas. Figure 2 Head and neck cancer disease was 66(65%) found in working people highly involved 40 (39%) out of 102 were from labor category, second common category was 20(20%) farmers, less commonly found 3(3%) were from education and industrial area. Figure: 3 in cancer 92 (90%) patients were taking Mainpuri, Gutkha, Pan, Cigarette, Naas, Naswar and Alcohol. Table: 1. In all patients I found the effected sites were Cheek, Tongue, Larynx, Hypopharynx, Plate of neck, Lip, Gum, RMT and Tonsil. Cheek was the most common site that was highly affected as 44(43.1%) out of 102 total no: of patients. Second affected site was Tongue with 22 (21.6%) in all. While 12 (11.8%) cases were found with Larynx cancer. 9(8.8%) patients were suffered in Hypopharynx cancer. The cancer in Plate of neck was communal in 4 (3.9%) patients. As the carcinoma of Lip, Gum and RMT were 3(2.9%) same in all cases. Tonsil was less pretentious as 2 (1.96%) out of total 102 patients. There were some side effects of treatment as Pain which was most usually observed in 89 (87%) out of 102. Dysphagia was seen in 66 (65%) patients. Ulceration occurred in 49 (48%) cases. Swelling was arisen in 43 (42%) patients. In 38 (37%) patients I found the Fungating growth. The side effect Hoarseness of voice was detected in 34 (33%) cancer patients. 31 (30%) patients out of total was feeling Vomiting as a side effect of treatment. While Hemoptysis was influencing less no: of patients 23 (23%) out of total 102. Table: 3. In Complete Blood Count (CBC) there were some changes after treatment in Lymphocytes it was statistically significant as its P-value was (0.026), while P-value with Monocytes was (0.046). Basophils were also statistically significant with P-value (0.05) and the P-value for (MPV) Mean Platelet Volume was (0.043) which was also significant than others. As shown in (Tables and graphs).

## DISCUSSION

Tobacco products like Cigarette, Gutkha, Betel nut (supari), Naswar, Betel quid (pan), Mainpuri and Naas are most common addictions in the population of Hyderabad and adjoining areas. Male were more spoiled in this bad practice. Most of people are habitual of chewing and smoking tobacco and are gripped in this dangerous routine at an early age, due to scarcity, illiteracy and lack of knowledge about poisonous reactions and hazard effects of these Tobacco products. In Hyderabad and adjoining areas Mainpuri and Gutkha are the utmost injurious and carcinogenic then other forms<sup>28</sup>. Mainpuri and Gutkha in the form of unhealthy packed and unpacked forms liberally exist in Hyderabad shops. People of Hyderabad and adjoining areas chew and eat these toxic mixed tobacco products daily whole the day even during sleep they keep that blend in mouth overnight. Most people chew this smokeless tobacco during work like labor, industrial

and farmer<sup>28</sup>. This chewing habit is the main cause of head and neck cancer because of carcinogens which badly impact the oral cavity and mucosa with early signs and symptoms of white and red spots or miscellaneous red and white wound (Erythroleukolakia). In advance stage lesion grows and becomes painful mass and growth. Then it affects the whole oral cavity critically<sup>29</sup>. The high percentage of head and neck cancer was observed in middle age group from 41-60, as more or less similar findings reported by Harish & Junaid, 2016. The gender highly involved in carcinoma found was male<sup>30</sup>.

Uneducated were more affected with carcinoma then educated due to lack of knowledge as stated in early studies. In this study family history was founded in patients as reported by Haung et al, 2015. Maximum site of cancer patients was Cheek and Tongue, while Larynx, Hypopharynx, Plate, lip, Tonsil, RMT and Gum was also gripped in carcinoma with less quantity<sup>30, 31</sup>.

There is statistically significant variation in Basophils, Lymphocytes, Monocytes and MPV where as other parameters of WBC, RBC, Hemoglobin, Hematocrit, MCV, MCH, Neutrophils, Eosinophils, Platelet count, RBC distribution width, Platelet distribution width and ESR are statistically non-significant. The less and more related findings were also detected<sup>32</sup>.

In few studies the significant variation in Liver Function Test was noted<sup>33</sup> while this research perceived statistically no significant variation in the parameters of Liver Function Test.

## CONCLUSION

Male was founded in mainstream, 36% patients were from age 41-50 years but 9% patients were from age 20-30years. Oral cancer patients were in majority. Due to lack of education, trend of smoking and chewing people using Cigarettes, Mainpuri and Naswar etc. which slowly affect the health and cause of cancer. Solutions of disease are commonly difficult, and the efficiency of treatment and chance of persistence must be equally managed with latent practical and excellence of lifetime results. Patient's general situation and his or her capacity to bear forceful therapy must be considered by the cure team. We should arrange workshops/seminars for the awareness of people about hazards of tobacco and head and neck Cancer.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Comparison of Manual Vacuum Aspiration Versus Electric Suction Evacuation in First Trimester Abortion

Hamna Javed, Bilal Mehmood and Saadia Khan Baloch

Manual Vacuum  
Aspiration VS  
Electric Suction  
Evacuation in  
Abortion

## ABSTRACT

**Objective:** To compare manual vacuum aspiration versus electric suction evacuation (in terms of complete abortion) in first trimester abortion at a tertiary care hospital.

**Study Design:** A Randomized controlled trial study.

**Place and Duration of Study:** This study was conducted at the Department of obstetrics and gynecology, Holy Family Hospital, Rawalpindi from 01-01-2016 to 30-12-2016.

**Materials and Methods:** A total number of 430 pregnant females, age ranging from 20-40 years and gestational age <12 weeks at the time of abortion were included in this study. These study cases were randomly divided into two groups. Group A (n=215) was underwent manual vacuum aspiration while group B (n=215): was managed by electric suction evacuation technique. The final outcomes i.e. complete abortion was noted on 7<sup>th</sup> day. Data was analyzed by using SPSS Version 20. Chi-square test was applied to compare complete abortion rate in both groups.

**Results:** The mean age of the patients was 32.15±5.06 years. Mean body mass index was 25.58±7.84 Kg/m<sup>2</sup>. Mean gestational age of females at the time of abortion was 8.97±1.29 weeks. Regarding complete abortion using two techniques, the overall success rate was 409 (95.1%) and there were only 21 (4.9%) cases of failure. Failure rate was 15 (6.97%) in electrical suction evacuation group and only 6 (2.80%) in manual vacuum aspiration group (p-value of 0.04).

**Conclusion:** Manual Vacuum aspiration is a superior technique as compared to electrical suction evacuation regarding success of complete abortion.

**Key Words:** Abortion, Manual Vacuum Aspiration, Electric Suction Evacuation.

**Citation of article:** Javed H, Mehmood B, Baloch SK. Comparison of Manual Vacuum Aspiration Versus Electric Suction Evacuation in First Trimester Abortion. Med Forum 2017;28(6):29-31.

## INTRODUCTION

Abortion (early pregnancy loss) is a very common event of women's life and is accountable for a very high number of losses of pregnancies. According to WHO, nearly 46 million pregnancies are aborted every year, out of which nearly 20 million abortions are done in unsafe environment.<sup>1</sup> The estimated abortion rate in Pakistan is about 29/1000 in pregnant females having age 15 to 49 years. Incomplete miscarriage occurs in about 10% to 15% of all pregnancies and it is accountable for 10% to 13% of total maternal deaths during pregnancy.<sup>2-6</sup>

To avoid miscarriage, there has been a continuous research for the development of a safe and cost effective method of abortion.

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Received: April 11, 2017; Accepted: May 20, 2017

Manual vacuum aspiration and electrical suction evacuation are two commonly used methods of abortion in many hospital settings in Pakistan. Out of all the recognized procedures of first trimester, Electrical suction evacuation (ESE) has been used since years. It has become standard surgical procedure for safe early pregnancy termination.<sup>7</sup> Most of these operations are performed in operating theatre using an electric vacuum. Manual vacuum aspiration (MVA) is an alternative to electrical suction. It also does not require electricity for its operation and has a success rate upto 98.0%-100%.<sup>8-10</sup> Moreover, women also prefer MVA over ESE because of its less noise, lower cost and more reliability.<sup>11-13</sup> But MVA is less used as compared to ESE in many centers.<sup>14</sup> In this study, we compared manual vacuum aspiration versus electric suction evacuation (in terms of complete abortion) in first trimester abortion at a tertiary care hospital.

## MATERIALS AND METHODS

This clinical trial was conducted in a tertiary care setting, Holy Family Hospital Rawalpindi. The study was completed in a period of one year from January 2016 to December 2016. A total number of four hundred and thirty (430) pregnant females having age 20-40 years and Gestational age less than 12 weeks

assessed on LMP undergoing first trimester abortion presenting with complaint of bleeding per vagina as per abortion definition were selected for this trial. Females with history of cesarean section, pelvic infection, uterine fibroids, ectopic pregnancy and those having any medical disorder like diabetes, hypertension, asthma, epilepsy assessed through medical records were excluded.

Ethical clearance was taken from Institutional Ethical Committee to conduct this study. Informed consent was taken from each patient before inclusion. These study cases were briefed about the objectives of this study, ensuring them confidentiality of the information provided and fact that there was no risk involved to the patient while taking part in this study.

Once registered these study cases were randomly divided into two groups (Group A and Group B) by draws method. Group A females underwent manual vacuum aspiration while group B females underwent electric suction evacuation technique. The final outcomes i.e. complete abortion was noted on 7<sup>th</sup> day after abortion.

Data was analyzed by using SPSS Version 20. Mean and standard deviation was calculated for the numerical data like age of patients, duration of procedure, BMI and gestational age. Frequencies and percentages will be tabulated for qualitative variables like age groups, parity, gravidity and complete abortion. Chi-square test was applied to compare outcome i.e. (complete abortion) in both groups.

## RESULTS

In this study, 430 patients were included. The mean age of the patients was 32.15±5.06 years. Mean body mass index was 25.58±7.84 Kg/m<sup>2</sup>. Mean gestational age of females at the time of abortion was 8.97±1.29 weeks. Comparison of age, BMI and gestational age within groups is given in Table 1.

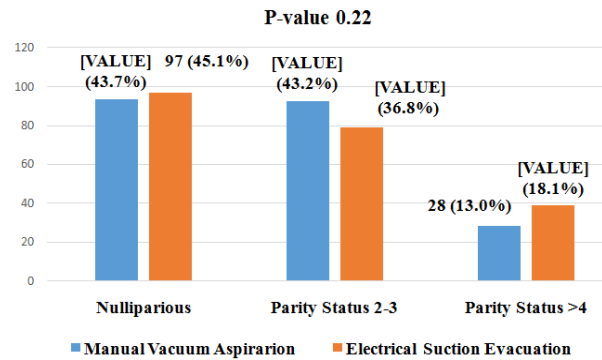
**Table No.1: Baseline Characteristics of study patients.**

Variable	Manual Vacuum Aspiration (N=215)	Electrical Suction Evacuation (N=215)	P-value
Age	32.51±5.18	31.80±4.92	0.15
BMI	25.21±9.71	25.95±5.33	0.33
Gestational Age	9.00±1.28	8.93±1.29	0.54

Regarding parity status, there were 191 (44.4%) nulliparous females. The pregnant females with parity status of 2-3 were 172 (40.0%) and with parity status ≥ 4 were 67 (15.6%). There was no difference in parity status between the groups (Fig 1).

Regarding complete abortion using two techniques, the overall success rate was 409 (95.1%) and there were only 21 (4.9%) cases of failure. Out of which 15 cases were in electrical suction group and 6 cases were in manual vacuum aspiration group. The rate of failure of

complete abortion was significantly high in electrical suction group with p-value of 0.04 (Table 2).



**Figure No.1. Comparison of Complete Abortion in Manual Vacuum Aspiration Versus Electrical Suction.**

**Table No.2: Comparison of Complete Abortion Rate.**

Complete Abortion	Manual Vacuum Aspiration	Electrical Suction	P-value
Yes	209 (97.20)	200 (93.03)	0.04
No	6 (2.80)	15 (6.97)	

## DISCUSSION

Manual vacuum aspiration is being used worldwide from the last 30 years and is considered to be a safe and effective procedure of uterine emptying in early pregnancy.<sup>15,16</sup> It is now considered as an alternative tool of abortion to electrical suction, dilation and curettage.<sup>17</sup> Tasnim et al., concluded that Manual vacuum aspiration is a safe and effective alternative to traditional electric vacuum aspiration.<sup>7</sup> It is superior to Electrical Vacuum Aspiration in terms of cost, reduced need for general anaesthesia and no need for electricity. But the use of manual vacuum aspiration in most of the hospitals is restricted due to unfamiliarity of the clinicians with its use. The technique was introduced in our institution only three years back and was new for the residents as well other faculty members who were more competent with Electrical suction. A high achievement rate with no main complications with manual vacuum aspiration proved that this technique is safe and easy to learn. According to Edwards et al manual vacuum aspiration is associated with smaller blood loss, short procedural time, less hospital stay and thus a cost effective procedure for early abortion.<sup>18</sup> Manual vacuum aspiration is also considered to be an effective and safe tool for outpatient or office based abortion.<sup>18</sup> There is very low incidence of complication using manual vacuum aspiration and electrical suction but both these procedures can lead to severe complication e.g. uterine perforation, pelvic infection and even death.<sup>10</sup>

The mean age of pregnant females at the time of abortion in my study was 32.15±5.06 years. The complete abortion rate using manual vacuum aspiration was high as compared to the electrical suction group. In this study this rate was 97.2% in manual vacuum aspiration group and 93.02% in electrical suction group.

In the study of Tasnim et al.<sup>7</sup> the rate of successful abortion was high in electrical suction group 91.4% versus 89.6% in MVA group. But in the study of Samal et al.<sup>2</sup> the rate of complete abortion was high in manual vacuum group 98.0% versus 97.0% in ESE group. Helen et al.<sup>1</sup> also found similar results, in their study the rate of successful abortion was 98.0% in MVA group and 97.0% in ESE group. And these authors concluded that MVA should be used as a 1<sup>st</sup> line technique because it is much safe and easy as compared to ESE method. In the study of Baqai et al.<sup>19</sup> the rate of successful abortion using MVA was 94.5%. Ansari et al.<sup>20</sup> found 97.7% success rate of abortion using MVA. In my study, the mean gestational age at the time of abortion was 8.26±1.57 weeks and in the study of Tasnim the mean gestational age in manual vacuum aspiration group was 9.7±1.44 weeks.<sup>7</sup> The less gestational age in my study may be responsible for high success rates using manual vacuum aspiration.

So according to the results of our study, MVA is associated with higher rate of successful abortion as compared to electrical suction evacuation. Because of its simplicity and easy usage, it should be used for abortion preferably as compared to electrical suction evacuation especially in centers where there is a lack of modern facilities and especially electricity backup in gynecology departments.

## CONCLUSION

Manual Vacuum aspiration is a superior technique as compared to electrical suction evacuation regarding success of complete abortion.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Lumboperitoneal Shunting in Patients with Normal Hydrocephalus

Shoaib Umar, Abdul Moez, Erum Sultan and Muhammad Ali Bukhari

## ABSTRACT

**Objective:** To determine the success of lumbo-peritoneal shunt in cases of normal pressure hydrocephalus.

**Study Design:** Descriptive cases series study

**Place and Duration of Study:** This study was conducted at the Department of Neurosurgery, Sheikh Zayed Hospital, Rahim Yar Khan from 01-01-2015 to 01-01-2017.

**Materials and Methods:** 40 cases of normal pressure hydrocephalus of both genders with age range of 20 to 80 years were selected. The diagnosis of NPH was made on mini mental status examination and modified Rankin score along with normal CSF pressure. These cases then underwent LPS at Neurosurgery Department of Sheikh Zayed Hospital, RYK and were observed post operatively on intervals of 1 month, 3 month and 6 months where the final outcome was seen. The success was labeled as successful where there was 50% improvement in the either mini mental status examination or modified Rankin score done at baseline.

**Results:** In this study there were total 40 cases out of which 25 (62.50%) were males and 15 (37.50%) females with mean age of  $57.62 \pm 7.21$  years. The treatment success of LPS was seen in 33 (82.50%) out of 40 cases. Among the different parameters to label success in these 33 cases, the maximum improvement was seen in more than one parameters; which was seen in 18 (54.55%) of cases.

**Conclusion:** Lumbo-peritoneal shunt is efficacious in cases with normal pressure hydrocephalus where it is seen in every 8 out of 10 cases.

**Key Words:** NPH, VPS, LPS.

**Citation of article:** Umar S, Moez A, Sultan E, Bukhari MA. Lumboperitoneal Shunting In Patients with Normal Pressure Hydrocephalus. Med Forum 2017;28(6):32-34.

## INTRODUCTION

Normal pressure hydrocephalus (NPH) is syndrome of symptoms that was first recognized by Adams and Hakim. In this condition the ventricle become pathologically enlarged but the opening pressure on lumbar puncture is normal. In contrast to the NPH, the other causes of communicating and non-communicating hydrocephalus are caused by some structural blockage to the cerebrospinal fluid (CSF) flow among the ventricular system. This can be caused by either stenosis of aqueduct of Sylvius or some other reasons causing compression over it. The incidence of normal pressure hydrocephalus (NPH) has varied in different studies from 2 to 20 per million per year.<sup>1-3</sup>

Normal Pressure Hydrocephalus has its classical presentation and can be diagnosed on the basis of urinary incontinence, disturbed gait and dementia or cognitive impairment. Early diagnosis and then proper intervention is the mainstay regarding the management

of the NPH, because the damage done by this lesion is reversible. Computed Tomography (CT) brain and Magnetic resonance imaging (MRI) are the most common investigation choices to label the dilated ventricles and normal opening pressure to call it as NPH.<sup>4-5</sup> Ventriculo-peritoneal shunt (VPS) and lumbo-peritoneal shunt (LPS) are the most common treatment modalities. But there are no definitive guidelines regarding the placement of the shunt in such cases of NPH. The decisions are tailored on the availability of the resources, clinical expertise, presence of co morbid conditions and the chances of the complication rates and decisions are taken on individual basis. Lumbo-peritoneal shunts (LPS) are usually safe and the chances of complications like intracranial spread of infections are not associated with it as are with VP shunting. The most common complications of this are local collection of fluid in the back or abdominal cavity. The efficacy by LPS ranges from 60 to almost 90% of cases.<sup>6-9</sup>

## MATERIALS AND METHODS

This study was conducted at the Department of Neurosurgery, Sheikh Zayed Hospital, Rahim Yar Khan from 01-01-2015 to 01-01-2017.

**Sampling Technique:** Non-probability, consecutive sampling.

**Sample selection;** The cases were selected according to the following inclusion and exclusion criteria.

**Inclusion criteria:** 1. Both genders

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Received: April 01, 2017; Accepted: May 05, 2017

2. Age 20 to 80 years  
 3. Cases of normal pressure hydrocephalus with symptoms of cognitive impairment, gait disturbance and urinary incontinence (assessed by mini mental status examination and modified Rankin score) along with the opening CSF pressure of 70-245 mm of H<sub>2</sub>O were included in the present study.

**Exclusion Criteria:** 1. Cases with communicative and non-communicative hydrocephalus other than NPH were excluded.

2. Documented cases of meningitis i.e. WBC count more than 50 cells/mm<sup>3</sup> on CSF analysis.  
 3. Cases with end stage liver cirrhosis, renal or cardiac failure.

In this descriptive cases series study, 40 cases of normal pressure hydrocephalus as per inclusion and exclusion criteria were selected. The detailed demographic and clinical data was collected to label them as case of NPH and to check for their base line cognitive and functional status in the form of mini mental status examination and modified Rankin score. The cases with no signs of meningitis by assessing on CSF fluid, were then underwent this lumbo-peritoneal shunting by consultant neurosurgeon at Neurosurgery Department of Sheikh Zayed Hospital, RYK and the shunt was placed. These cases were observed post operatively and then assessed periodically on intervals of 1 month, 3 month and 6 months where the final outcome was seen. The success was labeled as successful where there was 50% improvement in the either mini mental status examination or modified Rankin score done at baseline.

**Statistical analysis;**

The data was processed and analyzed by using SPSS version 20. Nominal and ordinal data were presented as mean ±SD (standard deviation) and in frequencies and percentages accordingly. Chi-square test was used to see for statistical significance and p value ≤0.05 was taken as significant.

**RESULTS**

In this study there were total 40 cases out of which 25 (62.50%) were males and 15 (37.50%) females (table 1). The mean age was 57.62±7.21 years (table 2). In the diagnosis of NPH, the cognitive impairment was the most commonly seen. It was observed in 32 (80%) cases, while gait disturbance and urinary incontinence were seen in 27 (67.50%) and 20 (50%) of cases respectively (table 1).

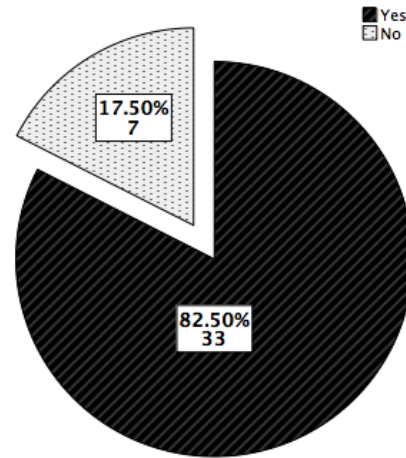
**Table No.1: Study variables (A) n= 40**

Variables	Numbers	%
Male	25	62.50
Female	15	37.50
Cognitive impairment	32	80
Gait disturbance	27	67.50
Urinary incontinence	20	30

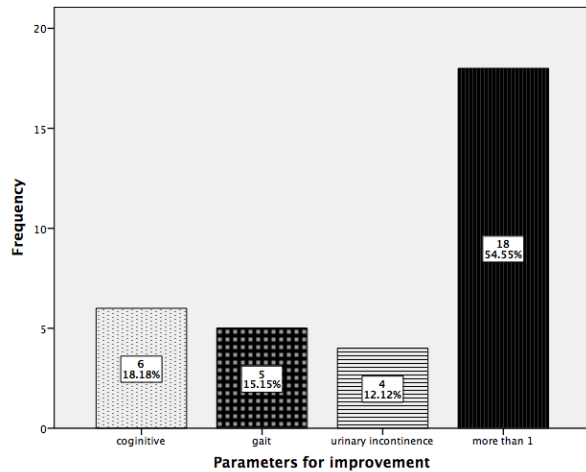
The treatment success was seen in 33 (82.50%) out of 40 cases as in figure 1. Among the different parameters to label success in these 33 cases, the maximum improvement was seen in more than one parameters; which was seen in 18 (54.55%) of cases followed by cognitive improvement seen in 6 (18.18%) of cases as in figure 2.

**Table No.2: Study variables (B) n= 40**

Variables	Mean	Range
Age (years)	57.62±7.21	20-80
Mini mental status score	1.81±0.92	1-4
Modified Rankin score	2.12±1.03	1-4



**Figure No.1: Treatment success of LP shunt n= 40**



**Figure No.2: Parameters of improvement in cases with successful treatment n= 33**

**DISCUSSION**

Normal pressure hydrocephalus (NPH) can be defined as a range of clinical symptoms comprising cognitive impairment, urinary incontinence and gait disturbances in cases where the intracranial pressure is normal. It is also called as Adam-Hakim Syndrome. The prevalence

of NPH is relatively low as compared to the other potential causes of hydrocephalus and the presenting clinical symptoms. Therefore proper diagnosis and early intervention can decrease the morbidity and mortality in such cases. Ventriculo-peritoneal shunt and lumbo-peritoneal shunt are one of the most commonly underwent intervention. The treatment success was seen in 33 (82.50%) out of 40 cases. In a study conducted by Bloch et al, the success of LP shunt was seen in 73% of cases while there intervention was needed in 27% of cases.<sup>10</sup> While in another study conducted by Klinge et al, the good response of this surgical intervention was seen in 84% of cases. One patient was expired and re intervention was done in 15% of cases.<sup>11</sup> Bayer et al conducted a study in Turkey in their cases of normal pressure hydrocephalus to treat with LP shunt and it was seen that the good outcome was seen in more than 82% of cases and the cognitive important was the most well responded clinical symptoms.<sup>12</sup> While in the rest of the cases few complications were seen for which either shunt was removed or re insertion of the shunt was done. Considering the different complications the shunt occlusion was the most common type among the study done by Singh A et al.<sup>13</sup> The previous studies have also revealed that the LP shunt has better outcome than the VP shunt because of the lower incidence of intracranial complications such intra cerebral hemorrhages, malpositioning of the shunt and fits and due to this LP shunt is preferred over the VP shunt.<sup>14-15</sup>

## CONCLUSION

Lumbo-peritoneal shunt is efficacious in cases with normal pressure hydrocephalus where it is seen in every 8 out of 10 cases.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Epidemiological Analysis of Infant Mortality in Rural Punjab of Pakistan

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## ABSTRACT

**Objective:** The objective of the present study was to determine the factors affecting the child mortality in Rural Punjab, Pakistan.

**Study Design:** Descriptive / observational study.

**Place and Duration of Study:** This study was conducted at the College of Statistical and Actuarial Sciences, University of the Punjab, Lahore from 20<sup>th</sup> November 2016 to 15<sup>th</sup> April, 2017.

**Materials and Methods:** To assess the contribution of selected socio-economic and bio-demographic variables on child mortality in Rural Punjab, Pakistan, binary logistic regression for the PDHS (2006-07) data was used. For this, married women were selected; with total sample size 10466.

**Results:** Maternal occupation, maternal education, breastfeeding, sex of child, mass media, age at 1<sup>st</sup> birth, age at 1<sup>st</sup> marriage, cousin marriage, child is twin, preceding birth interval, birth order, number of family members, parental education, parental occupation and wealth index had significant effect on child mortality ( $P < 0.05$ ).

**Conclusion:** Increase in awareness of health care of infant and children among the people in rural areas are required. New health centers should be established in rural areas to provide information about health care of children. Preceding birth interval must be more than two years. Early age marriages should be condemned.

**Key Words:** Mortality, Morbidity, Odds Ratio, Logistic Regression

**Citation of article:** Sherwani RAK, Raza MA, Bhatti SH, Aftab M, Ahmad T, Shaukat MS. *Epidemiological Analysis of Infant Mortality in Rural Punjab of Pakistan. Med Forum 2017;28(6):35-39.*

## INTRODUCTION

Infant and child mortality had turned into a terrifying issue far and wide, particularly in low resourced nations like Pakistan, India, Bangladesh and Sri Lanka<sup>1</sup>. During the recent decades rate of overall child mortality had declined across the world but the developing nations still possessed high rate<sup>2</sup>. According to WHO, Pakistan ranks 47<sup>th</sup> among the countries that have highest mortality rates for the children under-five years of age<sup>[3]</sup>. Several factors affect the child mortality. Some of them are biological and some relate to socioeconomic issues. In addition, religious disparities also had significant effect on child mortality<sup>4</sup>.

Organic elements incorporate high fertility, birth dividing, birth weight, maternal age and wellbeing, various births and irresistible ailments<sup>5</sup>. Socioeconomic components include the economic wellbeing of the

family, breast feeding, culture, religion, poor cleanliness and less maternal wellbeing education<sup>6</sup>.

From last few decades, Pakistan remained a victim of child mortality. Although child mortality rate had declined since 1980's from 153 to 86 per 1000 live births but still persist on a high note. Approximately, more than four hundred thousand child died each year and 97 per 1000 are under the age of five<sup>7,8</sup>. The main sources of death reported among children under-five years include pneumonia and diarrhea trailed by malaria, measles, birth trauma, hemolytic diseases, congenital anomalies, malnutrition and maternal infections, all of which can be vetoed through proper nutrition, hygiene, and better medical facilities. Roughly, 38% of children under five are accounted for to be tolerably or seriously underweight and 59% of rural Pakistanis don't have entry to satisfactory sanitation places which expands the odds of contracting irresistible maladies<sup>9</sup>. Pakistanis is still among the four nations where Polio stays endemic<sup>10</sup>.

In October 2004 USAID set up a program Pakistan Initiative for Mothers and Newborns (PAIMAN) through which it financed Pakistan 56.2 million dollars for enhancing maternal and baby well being<sup>11</sup>. Generally speaking, in Pakistan, more than 26 percent of mothers were accounted for by the occurrence of child mortality. The patterns are increasing in rural areas than in urban areas<sup>12</sup>. The goal of current study was to focus the components influencing the child mortality in provincial territory of Punjab in Pakistan.

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Received: April 25, 2017;

Accepted: May 20, 2017

**MATERIALS AND METHODS**

In current study, we utilize the “Pakistan demographic and health survey (PDHS-2007)” data published by National Institute of Population Studies (NIPS), Pakistan. Pakistan's first demographic and wellbeing overview was attempted in 1990-91. From that point forward, different overviews concentrating on richness & family arranging, conceptive wellbeing and status of ladies led. The present demographic and wellbeing review (2006-07) had uncommon elements, including maternal mortality and infant & child death, mortality, and morbidity, nevertheless the routine territories which covers demographic and wellbeing overviews. In the present study women's of child bearing age were selected. Selected sample covers both urban and rural areas of Punjab. The data was analyzed using Statistical Product and service solutions (SPSS). Variables associated with child mortality were investigated using logistic regression. Continuous variables were categorized by using Quartile analysis. Odds ratios and 95% confidence intervals (C.I.s) were calculated <sup>[13]</sup>.

**RESULTS**

Descriptive and inferential statistics is used to access the silent features of the study. Descriptive statistics includes the crosstabs and percentages of the dependent variable with respect to independent variables. Table 1, indicated that breastfeeding factor provides significant effect on child mortality. The findings of the study indicated child mortality rate among the children was 46.3% whose mothers were not presently breastfeeding and 38.6% were those mothers who were currently breastfeeding. The results of significant variable like sex of child indicated that child mortality rate among male and female children were 43.1% and 45.6% respectively. Mass media also shows significant effect on child mortality. In bio-demographic variable, age at first birth found significant effect on child mortality. The results indicates that child mortality rate of the children whose mothers age less than or equal to 16 years was 60.2% and for the children whose mothers age was greater than 16 years was 40.7 %. Age at first marriage indicates that child mortality rate was 50.5% for the mothers whose age at first marriage is less than or equal to 18 years and 32.6% for those mothers whose age at first marriage was more than 18 years. Child mortality was 38.4% for the children of the respondents who have no relationship with their husbands before marriage and 47.4% for the children of the respondent who have relationship with their husbands before marriage. Training is the most impacted element in separating the newborn child and kid mortality levels inside of all the financial elements. Mothers with no education had 51.3% chance of child mortality. Rate of child mortality for twin babies was 43.9%.

**Table No.1: Distribution of Child Mortality According to Selected Variables**

Selected Variables	Child mortality		Total	chi-sq
	Yes (%)	No (%)		
Currently breastfeeding				
No	3541(46.3)	4103(53.7)	7644	49.521
Yes	1090(38.6)	1732(61.4)	2822	***
Sex of child				
Male	2359(43.1)	3120(56.9)	5479	6.631*
Female	2272(45.6)	2715(54.4)	4987	
Mass media				
No	2469(50.8)	2389(49.2)	4858	158.89
Yes	2162(38.6)	3446(61.4)	5608	6***
Age at 1st birth				
<=16	1147(60.2)	759(39.8)	1906	239.73
>16	3484(40.7)	5076(59.3)	8560	2***
Age at 1st marriage				
<=18	3431(50.5)	3359(49.5)	6790	309.27
>18	1200(32.6)	2476(67.4)	3676	***
Maternal occupation				
Not working	2437(37.5)	4057(62.5)	6494	313.33
Working	2194(55.2)	1778(44.8)	3972	5***
Cousin marriage				
No relationship	1410(38.4)	2261(61.6)	3671	78.142
Cousin	3221(47.4)	3574(52.6)	6795	***
Maternal education				
No education	3903(48.1)	4209(51.9)	8112	246.16
Primary	531(34.9)	990(65.1)	1521	
Secondary & Above	197(23.6)	636(76.4)	833	
Preceding birth interval				
First Birth	763(32.7)	1571(67.3)	2334	314.10
<=12	520(64.6)	285(35.4)	805	
13-24	1570(50.3)	1552(49.7)	3122	
>25	1771(42.3)	2416(57.7)	4187	
Child is twin				
Single birth	4525(43.9)	5773(56.1)	10298	24.585
child is twin	106(63.1)	62(36.9)	168	***
Birth order				
1st child	763(32.7)	1571(67.3)	2334	387.44
2-3rd child	1433(38.6)	2283(61.4)	3716	
4+	2435(51.1)	1981(44.9)	4416	
Household members				
1-4 small family	303(44.6)	377(55.4)	680	1.68
5-7 medium	1793(45.0)	2191(55)	3984	
8 and over	2535(43.7)	3267(56.3)	5802	
Parental education				
No education	2361(51.3)	2245(48.7)	4606	184.92
Primary	818(42.7)	1096(57.3)	1914	
Secondary & Above	1445(36.7)	2494(63.3)	3939	
Parental Occupation				
Pro.Tec.Mng.Cler.Sale.Srvcs.Skill	2455(59.7)	1656(40.3)	4111	66.072
Didn't work., h.hold& domestic	170(42.6)	229(57.4)	399	
Agric-self employ.agric-employ	1706(52.8)	1526(47.2)	3232	
Laborer	1501(55.2)	1220(44.8)	2721	
P< 0.05*, P< 0.01**, P< 0.001***				

**Table-2: Multiple Logistic Regression Analysis of Child Mortality**

Variables	B	S.E.	Wald	P-value	Exp(B)	95% C.I for EXP(B)	
						Lower	Upper
<b>Currently Breastfeeding</b>							
Yes					1		
No	0.285	0.049	33.899	0.000	1.33	1.208	1.464
<b>Sex of Child</b>							
Male					1		
Female	0.095	0.042	5.039	0.025	1.099	1.012	1.194
<b>Mass Media</b>							
Yes					1		
No	0.195	0.049	15.645	0.000	1.215	1.103	1.338
<b>Age at 1st Birth</b>							
>16					1		
<= 16	0.431	0.058	55.337	0.000	1.539	1.374	1.724
<b>Age at 1st Marriage</b>							
> 18					1		
<= 18	0.450	0.048	87.1	0.000	1.568	1.427	1.723
<b>Maternal Occupation</b>							
Not Working					1		
Working	0.501	0.045	123.96	0.000	1.65	1.511	1.802
<b>Cousin Marriage</b>							
No					1		
Yes	0.283	0.045	39.008	0.000	1.327	1.214	1.451
<b>Maternal Education</b>							
Secondary and higher					1		
No Education	0.412	0.096	18.378	0.000	1.51	1.251	1.823
Primary	0.265	0.104	6.517	0.011	1.304	1.064	1.599
<b>Child is Twin</b>							
Single					1		
Twin	0.866	0.184	22.151	0.000	2.377	1.658	3.41
<b>Parental Education</b>							
Secondary and higher					1		
No Education	0.108	0.055	3.877	0.049	1.114	1	1.241
Primary	-0.034	0.063	0.294	0.588	0.967	0.855	1.093
<b>Parental Occupation</b>							
Pro.Tec.Mng.Cler.Sle.Srvcs.Skll					1		
Didn't work., h.hold& domestic	0.4	0.114	12.413	0.000	1.492	1.194	1.864
Agric-self employ.agric-employ	-0.025	0.054	0.223	0.637	0.975	0.878	1.083
Laborer	-0.097	0.057	2.934	0.087	0.907	0.812	1.014
<b>Wealth Index</b>							
Rich					1		
Poor	0.244	0.067	13.164	0.000	1.276	1.119	1.456
Middle	0.011	0.063	0.032	0.858	1.011	0.894	1.145
<b>Preceding birth interval</b>							
25 months and over					1		
First birth	-0.541	0.06	80.08	0.000	0.582	0.517	0.656
<12 months	0.915	0.084	117.92	0.000	2.496	2.116	2.944
13-24 months	0.344	0.05	46.537	0.000	1.411	1.278	1.557
<b>Birth order number</b>							
1 <sup>st</sup> child					1		
2-3 <sup>rd</sup> child	0.211	0.058	13.269	0.000	1.235	1.102	1.384
4+	0.755	0.056	180.56	0.000	2.128	1.906	2.376

P&lt; 0.05\*, P&lt; 0.01\*\*, P&lt; 0.001\*\*\*

The results showed clearly that child twin variable had significant effect on child mortality [ $\chi^2=24.585$ ,  $p<0.001$ ]. Babies of the higher birth order have more chances of death. The analyses demonstrate that birth order has significant effect on child mortality. Number of household member's variable had not significant effect on child mortality [ $\chi^2=1.68$ ]. Father's education indicates as significant effect on child mortality. Parental occupation is an important predictor of infant and child mortality. Occupation was taken as an index of socio-economic status. Child mortality is significantly related to parental occupation [ $\chi^2=66.072$ ]. Child mortality rate among the poor, middle and rich families were 50.2%, 40.5% and 33.8% respectively.

Table 2 indicates the estimated coefficients, Standard errors, odds ratio and 95% confidence intervals. The odds ratio of breastfeeding is 1.330 which means that for no breastfeeding the odds of child mortality is 1.33 times than yes breastfeeding and 95% confidence interval of odds ratio (1.208, 1.464). Sex of child has significant effect on child mortality but it is not more affective variable [AOR= 1.099]. Child mortality without watching TV is 1.215 times more likely than watching TV.

The age at first marriage has significant effect on child mortality with [AOR= 1.568]. Analysis of this study highlights that child mortality with working respondents is 1.650 times more likely than the respondent who did not work. The odds ratio of cousin marriage is 1.327 and confidence interval (1.214, 1.451) which clearly demonstrates the significant effect on child mortality. The odds ratio of mother with no education is 1.510 and confidence interval is (1.251, 1.823) which does not include the value of 1. It means that child mortality with no education of mother 1.510 times more likely than secondary & higher education. The odds ratio of primary education is 1.304 and confidence interval (1.064, 1.599) which also does not include the value of 1. The result also confirms that maternal education has significant effect on child mortality. Table 2 shows that the odds ratio of the twin child is 2.377 and confidence interval (1.658, 3.410). It observes that child mortality with twin child 2.377 times more likely than the single children. The results indicate that type of birth has significant effect on child mortality. The odds ratio of parental occupation (agric employee / agric-self employee) is 0.975 and confidence interval is (0.878, 1.083) which shows insignificant. The odds ratio of the parental occupation (laborer) is 0.907 and confidence interval (0.812, 1.014) which is also insignificant.

The odds ratio of the wealth index (poor) is 1.276 and 95% confidence interval of odds ratio is (1.119, 1.456). It observes that the wealth index (poor) has significant effect on child mortality. The odd ratio of the wealth index (middle) is 1.011 and 95% confidence interval is (0.894, 1.145) which is insignificant. Current study

indicated that the child mortality with the first baby 1.718 times less likely than the children whose birth interval more than 25 months. The odds ratio of children who's preceding birth interval greater than 12 months is 2.496 and 95% confidence interval (2.116, 2.944). It observes that child mortality with preceding birth interval greater than 12 months 2.496 times more likely than children whose birth interval is more than 25 months. The odds ratio of the children whose proceeding birth interval 13 to 24 months is 1.411 and confidence interval is (1.278, 1.557) does not include the value of 1. It observes that child mortality with children whose birth interval 13 to 24 months is 1.411 times more likely than children whose preceding birth interval is more than 25 months. The result shows that preceding birth interval has significant effect on child mortality. Child mortality with more than 4 children is 2.128 times more likely than the child of first order. The result shows that birth order has significant effect on child mortality.

## DISCUSSION

Breastfeeding, sex of child, mass media, age at 1<sup>st</sup> birth, age at 1<sup>st</sup> marriage, maternal occupation, cousin marriage, maternal education, parental occupation, parental education, child is twin, preceding birth interval and birth order shows significant effect while number of family member's variable indicates insignificant effect on child mortality by univariate analysis in rural area of Punjab, Pakistan. Feeding practices were vital determinants of kids' dietary status and numerous studies have demonstrated the useful impacts of breastfeeding on healthful status, grimness and mortality of newborn children<sup>14</sup>. Mother's age plays a key component for child survival at the time of child birth. Infants born to mothers who were less than 16 years of age, at high risk of dying while infants.

Parental education, parental occupation and wealth index demonstrates insignificant effect on child mortality by the help of logistic regression analysis. Many studies sustained a direct causal relationship between wealth index and child mortality<sup>15</sup>. Education of mothers may be attributed to the children of better diets and better overall care than the children of non-educated mothers<sup>16</sup>. Results depicted that child mortality with primary education was 1.304 times more likely than secondary & higher. Birth interval played significant role on infant and child mortality as indicated in previous studies<sup>17</sup>. Another study showed that in first pregnancies the childhood mortality was highest, in 2nd and 3rd. pregnancies that were lowest<sup>18</sup>.

## CONCLUSION

The present study strongly recommended that women should be motivated to complete their education at least up to the secondary level. Parents should give equal preference to daughters as well as sons in health care

matters. Efforts should make to improve the women education by the government of Punjab, Pakistan using media, workshops and seminars. Government must increase awareness of health care of infant and children among the people in rural areas. New health centers should be established in rural areas to provide information about health of children. Preceding birth interval must be more than two to three years. Early age marriages should be condemned. These all recommendations are strongly amplified by the government of Punjab, Pakistan to decrease the mortality rate especially in rural area of Punjab, Pakistan.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Prevalence and Risk Factors for Hypertension Among School Children in Four Districts of Hazara division, Khyber Pukhtoonkhwa

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## ABSTRACT

**Objective:** The current study was conducted with the aim to evaluate the prevalence and risk factors for hypertension among schoolchildren.

**Study Design:** Descriptive / cross-sectional study

**Place and Duration of Study:** This study was conducted at the Department of Paediatric, Saidu Medical College, Swat from March 2014 to December 2014.

**Materials and Methods:** A total of 3200 schoolchildren aged between 5 to 15 years selected from 16 schools of four districts of Hazara division were included in this study. A pretested questionnaire was used to collect information about children gender, age, and family history of hypertension, diabetes mellitus and cardiovascular diseases. Mercury sphygmomanometer with appropriate cuff size was used to measure blood pressure (BP). For each subject, BP was recorded three times on the same visit with at-least 30 minutes rest between the readings. Participants with the average systolic and/or diastolic BP>95th percentile were categorized as hypertensives. Data was analysed by using SPSS 17.

**Results:** The mean age of the study participants was 9.7±3.2 years with a male to female ratio of 1:1. A total of 153 (4.78%) children suffered from obesity, whereas the prevalence of hypertension was 6% (n=191). In univariate analysis, obesity (OR=1.932, p-value=0.024), family history of hypertension (OR=1.321, p-value=0.033) and studying in private schools (OR=1.712, p-value=0.024) had statistically significant positive association with childhood hypertension. However, in multivariate analysis, obesity emerged as the only risk factor for childhood hypertension (OR=2.316, p-value=0.021).

**Conclusion:** Prevalence of childhood hypertension in the current study was comparable to the range reported in literature. Behaviour therapy directed at increased physical activity and dietary modification in obese children may reduce the incidence of childhood hypertension.

**Key Words:** Family history of hypertension; private schools; obesity

**Citation of article:** Haq I, Haq I, Ahmad N, Wazir MDK. Prevalence and Risk Factors for Hypertension Among School Children in Four Districts of Hazara division, Khyber Pukhtoonkhwa. Med Forum 2017;28(6):40-44.

## INTRODUCTION

Hypertension at any age in either sex is a major risk factor for cardiovascular morbidity and mortality.<sup>1,2</sup> Primary hypertension, once considered a rare condition in children, has become increasingly prevalent.<sup>2</sup> Currently, with the estimated prevalence of 2-5%, childhood hypertension is one of the ten most common

chronic diseases in children, predisposing them to adult hypertension, and is associated with early markers of cardiovascular diseases.<sup>3-5</sup> Considering the long-term complications of untreated hypertension, the timely diagnosis and management of hypertension in children with safe and effective medications is of utmost importance.<sup>6</sup> According to hypertension management guidelines, children with age of >3 years who are seen in clinical or hospital settings should have their blood pressure (BP) measured at-least once during each visit.<sup>6</sup> However, as the majority of hypertensive children suffer from asymptomatic or mild to moderate symptomatic primary hypertension, and accurate diagnosis of hypertension in children requires the use of standardized growth charts specific for age, gender, and height, childhood hypertension in nearly 75% cases goes unrecognized.<sup>7</sup> The authors of a study conducted in United States reported that only 23% of 12138 children and adolescents with charted BP >95th percentile (at a minimum of three separate clinic visits), had associated International Classification of Diseases

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(ICD) codes for a hypertension-related diagnosis, and only 5.6% of those with diagnosed hypertension were on antihypertensive medications.<sup>3</sup> The under-diagnosis of childhood hypertension may be even more common in developing countries, where medical care is limited to symptomatic diseases, and childhood hypertension is being overlooked in place of more urgent symptomatic disease. As there is scarcity of published information regarding the childhood hypertension in Pakistan, the present study was conducted with the aim to evaluate the prevalence and risk factors associated with childhood hypertension among the schoolchildren in four districts of Hazara Division of Khyber Pukhtoonkhwa, Pakistan.

## MATERIALS AND METHODS

This was a descriptive / cross-sectional study conducted in 16 schools of four districts of Hazara Division (Abbottabad, Batagram, Haripur and Mansehra). From each district, four schools, two for boys and two for girls from government and private sector were randomly selected. Initial twenty students of each class from prep to 9<sup>th</sup> with age ranging from 5 to 15 years and who were willing to participate in the study were included (200 subjects from each school). The exact age of children was verified from the school record.

**Data collection and measurements:** A team of four house officers, one dispenser and one ward boy was prepared. They were given orientation lecture on different aspects of the study such as administering the questionnaire and measuring weight, height and BP. In order to keep the inter-observer error to minimum, each member of the team was given a specific task throughout the study. A pretested questionnaire was used to collect information about children gender, age, and family history of hypertension, diabetes mellitus and cardiovascular diseases. The questionnaire was administered to the enrolled children and they were asked to get it filled by their parents at home. Incomplete or unsatisfactory answer was confirmed by telephonic contact or repeating the questionnaire. For each student, weight, height and BP were measured. A portable measuring board and meter ruler, and standard weight machine were used for measuring height and weight respectively. Blood pressure was recorded by mercury sphygmomanometer using standardized method and standard cuff for different ages. For each subject, the BP was recorded three times on the same day with at-least 30 minutes rest between the readings. All the measurements were carried out after removing all the extra clothing except shalwar kameez/pant shirt. Body mass index (BMI) was calculated by using the formula (weight in kilograms/height in m<sup>2</sup>), and was categorized according to the Centres for Disease Control and Prevention (CDC) age- and sex-specific growth charts (8). The

following categories were used: underweight <5th percentile; normal weight, 5th to 85th percentile; overweight, 85th to 95th percentile; obese, >95th percentile. Blood pressure was categorized by using BP tables and age, gender and height percentile from Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents.<sup>6</sup> Study subjects with the average systolic and/or diastolic BP <90th percentile were categorized as normotensives, those with the average systolic and/or diastolic BP ranging from 90th to 95th percentile as pre-hypertensives and those with the average systolic and/or diastolic BP >95th percentile as hypertensives.<sup>6</sup>

**Statistical analysis:** Data was analysed by using SPSS 17. Categorical variables were presented as frequencies and percentages, whereas mean  $\pm$  standard deviation (SD) were calculated for continuous variables. Multivariate binary logistic regression analysis was used to obtain final model to identify the risk factors associated with the presence of hypertension. Variables which had a p-value of <0.25 in univariate analysis were included in multivariate analysis. The fit of the model was assessed by Hosmer Lemeshow and overall classification percentage. A p-value of <0.05 was considered statistically significant.

**Ethical approval:** This study was approved by the Research and Ethics Committee of Ayub Medical College Abbottabad, Pakistan.

## RESULTS

**Table No.1: Socio-demographic characteristics of the study participants**

Variable	Mean $\pm$ SD	No. (%)
<b>Age (years)</b>	10.7 $\pm$ 3.2	
5-10		1873 (58.5)
11-14		1327 (41.5)
<b>Gender</b>		
Female		1600 (50)
Male		1600 (50)
<b>School sector</b>		
Private		1600 (50)
Public		1600 (50)
<b>Family history of hypertension</b>		
No		2792 (86.3)
Yes		408 (12.7)
<b>Family history of CVD</b>		
No		3088 (96.5)
Yes		112 (3.5)
<b>Family history of diabetes mellitus</b>		
No		2848 (89)
Yes		352 (11)

CVD, cardiovascular disease; SD, standard deviation

A total of 3200 children were included in the study with a male to female ratio of 1:1. The mean age of the study participants was  $9.7 \pm 3.2$  years. Socio-demographic characteristics of the study participants are given in table 1.

A total of 153 study participants (4.78%) suffered from obesity, whereas the prevalence of hypertension in the current study was 6% (n=191).

In univariate analysis, obesity (OR= 1.932, p-value= 0.014), family history of hypertension (OR= 1.321,

p-value= 0.033) and studying in private schools (OR= 1.712, p-value= 0.024) had statistically significant positive association with childhood hypertension. However, in multivariate binary logistic regression analysis, obesity emerged as the only risk factor for childhood hypertension (OR= 2.316, p-value= 0.021). This model fit was based on non-significant Hosmer Lemeshow test (p-value= 0.648) and overall percentage of 76% from classification table (Table 2)

**Table No.2: Risk factors for hypertension**

Variables	Hypertension	Univariate analysis OR(95%CI)	p-value	Multivariate analysis OR(95%CI)	p-value
<b>Age</b>					
5-10	91 (47.6)	Referent		-	
11-14	100 (52.4)	1.107 (0.561-2.811)	0.811		
<b>Gender</b>					
Female	87 (45.5)	Referent		-	
Male	104 (54.5)	1.287 (0.631-1.917)	0.730		
<b>School sector</b>					
Public	70 (36.6)	Referent		Referent	
Private	121 (63.4)	1.712(1.256-3.561)	0.024	1.421 (0.891-2.154)	0.074
<b>Family history of hypertension</b>					
No	80 (41.9)	Referent		Referent	
Yes	111 (58.1)	1.321 (1.111-2.342)	0.033	1.341 (0.723-2.116)	0.114
<b>Family history of CVD</b>					
No	93 (48.7)	Referent		-	
Yes	98 (51.3)	1.091(0.461-2.111)	0.899		
<b>Family history of DM</b>					
No	101 (52.8)	Referent		-	
Yes	90 (47.2)	0.891(0.689-1.987)	0.813		
<b>Obesity</b>					
No	65 (34.0)	Referent		Referent	
Yes	126 (66.0)	1.932(1.345-3.467)	0.014	2.316 (1.911-3.891)	<b>0.021</b>

CI, confidence interval; CVD, cardiovascular disease; DM, diabetes mellitus; OR, odds ratio

## DISCUSSION

Being a multifactorial disease, hypertension is influenced by genetic factors, socio-demographic and cultural factors and dietary pattern, thus, its prevalence varies across regions, countries and communities. In the current study, the prevalence of hypertension among the study participants was 6%. This was comparable with the prevalence of childhood hypertension reported by studies conducted in Surat (6.48%), Bihar (4.7%) and Shimla (5.9%) cities of neighbouring India.<sup>(9-11)</sup> However, it was comparatively higher than the rate of childhood hypertension (3%) reported by a study conducted in Karachi, Pakistan.<sup>12</sup> The possible reason for comparatively high prevalence in our study could be the relatively high frequency of obesity (4.8%) in our cohort than that reported by the study conducted in

Karachi (1%).<sup>12</sup> Moreover, as the two studies were conducted in two different parts of Pakistan i.e. Hazara Division and Karachi respectively, the difference in life style, genetic factors and nutrition of the study populations could be the other possible reasons for the different prevalence of hypertension in the two studies. Early identification of the risk factors for childhood hypertension is essential for reducing its incidence and preventing its complications. In the current study, after adjusting for the family history of hypertension and studying in private schools, obesity emerged as the only risk factor for the presence of hypertension. Obese children were 2.3 times more likely to be hypertensive than their counterparts. As obesity causes disturbances in autonomic function, insulin resistance, hyperactivity of sympathetic nervous system, sodium retention, activation of the renin-angiotensin-aldosterone

system, and abnormalities in vascular structure and function,<sup>(2, 13-17)</sup> it has been widely reported as a risk factor for childhood hypertension. Similar to our finding, a strong correlation between obesity and paediatric hypertension has been reported by various Western studies<sup>18-20</sup> and studies conducted in Pakistan<sup>12</sup> and India.<sup>9,11,21</sup>

Although in the current study, in univariate analysis, family history of hypertension had a positive association with childhood hypertension, but it did not reach the level of significance in multivariate analysis. This was contrary to the findings of those studies in which positive family history of hypertension emerged as a risk factor for paediatric hypertension.<sup>21,22</sup> In developing countries like Pakistan, people usually undergo medical check-up only when they suffer from symptomatic diseases. As primary hypertension largely remains asymptomatic, we hypothesize that the possible inadequate screening of parents of the current study participants could be a reason for non-significant association between the family history and childhood hypertension in our cohort. The comparatively lower percentage of children with positive family history for hypertension (12.7%) than the estimated national prevalence of hypertension (18%),<sup>(23)</sup> advocates the possible under-diagnosis of hypertension in the parents of study participants. Similar to our finding, no significant association between family history of hypertension and paediatric hypertension has been reported elsewhere.<sup>9,12</sup>

As measuring BP on separate visits is essential for the diagnosis of hypertension on clinical basis,<sup>6</sup> taking the average of the three BP readings on the single visit was the major limitation associated with the current study. This could have overestimated the prevalence of hypertension in the studied cohort. Lack of information about physical activity and dietary pattern, and using BMI as the sole measure of obesity were the other limitations associated with the current study.

## CONCLUSION

Prevalence of childhood hypertension in the current study was comparable to the range reported in published literature. In order to prevent its complications in adulthood, we propose that children should be screened regularly for hypertension. As in our cohort, obese children were significantly more likely to be hypertensive, and losing weight in early years of life has been reported to be associated with clinically significant reductions in BP,<sup>2</sup> therefore, they should be targeted for primary prevention. Behaviour therapy directed at increased physical activity and dietary modification, and public health initiatives to increase community awareness about complications of paediatric obesity may lead to considerable improvement in cardiovascular health. Studies in future with large sample size, repeated BP measures on

different visits and information about physical activity and dietary pattern are suggested to confirm the findings of the present study.

**Acknowledgement:** The authors thank all the children, their parents and staff at the study sites for their help in conducting this study.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency of Macrosomia and Hypoglycemia in Neonates of Diabetic Mothers

Macrosomia and Hypoglycemia in Neonates of Diabetic Mothers

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## ABSTRACT

**Objectives:** To determine frequency of macrosomia and hypoglycemia in neonates of Diabetic Mothers.

**Study Design:** Descriptive / Cross-Sectional Study

**Place and duration of Study:** This study was conducted at the Labor Room and Post Natal Unit of Pediatric Department, Liaquat National Hospital Karachi from October 2013 to March 2014.

**Materials and Methods:** This study was carried out on 376 cases at labor room where female (Mother) came for delivery, her pregnancy record Checked for control of blood sugar level and brief history taken. Neonatal cord blood taken at the time of delivery for glucose level. Neonatal birth weight taken immediately after birth and plotted on growth chart for the assessment of macrosomia

**Results:** Mean age of the patients was 35.37 years, male prevalence was found higher, and that is 57.40%. Mean gestational age was 37.22 weeks. Mean duration of diabetes was 3.77 years. Frequency of hypoglycemia was found in 21.50% patients, while macrosomia was found in 36.20% patients.

**Conclusion:** The frequency of hypoglycemia and macrosomia in infants of diabetic mother was 21.5% and 36.50% respectively.

**Key Words:** Infant of Diabetic Mother, Hypoglycemia, Hyperglycemia, Macrosomia. Neonates

**Citation of article:** Chohan MN, Dass D, Ahmed I, Shamim S. Frequency of Macrosomia and Hypoglycemia in Neonates of Diabetic Mothers. Med Forum 2017;28(6):45-48.

## INTRODUCTION

Today, 3-10% of pregnancies are affected by abnormal glucose regulation and control. Of these cases, 80-88% is related to abnormal glucose control of pregnancy or gestational diabetes mellitus. Of mothers with preexisting diabetes, 35% have been found to have type 1 diabetes mellitus, and 65% have been found to have type 2 diabetes mellitus<sup>1</sup>.

The infant of diabetic mother is the premier example of the morbidity that may exist in the neonates due to maternal disease (diabetes) because it may cause hypoglycemia, respiratory distress syndrome and hypocalcemia in newborns.<sup>2</sup>

Closer metabolic control of the pregnant diabetic women results in greater potential for producing a normal neonate. Pregnancy of diabetic mother should be considered as a high risk. Diabetic mothers can control their blood sugar level by walking 3 times a day for 30 minutes after each meal and Medical Nutrition therapy by taking 30 Kcal/kg/day.

If after 7 days of exercise and Medical Nutrition Therapy, blood sugar level is not controlled than human Regular and NPH Insulin therapy can normalize blood sugar level.<sup>3,4</sup>

Various studies show that perinatal mortality varied directly with maternal severity of diabetes. At birth the infants of poor controlled diabetes often appears macrosomic (45%) in contrast to the infant born to well control diabetes. If gestational diabetes is well controlled than the outcome can approach that of non-diabetic pregnancies, and because of better understanding of pathophysiology of diabetes, the complications in uncontrolled gestational diabetes can be recognized and managed.<sup>4,5,8</sup>

A decline in plasma glucose concentration following delivery is characteristic of infant of diabetic mother, especially among neonates who are either macrosomic or whose mothers had poor glycemic control during pregnancy.<sup>6,7</sup>

The rationale of this study is to determine the frequency of complications such as hypoglycemia and macrosomia in infants of diabetic that will help in determining the hypoglycemia soon after birth 60 and 120 minutes later, by doing this we can enforce for early neonatal blood sugar monitoring to prevent the brain insult.

## MATERIALS AND METHODS

It was a Descriptive and Cross- Sectional Study done with Non Probability Consecutive

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Received: April 14, 2017; Accepted: May 12, 2017

Technique, conducted at the labor room and post natal unit of Liaquat National Hospital Karachi, from October 2013 to March 2014 over 376 neonates, at labor room where female (Mother) came for delivery, her pregnancy record Checked for control of blood sugar level and brief history taken. Neonatal cord blood taken at the time of delivery for glucose level. Neonatal birth weight taken immediately after birth and plotted on growth chart for the assessment of macrosomia

All this data was collected and recorded by main researcher in predesigned proforma. Informed verbal consent was taken prior to asking questions and the information gathered from mothers were kept confidential

The data entered and analyzed in statistical program SPSS version 16.0. Frequencies and percentages computed for qualitative variables like gender of baby, hypoglycemia (neonatal Glucose level), Macrosomia (weight of baby), Gravida, Para, whether diabetes controlled or uncontrolled, diabetes how controlled (Exercise, diet, Insulin), mode of delivery and duration of maternal diabetes.

The numerical variables such as age of mother (in years), gestational age of baby etc. presented as Mean + Standard deviation. Effect modifiers controlled by stratification of age of mother, duration of diabetes, gender of baby, gestational age of baby, parity and mode of delivery. Outcome compared among controlled and uncontrolled diabetic mothers applying chi square test. All the data calculated on 95% confidence interval. A p- value < 0.5 considered as statistically significant level.

**Inclusion Criteria:** All alive babies born to Type 2 Diabetic Mothers (whether controlled or uncontrolled diabetes) above 28 weeks of gestation (Assessed on Last Menstrual Period), Duration of Maternal Type 2 Diabetes of more than 1 year

**Exclusion Criteria:** Babies born before 28 weeks of gestation (Assessed on Last Menstrual Period), Babies born to Nondiabetic mothers

**Operational Definitions:** Diabetes: Diabetes may be defined as, that meeting the WHO criteria for diabetes that is Fasting plasma glucose level >126 mg/dl at 2m different occasions (24 hours apart)

Hypoglycemia: Any blood glucose levels of <45mg/dl (2.2mmol/l). Macrosomia: Birth weight >90% for gestational age

## RESULTS

**Table No.1: Age Parameters**

Age of Mothers (Years)	Mean	S.D	Min.	Max.
	35.37	1.49	34	37
Gestational age of Baby (Weeks)	37.22	1.13	37	43
Duration of Diabetes (Years)	3.77	1.47	2	5

**Table No. 2: Comparison of Outcome and Diabetes Status n=376**

Outcome	Total	P-Value
Hypoglycemia	Yes	81 (100)
	No	295 (100)
	Total	376 (100)
Macrosomia	Yes	136 (100)
	No	240 (100)
	Total	376 (100)

**Table No.3: Comparison of Hypoglycemia and Diabetes Status with gender of the baby**

Gender	Hypoglycemia	Total	P- Value
Male	Yes	39 (100)	0.001
	No	177 (100)	
	Total	216 (100)	
Female	Yes	42 (100)	0.452
	No	118 (100)	
	Total	160 (100)	

**Table No.4: Comparison of Macrosomia and Diabetes Status with gender of the baby**

Gender	Macrosomia	Total	P-Value
Male	Yes	56 (100)	0.001
	No	160 (100)	
	Total	216 (100)	
Female	Yes	80 (100)	0.132
	No	80 (100)	
	Total	160 (100)	

**Table No.5: Comparison of Hypoglycemia and Diabetes status with age, diabetes duration and Parity N=376**

Age Group (Years)	Hypoglycemia	Total	P-Value
≤ 35	Yes	37 (100)	0.001
	No	167 (100)	
	Total	204 (100)	
>35	Yes	44 (100)	0.001
	No	128 (100)	
	Total	172 (100)	
≤ 40	Yes	76 (100)	0.001
	No	286 (100)	
	Total	362 (100)	
>40	Yes	5 (100)	0.001
	No	9 (100)	
	Total	14 (100)	
Diabetes Duration ≤ 3 Years	Yes	20 (100)	0.001
	No	133 (100)	
	Total	153 (100)	
Diabetes Duration > 3 Years	Yes	61 (100)	0.001
	No	162 (100)	
	Total	223 (100)	
Primiparous	Yes	36 (100)	0.001
	No	48 (100)	
	Total	84 (100)	
Multiparous	Yes	45 (100)	0.001
	No	247 (100)	
	Total	292 (100)	

**Table No.6: Comparison of Macrosomia and Diabetes Status with age, diabetes duration and Parity n=376**

Age Group (Years)	Macrosomia	Total	P-Value
≤ 35	Yes	69 (100)	0.001
	No	135 (100)	
	Total	204 (100)	
>35	Yes	67 (100)	0.001
	No	105 (100)	
	Total	172 (100)	
≤ 40	Yes	131 (100)	0.001
	No	231 (100)	
	Total	362 (100)	
>40	Yes	5 (100)	0.001
	No	9 (100)	
	Total	14 (100)	
Diabetes Duration ≤ 3 Years	Yes	45 (100)	0.001
	No	108 (100)	
	Total	153 (100)	
Diabetes Duration > 3 Years	Yes	91 (100)	0.001
	No	132 (100)	
	Total	223 (100)	
Primiparous	Yes	53 (100)	0.001
	No	31 (100)	
	Total	84 (100)	
Multiparous	Yes	83 (100)	0.001
	No	209 (100)	
	Total	292 (100)	

Mean age of patients was 35.37 years (Table 1). Most of the patient lies in age <35 years, i.e. 54.30% (Table 1). Male prevalence was found higher, that is 57.40% (Table 3). Mean gestational age was 37.22 weeks Table 1). Most of the patient was present in <40 weeks of gestation that is 96.30% (Table 1). Mean duration of diabetes was 3.77 years (table 4). Most of the patients were present with duration of diabetes > 3 years that is 59.30% (Table 5). The majority of the patients were present with multi gravida status that is 74.50%, where as 77.70% patients were multiparous (Table 5 and 6). Frequency of hypoglycemia was found in 21.50% patients, while macrosomia was found in 36.20% patients (Table 2). Stratification was done to see the effect of diabetes status on the outcome. Chi square test was applied and significant effect was observed as P-Value was found 0.001 in hypoglycemia and macrosomia (Table 5). Effect modifiers were controlled by stratification of age, gestational age, duration of diabetes, gender of the baby and parity.

## DISCUSSION

A study by Robert Schwartz reported that macrosomia was present in 10-27% newborn of well controlled diabetic mothers<sup>5</sup>. This study is not similar to our study

because 42.3% babies were macrosomic in controlled diabetic mothers in our study.

Another study by C. Andrew Combs showed that neonatal macrosomia occurred in 32 (29%) cases whose mothers had high postprandial glucose level between 29 and 32 weeks of gestation<sup>6</sup>. This study is also different from our study because 57.7% babies were macrosomic in uncontrolled diabetic mothers in our study.

A similar local study to our study was done by Hussain M et al who found the complications in infants of diabetic mothers i.e. Macrosomia 40.4% and Hypoglycemia 23.8% in his study.<sup>7</sup> while in our study macrosomia was present in 36.20% babies and Hypoglycemia was present in 21.50% babies.

Similarly, the study of Alam M et al. showed 45% babies were macrosomic and hypoglycemia was noted in 35%, the mean GA of IDMs was 37.84 weeks ± 1.88. 29. The commonest morbidities were Hypoglycemia (significantly higher in IDMs than non-IDMs) and hyperbilirubinaemia in 30 (63.8%) and 26 (57.4%) respectively.<sup>8</sup> Mean gestational age in our study was 37.22 and there was no comparison of morbidities with non IDM Mothers.

Another different study of Mahjabeen K who reported that overall incidence of macrosomia was 72(31.4%). In her study there were significantly more macrosomic newborns in diabetic women; (52.8%) compared to non-diabetic women (47.2%). Fetal macrosomia in her study was 31.4% in both diabetic and non-diabetic mothers.<sup>9</sup> While in our study macrosomia was 42.55% and we did not have any comparison with non-diabetic mothers.

In one non-similar study conducted by Anwar TA et al. on 165 cases who found significant difference of neonatal outcome of all macrosomic neonates of controlled and uncontrolled diabetic mothers' babies, hypoglycemia 62.5% in non-diabetic mothers, 43.3% in diabetic mothers (p value < 0.05). Of the 165 macrosomic infants, 112(67.9%) born to controlled diabetic mothers, while 53(32.1%) born to Uncontrolled mothers, whereas Mothers with a uncontrolled diabetic history of fetal macrosomia in the study group accounted for 39.5% compared with 12.5% in the control<sup>10</sup>. While in our study macrosomia was present in 66.2% case whose mothers had uncontrolled diabetes, while 54% cases had macrosomia whose mothers had controlled diabetes. Another study conducted by Saleh A et al. there were significantly more macrosomic newborns in non-diabetic women; 73% versus 2 in diabetic women, p=0.0001<sup>11</sup>.

Another different study by Agrawal RK et al. reported 47% infants developed hypoglycaemia in well controlled diabetic mothers during the first 2 h of life. There was no difference in the cord blood glucose levels between infants with or without hypoglycaemia (3.7 +/- 1.1 vs 4.5 +/- 1.1 mmol/L, respectively)<sup>3</sup>. While in our study hypoglycemia was present in 28.1%

cases of uncontrolled diabetic mothers and 14.3% cases had hypoglycemia in controlled diabetic mothers

In another by Jaja T et al. showed the commonest morbidity was Hypoglycemia (significantly higher in IDMs than non-IDMs) and hyperbilirubinaemia in 30 (63.8%) within the first 24 hours. and 26 (57.4%) respectively<sup>12</sup>. While S Banerjee reported the incidence of neonatal hypoglycemia 12.5% in tight glycemic control diabetic mothers, 18.2% in appropriate glycemic control glycemic mothers and 22.2% in uncontrolled glycemic control diabetic mothers<sup>13</sup>.

Conclusion:

## CONCLUSION

The frequency of hypoglycemia and macrosomia in infants of diabetic mother was 21.5% and 36.50% respectively.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency of Bleeding Disorders in Teenage Girls Presenting with Menorrhagia

Omaima Zubair Khan, Wardah Hasan and Maha Khan

## ABSTRACT

**Objective:** Menorrhagia is quite common menstrual problem among teen aged girls with increasing proportion all over the world. This study has been done to ascertain frequency of bleeding disorders in teenaged girls presenting with menorrhagia.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the Department of Gynecology, Nishtar Hospital, Multan from June 2015 to January 2016.

**Material and methods;** One hundred and thirty three teen aged girls having menorrhagia for more than 6 months were included in this study using non-probability purposive sampling technique which underwent relevant investigations.

**Results:** mean age of these young girls was  $16.50 \pm 1.79$  years (with minimum age was 14 years while maximum age was 19 years). Most of these young girls i.e. 87 (65.4%) were aged 16 – 19 years while remaining 46 (34.6%) were aged up to 15 years. Most of these teenaged young girls 78 (58.6%) were from urban areas and 103 (77.4%) belonged to the families having poor social class. Family history of menorrhagia was present in 55 (41.4%) in these young patients with menorrhagia. Mean body mass index of these young girls was  $23.22 \pm 2.91$  kg/m<sup>2</sup> and obesity was present 16 (12%) of these patients. Mean disease duration of menorrhagia was  $14.52 \pm 8.46$  months and 69 (51.9%) of these young girls had history of menorrhagia for more than 12 months. Polycystic ovary syndrome was noted in 15 (11.3%) of our study cases, thrombocytopenia was present in 23 (17.3%) our patients with menorrhagia and von Willebrand disease was noted in 13 (9.8%) these young girls.

**Conclusion:** Menorrhagia was significantly more prevalent in young teenaged age groups having positive family history while thrombocytopenia was the most common bleeding disorder observed in our study. Patients having menorrhagia should be made aware to discuss this issue with the females of their families so that early diagnosis followed by early and proper management.

**Key Words:** Menorrhagia, teenage girls, bleeding disorders

**Citation of article:** Khan OZ, Hasan W, Khan M. Frequency of Bleeding Disorders in Teenage Girls Presenting with Menorrhagia. Med Forum 2017;28(6):49-52.

## INTRODUCTION

Menorrhagia, a significant public health problem, is quite prevalent among young girls with its increasing proportion.<sup>1</sup> It has been estimated that at the time of menarche, it affects about 34 % young girls.<sup>2</sup> Different reports have documented that 5 – 10 % of adolescent girls seek medical treatment in this time period, of which 50 % undergo surgical interventions.<sup>1,3</sup> For those young girls, who do not get medical treatment heavy menstrual bleeding significantly affects quality of life and has negative impact on routine daily activities like sports, various social activities and education as a result of associated symptoms.

Hence, it leads to different psychological and social issues among patients and their families so it needs special consideration as hygiene issues in these

developmentally delayed young girls are important factors. These long and heavy periods are generally associated with related symptoms such as pelvic pain, dysmenorrhea, headaches and most importantly severe anemia showing its related symptoms including energy loss and easy fatigue however the reasons for not seeking medical treatment are still unclear. Detailed family history generally points towards strong family history of the disease among first and 2<sup>nd</sup> degree relatives so menorrhagia is deemed as “normal entity” by the patient and/or guardians particularly mothers of these young girls.<sup>4</sup>

Immaturity of the hypothalamic pituitary ovarian (HPO) axis is one of the major causes of menorrhagia which often leads to anovulation which is related with endometrial proliferation in absence of luteal phase progesterone support of the proliferating endometrial glands.

Immaturity of the HPO axis has been reported to be associated with approximately 75% cases of menorrhagia among adolescents.<sup>5,6</sup> Mostly menorrhagia in young girls is due to the different underlying conditions like “von Willebrand disease (vWD), platelet function disorders and coagulation factor

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deficiencies” with some other conditions which results in more blood loss may include hypothyroidism, genital tuberculosis, and polycystic ovarian disease.<sup>7-10</sup> Bevan et al<sup>11</sup> has documented frequency of thrombocytopenia was 13% and Von Willebrand disease was 7.14% in teenage girls presenting with menorrhagia. Gillani et al<sup>12</sup> reported in another recent study that frequency of polycystic ovarian disease was 8.6%, thrombocytopenia 8.6% and VonWillebrand disease 2.8% in teenage girls presenting with menorrhagia.

Teenage girls having gynaecological issues often suffer from certain psychological stress which exerts negative impact on their quality of life, routine daily activities at school, sports and social bindings so they may require higher degree of privacy and sensitive handling by their family members and health care professionals. There was no such study available from Pakistan, so this study was done to different bleeding disorders.

## MATERIALS AND METHODS

Patients fulfilling the inclusion criteria from out-door department of Gynecology, Nishtar hospital Multan, from June 2015 to January 2016 were included in the study. Baseline demographic information of these teenaged girls such as age, BMI, family history, history of anemia, residential status, social background, duration of complain and obesity was taken. Before inclusion, informed consent was asked from attendants/guardians and/or patients after they were briefed about the objectives of our study. Young girls (aged 13 – 19 years) presenting with history of menorrhagia for more than 6 months were registered in this study while patients who were taking treatment for anticoagulants, antifibrinolytics, married girls and non – steroidal antiinflammatory drugs were not included in this study. Five ml of venous blood was drawn from the antecubital vein and it was transported in a cool vaccine box to the laboratory immediately. Transvaginal ultrasound was done by same sonologist.

Menorrhagia was defined as “if the duration of menstruation is more than seven days and the haemoglobin level <10 gm/dl on laboratory test”. Polycystic ovary syndrome was defined according to Rotterdam criteria,<sup>13</sup> It was diagnosed if any two of following conditions present; “Oligoovulation (cycles of  $\geq 36$  days or <8 cycles a year) or anovulation (irregularity of menstrual periods), Excess androgen levels (Testosterone (free) 0.06 to 2.57 pg per ml (0.20 to 8.90 pmol per L) measured by laboratory test and Polycystic ovaries (Polycystic ovaries was defined by the transvaginal ultrasound appearance of 12 or more follicles in each ovary measuring 2 to 9 mm in diameter and ovarian volume >10 mL)”. Thrombocytopenia was defined as a “platelet count of less than  $150 \times 10^3$  per  $\mu\text{L}$  by laboratory test” and von Willebrand disease was defined as when blood test by laboratory give any one of following result; “Von Willebrand Ristocetin Cofactor VWF:RCo (IU/dL) <30, von Willebrand Factor Antigen VWF:Ag (IU/dL) <30 and VWF:RCo/VWF:AgRatio >0.5-0.7, Von Willebrand Ristocetin Cofactor VWF:RCo (IU/dL) <30, von Willebrand Factor Antigen VWF:Ag (IU/dL) <30-200 and VWF:RCo/VWF:AgRatio <0.5-0.7”. Data was analyzed with statistical analysis program (SPSS version15).

## RESULTS

One hundred and thirty three teenaged girls having menorrhagia were included, mean age of these young girls was  $16.50 \pm 1.79$  years (with minimum age was 14 years while maximum age was 19 years). Most of these young girls i.e. 87 (65.4%) were aged 16 – 19 years while remaining 46 (34.6%) were aged up to 15 years. Most of these teenaged young girls 78 (58.6%) were from urban areas and 103 (77.4%) belonged to the families having poor social class. Family history of menorrhagia was present in 55 (41.4%) in these young patients with menorrhagia.

**Table No. 1: Distribution of different parameters in patients having Polycystic ovary syndrome.**

Parameters		Poly cystic ovary syndrome		P – value
		Yes	No	
Age	Up to 15 Years	07	39	0.388
	16 – 19 Years	08	79	
Residential status	Rural	00	55	0.001
	Urban	15	63	
Socioeconomic status	Poor	13	90	0.395
	Middle Income	02	28	
Family History	Yes	05	50	0.524
	No	10	68	
Obesity	Yes	01	15	0.214
	No	14	103	
Disease duration	6 – 12 months	07	57	0.998
	More than 12 months	08	61	

**Table No. 2: Distribution of different parameters in patients having thrombocytopenia.**

Parameters		Thrombocytopenia		P – value
		Yes	No	
Age	Up to 15 Years	00	46	<b>0.001</b>
	16 – 19 Years	23	64	
Residential status	Rural	09	46	<b>0.997</b>
	Urban	14	64	
Socioeconomic status	Poor	16	87	<b>0.410</b>
	Middle Income	07	23	
Family History	Yes	16	39	<b>0.004</b>
	No	07	71	
Obesity	Yes	00	16	<b>0.073</b>
	No	23	94	
Disease duration	6 – 12 months	09	55	<b>0.369</b>
	More than 12 months	14	55	

**Table No. 3: Distribution of different parameters in patients having von Willebrand disease.**

Parameters		von Willebrand disease		P – value
		Yes	No	
Age	Up to 15 Years	06	40	<b>0.371</b>
	16 – 19 Years	07	80	
Residential status	Rural	00	55	<b>0.001</b>
	Urban	13	65	
Socioeconomic status	Poor	07	96	<b>0.073</b>
	Middle Income	06	24	
Family History	Yes	07	48	<b>0.383</b>
	No	06	72	
Obesity	Yes	01	15	<b>0.690</b>
	No	12	105	
Disease duration	6 – 12 months	08	56	<b>0.328</b>
	More than 12 months	05	64	

Mean body mass index of these young girls was  $23.22 \pm 2.91$  kg/m<sup>2</sup> and obesity was present 16 (12%) of these patients. Mean disease duration of menorrhagia was  $14.52 \pm 8.46$  months and 69 (51.9%) of these young girls had history of menorrhagia for more than 12 months. Polycystic ovary syndrome was noted in 15 (11.3%) of our study cases, thrombocytopenia was present in 23 (17.3%) our patients with menorrhagia and von Willebrand disease was noted in 13 (9.8%) these young girls.

## DISCUSSION

Menorrhagia in teenaged young girls leads to negative impact on quality of life and poor performance in schools and sports and often source of embarrassment among sufferers and generally people try to hide ailment<sup>14-16</sup>. One hundred and thirty three teenaged girls having menorrhagia were included, mean age of these young girls was  $16.50 \pm 1.79$  years (with minimum age was 14 years while maximum age was 19 years). Most of these young girls i.e. 87 (65.4%) were aged 16 – 19 years while remaining 46 (34.6%) were aged up to 15 years. Karaman et al<sup>15</sup> conducted a study in Turkey has reported  $14.8 \pm 1.9$  years mean age in

young girls having menorrhagia, similar to our results. Bevan et al<sup>11</sup> reported 14.7 years mean in menorrhagia which is similar to our study results. A study conducted by Gillani et al<sup>12</sup> also reported similar results. Caki et al<sup>17</sup> from Turkey also documented that 65 % of the girls with menorrhagia were less than 18 years of age. Rathod et al<sup>18</sup> from India has reported similar results. Amesse et al<sup>19</sup> also reported  $14.5 \pm 3.5$  years mean age of the menorrhagia in young girls which is similar to our results. Chi et al<sup>20</sup> from UK has also reported similar findings which are comparable to our results. Most of these teenaged young girls 78 (58.6%) were from urban areas and 103 (77.4%) belonged to the families having poor social class. Family history of menorrhagia was present in 55 (41.4%) in these young patients with menorrhagia. Amesse et al<sup>19</sup> also reported high family history with 83.7% in young girls with menorrhagia. Mean body mass index of these young girls was  $23.22 \pm 2.91$  kg/m<sup>2</sup> and obesity was present 16 (12%) of these patients.

Mean disease duration of menorrhagia was  $14.52 \pm 8.46$  months and 69 (51.9%) of these young girls had history of menorrhagia for more than 12 months. A study conducted by Gillani et al<sup>12</sup> also reported 57.14 % young girls with menorrhagia had duration of illness for

more than 1 year. Similar findings have been reported by Rathod et al<sup>18</sup> from India.

Polycystic ovary syndrome was noted in 15 (11.3%) of our study cases, thrombocytopenia was present in 23 (17.3%) our patients with menorrhagia and von Willebrand disease was noted in 13 (9.8%) these young girls. Bevan et al<sup>11</sup> has documented frequency of thrombocytopenia was 13% and VonWillebrand disease was 7.14% in teenage girls presenting with menorrhagia. Gillani et al<sup>12</sup> reported in another recent study that frequency of polycystic ovarian disease was 8.6%, thrombocytopenia 8.6% and VonWillebrand disease 2.8% in teenage girls presenting with menorrhagia.

## CONCLUSION

Menorrhagia was significantly more prevalent in young teenaged age groups having positive family history while thrombocytopenia was the most common bleeding disorder observed in our study. Patients having menorrhagia should be made aware to discuss this issue with the females of their families so that early diagnosis followed by early and proper management

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Laparoscopic Cholecystectomy: Incidence and Severity

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## ABSTRACT

**Objective:** To evaluate this problem incidence and severity, and to control this problem.

**Study Design:** Descriptive / cross-sectional study

**Place and Duration of Study:** This study was conducted at the Department of General Surgery, Khalifa Gul Nawaz Teaching hospital Bannu from June 2015 to June 2016.

**Materials and Methods:** Study was conducted on 42 patients aged between 20-52 years with symptomatic gall stone disease. Patients more than 15 years of age having symptomatic gall stone disease were included in the study. A proforma was designed for Operative time, CO<sub>2</sub> pneumoperitoneum pressure and shoulder tip pain and the results were analyzed on SPSS 23.

**Results:** The mean age was 33.8 years and age range was 20-52 years. There were 7 males and 35 females and male to female ratio was 1:5. The mean operative time was 55 minutes and the mean pressure pneumoperitoneum was 12mmHg. The incidence of shoulder tip pain was 33.3%. The shoulder tip pain was significantly more in patients operated with high pneumoperitoneum pressure.

**Conclusion:** There were significantly more patients who experienced shoulder tip pain when the CO<sub>2</sub> pneumoperitoneum pressure was more and the severity was also more as compared to low pressure.

**Key Words:** Laparoscopy, cholecystectomy, shouldertippain, CO<sub>2</sub> pneumoperitoneum pressure.

**Citation of article:** Shah M, Shoaib M, Zaman S, Ahmad W. Shoulder Tip Pain Following Laparoscopic Cholecystectomy: Incidence and Severity. Med Forum 2017;28(6):53-56.

## INTRODUCTION

Cholecystitis is the most common disease of the biliary tree. Laparoscopic cholecystectomy is considered superior to open in terms of morbidity, cosmesis and rate of complications<sup>1</sup>. In the United States alone 770,000 laparoscopic cholecystectomies are performed annually<sup>2</sup>. Cholecystectomy is being done for more than 100 years by open surgery technique<sup>3</sup>. In 1987 Phillips Moore of France performed first laparoscopic cholecystectomy<sup>3,4</sup>. Since then it became popular amongst general surgeons and now it is considered a gold standard procedure for gall stone disease<sup>4</sup>. The incidence of shoulder tip pain was never heard of in the era of open surgery and was first reported after laparoscopic gynecological procedure. Complications similar to open surgery and some complications peculiar to LC occur, like shoulder tip pain. The incidence of shoulder tip pain varies greatly with some studies reporting incidences as high as 30-63%<sup>5,6</sup>.

Various factors have been explored to date of which CO<sub>2</sub> pneumoperitoneum pressure is the predominant factor which causes shoulder tip pain, as it increases intra-abdominal pressure, which stretches the diaphragm and liver capsule which causes shoulder tip pain<sup>6,7</sup>. The intensity and duration varies between patients and unpredictable, the prevention and treatment therefore, is also controversial. We have designed in the current study to see the incidence and severity of shoulder tip pain at an average pressure, duration of surgery, age and sex factors too. As studies are going on to see the complications related to this procedure and to establish the efficacy and fruitfulness of this procedure. This study was designed to examine the factors leading to shoulder tip pain. Moreover to make some strategy of eliminating this problem, to make it pain free and we are able to undertake this procedure as a day surgery. This will both reduce the cost and improve patient compliance and finance.

## MATERIALS AND METHODS

This existing study was carried out in the department of general surgery department of Khalifa Gul Nawaz teaching hospital Bannu from April 2015 to April 2015. Approval of the study was done from the local ethical committee. Informed consent was taken from the patient and also consents for open procedure if any complication arises during LC (laparoscopic cholecystectomy). Patients with dilated CBD (common bile duct) >8mm diameter, jaundiced patients, mass right hypochondrium, hepatitis B or C positive patients

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were excluded from the study. Consecutive Sampling technique was used. Patients were admitted one day before operation, routine laboratory investigations like blood complete, blood urea and sugar, LFTs, Hepatitis B and C were done. Chest X-ray and ECG were done for patients more than 40. Operation was performed through standard 4 port technique, 2 ports were 5mm and two 10mm, one for camera and the other for dissection and extraction of gall bladder. Open technique was adopted for port insertion. Nasogastric tube was inserted to each patient to deflate the stomach facilitating the operation and avoiding injury. Drain was routinely placed postoperatively to drain the gas and also any blood or bile. Patients were discharged the next day routinely if recovered uneventfully. Findings were recorded on a proforma and the data was analyzed with SPSS 23 version.

## RESULTS

A total of 42 patients were included in this study. 7(16.6%) were males and 35(83.4%) were females. Male to female ratio was 1:5. Age range was 20-52 years and average age was 33.8 years. Majority of the patients were in fourth decade followed by third decade. Average duration of the operation was 55minutes and the time range was 35-120 minutes.

**Table No.1: Demographic characteristics**

Age & Sex	No.& range	%age& average
Male	7	17%
Female	35	83%
Age	20-52	33.8%
Surgery Duration	35-120	55 min
CO <sub>2</sub> Pressure	9-16 mmHg	12 mmHg

**Table No.2: Complications of Laparoscopic cholecystectomy**

Complications	No. of patients	%age
Gall bladder perforation & stone spillage	12	35%
Shoulder tip pain	15	35.7%
CBD injuries and bile leak	1	2.1%
Port site infection	2	4.76%
Bleeding	3	7.1%
Abdominal pain(severe)	10	23.8%

The pressure of CO<sub>2</sub> pneumoperitoneum was 9-16 mmHg (average 12 mmHg). 15(35.7%) patients out of 42 developed shoulder tip pain. One patient developed bile leak which was less than 500ml and was treated conservatively. Six (14.2%) patients sustained minor liver injury which was controlled by cautery or gauze pressure. Three (6.6%) patients had diaphragm injury,

which was controlled with cautery. Perforation of gall bladder occurred in 12 (35%) patients and stone spillage occurred. Wound infection occurred in 1(2.1%) patient.

## DISCUSSION

Shoulder tip pain is a common symptom following laparoscopic cholecystectomy. As the cause for shoulder tip pain is not definitely known and different factors are thought to be responsible for this symptom. The most probable causes may be neurapraxia of the phrenic nerve, overstretching of the diaphragmatic fibers, CO<sub>2</sub> pneumoperitoneum, increased stretching of the liver capsule by the abdominal distention and displacement of the liver and traumatic injury, chemical or ischemic trauma<sup>7</sup>. In the current study the incidence of shoulder tip pain was 35.7% at an average pressure of 12mmHg. This is well within the range of other studies conducted on this topic and varies between 30-63%<sup>5, 6</sup>. However surgery at low pressure have low incidence of STP without compromising the safety and efficacy of the surgical procedure as evident from the literature<sup>7, 8, 9</sup>. Past studies show that to reduce the incidence of shoulder tip pain various procedures are used, which may be removal of CO<sub>2</sub> at the end of the procedure or reducing the pneumoperitoneum pressure as evident from study by Sattar Z et.al and Chundrigar T et. al<sup>8, 5</sup>. This not only reduce the shoulder tip pain but also improve ventilation, less pulmonary complications, early mobilization and recovery, short hospital stay, early discharge and hence less cost<sup>8</sup>. Low pressure does not affect the surgeon's visibility and surgery could be performed without compromising the safety and efficacy of the surgical procedure<sup>9</sup>. Khan F et.al, in his study, highlighted technical difficulties encountered by the surgeon under LPP<sup>6</sup>. Instillation of local anesthetic to right sub diaphragmatic area has no effect on pain<sup>10</sup>. However the exact remedy for pain reduction is still a mystery to be found.

The average time taken in this study to perform laparoscopic cholecystectomy was 55 min, but the incidence of complications like shoulder tip pain and CBD injuries were not more than other studies with less operative times<sup>4</sup>. One study claims that more the time taken more will be the injuries<sup>11</sup>. However the duration of surgery have no influence on postoperative pain<sup>12</sup>. The incidence of iatrogenic biliary injuries was 2.1% in this study. However the reported incidence in the literature was 0-2% which is comparable to this study<sup>13</sup>. Some studies report a very low incidence of 0.3% to 0.6%<sup>13, 14</sup>. One study from china shows an incidence of 0.2-0.7%<sup>15</sup>. This contrast may be due to the experience of the surgeon. The high incidence in this study may be due to the fact that we were in the learning phase and not experienced. The injury was avoidable as it occurred due to diathermy in the vicinity of CBD and the patient was obese. It is in consistence with other

studies who pointed out that diathermy close to vital structures is the major underlying mechanism of biliary tree trauma<sup>12, 13, and 16</sup>. Other factors which predispose to biliary injury are obscured anatomy, poor dissection of CBD, acute cholecystitis and distended thickened gallbladder. A parallel increase in the incidence of iatrogenic bile duct injuries are reported in the literature during laparoscopic cholecystectomy as compared to open cholecystectomy<sup>16</sup>. However it is now decreasing as the experience with procedure advances<sup>13</sup>. To minimize the injuries to CBD three rules should be observed throughout the surgery; Full dissection of Calot's triangle, Dissection of cystic duct to display T-junction with CBD; Low threshold for conversion to open cholecystectomy. To avoid injuries good training on VR simulator should be done and a novice surgeon should not operate on a surgical patient until prescribed proficiency criteria has been achieved<sup>17</sup>. Bleeding or hemorrhage from vascular injury is the most lethal complication of LC as hemostasis with diathermy is the major factor in causing CBD injury. It was 7.1% in this study which is within the range of 0.25-8% incurred in other studies<sup>13,18</sup>. Gall bladder perforation and stone spillage also occurs but of no practical significance. However sometimes abscesses and fistula may result which delays discharge from hospital<sup>20</sup>. The incidence of gall bladder perforation in this study was 35% which is not different from literature 16-50%<sup>20</sup>. The type of shoulder tip pain, its intensity and duration of varies between different patients and is largely unpredictable. The prevention and treatment of such pain, therefore, is also to reduce the incidence and severity of shoulder pain following laparoscopic surgery. Many studies have been carried out to examine the procedure related complications and for establishing the efficacy and fruitfulness of the procedure. However, to study the incidence and severity of shoulder tip pain at average pressure are limited. This research is different from the past studies and covers the research gap in three different directions, which signifies the current study. Firstly, the current study examines the incidence and severity of shoulder tip pain at an average pressure. Secondly some of the responsible factors of shoulder tip pain such as duration, age and sex were also considered. Thirdly, the study was designed to suggest a strategy which can make this procedure pain free and may be undertaken as day case surgery.

## CONCLUSION

We can say that the STP and other complications we mentioned in this study are not so clearly related to single causative factor, however CO<sub>2</sub> pneumoperitoneum is the most probable factor considered to be responsible for shoulder tip pain.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Serum Prolactin: Biochemical Parameter for Assessing Disease Severity among Rheumatoid Arthritis and Systemic Lupus Erythematosus

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Muhammad Ahsan

## ABSTRACT

**Objective:** To find out the role of serum prolactin as a biochemical parameter for assessing the disease severity in female suffering from rheumatoid arthritis and systemic lupus erythematosus.

**Study Design:** Observational / case-control Study.

**Place and Duration of Study:** This study was conducted at the Basic Medical Sciences Institute, Jinnah Postgraduate Medical Centre, Karachi from January 2014 to June 2016.

**Materials and Methods:** A total of 105 female subjects of fertile age were included in this study, comprising of 35 newly diagnosed cases in each group of SLE and RA, while 35 healthy controls were enrolled for comparison. All the RA and SLE cases were diagnosed by using selection criteria based on American Rheumatology Association. Disease severity was measured by principally using Duke Severity of Illness score (DUSOI), while serum prolactin was analyzed by ELISA.

**Results:** Significantly higher disease severity, ESR and serum prolactin was found among SLE subjects when compared to both RA and control groups. Similarly, serum prolactin and ESR was found significantly higher among subjects in RA group when compared to controls. Statistically significant strong positive correlation of serum prolactin with disease severity in both RA and SLE subjects having r value (Spearman's correlation) of 0.686 and 0.729 were observed respectively.

**Conclusion:** In this study, statistically significant strong correlation of serum prolactin with disease severity confirms the role of prolactin as a biochemical parameter for assessing the disease severity among RA and SLE subjects. In addition, our findings also suggest that the therapeutic modulation of prolactin secretion may also help to decrease the disease severity among RA and SLE subjects.

**Key Words:** Prolactin, Autoimmune Diseases, Systemic Lupus Erythematosus, Rheumatoid Arthritis

**Citation of article:** Iqbal T, Ahmed SDH, Sheikh SI, Imtiaz F, Ahsan M. Serum Prolactin: Biochemical Parameter for Assessing Disease Severity among Rheumatoid Arthritis and Systemic Lupus Erythematosus. Med Forum 2017;28(6):57-60.

## INTRODUCTION

Prolactin is a polypeptide hormone containing 199 amino acid residues secreted by the anterior pituitary<sup>1</sup>. It is primarily known for stimulating growth of mammary glands and maintaining lactation after childbirth. However, it also plays an important role in regulation of immune response, osmotic pressure, metabolism, behavior, and reproduction<sup>2</sup>.

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Received: April 13, 2017;

Accepted: May 20, 2017

Prolactin binds with its cognate receptor PRLr to manifests its physiological actions via autocrine, paracrine and endocrine<sup>3</sup>. Prolactin is not only secreted from pituitary but there are other extra-pituitary sites that are also responsible for its production<sup>4</sup>. This includes endothelium, brain cells, endometrium, prostate, skin and more importantly the immune system. The prolactin secreted from extra-pituitary cells has different biological activity due to variation in post-translational modifications<sup>5</sup>.

Autoimmune diseases like rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE) are illnesses that occur when the body is mistakenly attacked by its own immune system<sup>6</sup>. In RA auto antibodies are formed against IgG that causes chronic inflammation of the joints and tissue around it. These auto antibodies are called rheumatoid factor and are of the IgM class. RA affect primarily women between the ages of 30 and

50 years. People with HLA-DR4 genes are predisposed to RA, the agents that induces these auto antibodies is unknown<sup>7</sup>. Similarly, SLE is an immune complex mediated disease in which auto antibodies are formed against DNA, histones, nuclear proteins and other component of the cell nucleus. Antibodies against double stranded DNA are the hallmark of SLE. The prevalence of RA and SLE in Pakistan is largely unknown, however the global prevalence of RA was estimated to be 0.24%<sup>8</sup>, while the prevalence rate of SLE among Asian countries like China, India and Japan was found to vary from 30 to 50/ 100.000 population<sup>9</sup>. Hyperprolactinemia, other than causing galactorrhea, delayed puberty and disturbed menstrual cycles has also been linked with atherogenesis, various cancers including breast cancer, and autoimmune disorders<sup>10</sup>. Various research evidences have supported that elevation of serum prolactin participates in pathogenesis of autoimmune disease<sup>7</sup>. The immune system, which is responsible for chronic autoimmune inflammatory diseases like RA and SLE is also an important site of extra-pituitary prolactin production<sup>2</sup>. In immune system Prolactin acts as a cytokine that is evident by the expression of both prolactin and its receptor in monocytes and lymphocytes, suggesting its role in auto and paracrine regulation<sup>11</sup>. Keeping in mind the disease burden and the role of prolactin in chronic autoimmune inflammatory diseases, the present study is aimed to find out the role of serum prolactin as a biochemical parameter for assessing the disease severity in female patients suffering from SLE and RA.

## MATERIALS AND METHODS

This observational case-control study was conducted at the Basic Medical Sciences Institute, Jinnah Postgraduate Medical Centre, Karachi from January 2014 to June 2016. A total of 105 female subjects of fertile age were included in this study, comprising of 35 newly diagnosed cases in each group of SLE and RA, while 35 healthy controls were enrolled for comparison.

All the RA and SLE cases were diagnosed by using selection criteria based on American Rheumatology Association<sup>12,13,14</sup> respectively. Disease severity was measured by principally using Duke Severity of Illness score (DUSOI)<sup>15</sup>. DUSOI is based on a clinical judgment by a physician reflecting the severity of the disease. To match the score and compare RA with SLE, DUSOI was modified using method explained by Navarro-Cano et. al<sup>16</sup>. Subjects were examined and given scores on a scale of 0 to 4 each for symptoms, prognosis, treatability, and complications related to the disease. These four scores were then summed, divided by 16 and then multiplied by 100 to obtain the final score.

Subjects who were receiving steroid medication, hormone replacement therapy or contraceptive pills were excluded from the study. Likewise, Patients suffering from diabetes, liver diseases or any hormonal disorder were also excluded from the study. After informed consent, demographic data was recorded on a prescribed proforma. 5 ml of blood was collected after an overnight fast, which was centrifuged and serum was stored at -70 °C for later analyses. Prolactin was analyzed by using Monobind Accu-Bind Kit Product Code-725-300 by ELISA. Parameters were compared between groups and statistical significance was found by using one-way ANOVA. While post-hoc tukey's test was performed to see differences among the groups. Spearman's correlation was applied to explore the relationship between serum prolactin and disease severity.

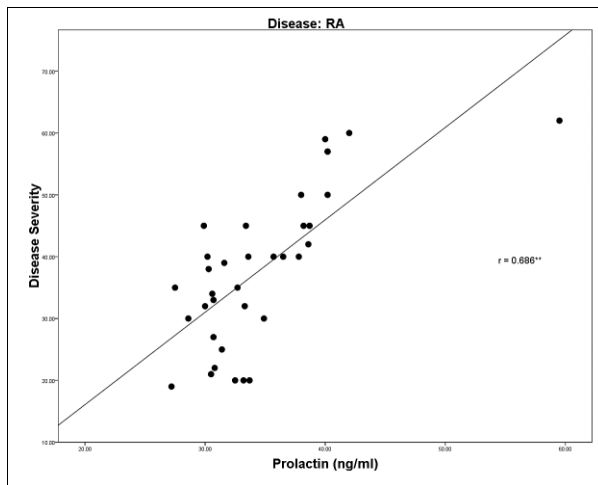
## RESULTS

Characteristics of subjects including demographic parameters, disease severity, ESR and serum prolactin are summarized in table.1. Raised ESR (> 20 mm/hr) and Hyperprolactinemia (> 29 ng/mL) was observed among females in RA and SLE groups. After comparison, statistically significant differences were observed among SLE, RA and controls.

**Table No. 1: Comparison of Basic Demographic Parameters, Disease Severity, ESR And Serum Prolactin Between SLE, RA And Control Groups.**

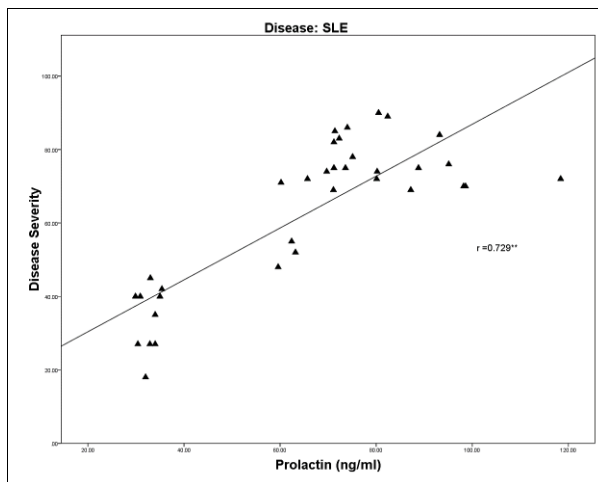
Parameters	SLE (mean ± SE) n=35	RA (mean ± SE) n=35	Control (mean ± SE) n=35	p-value
Age (yr)	23.48 ± 0.63 <sup>†</sup>	31.45 ± 0.98	31.25 ± 0.88	0.00*
Age at menarche (yr)	12.74 ± 0.16	12.74 ± 0.18	12.54 ± 0.18	0.66
Parity	1.40 ± 0.18 <sup>‡</sup>	2.82 ± 0.29	2.68 ± 0.27	0.00*
BMI (kg/m <sup>2</sup> )	20.51 ± 0.31	21.80 ± 0.55	21.15 ± 0.41	0.11
Disease Severity (modified DUSOI)	62.48 ± 3.503 <sup>†</sup>	37.97 ± 2.08	-	0.00*
ESR (mm/hr)	97.74 ± 3.13 <sup>†</sup>	88.08 ± 2.06 <sup>§</sup>	19.60 ± 1.02	0.00*
Serum Prolactin (ng/ml)	65.45 ± 4.08 <sup>†</sup>	34.65 ± 1.01 <sup>§</sup>	9.06 ± 0.59	0.00*

p-value was estimated by one way ANOVA, post-hoc tukey's test was performed to see differences among groups. \* p-value < 0.05; <sup>†</sup> significantly higher in SLE group when compared to RA and controls; <sup>‡</sup> significantly lower in SLE group when compared to RA and controls; <sup>§</sup> significantly higher in RA group when compared to controls.



**Figure No.1: Correlation between prolactin and disease severity in rheumatoid patients.**

The scatterplot shows normal distribution of RA subjects. Data points were labelled as (●). Strength of association and relationship demonstrated by a linear trend line and values of correlation coefficient (r).



**Figure No.2: Correlation between prolactin and disease severity in SLE patients.**

The scatterplot shows normal distribution of SLE subjects. Data points were labelled as (▲). Strength of association and relationship demonstrated by a linear trend line and values of correlation coefficient (r).

Post-hoc Tukey's test revealed that subjects in SLE group found to be younger in age and have lower parity when compared to both RA and control groups. While significantly higher disease severity, ESR and serum prolactin was found among SLE subjects when compared to both RA and control groups. Similarly, serum prolactin and ESR was found significantly higher among subjects in RA group when compared to controls. Spearman's correlation was performed between variables to explore the possible relationship. A strong positive correlation of serum prolactin with disease severity in both RA and SLE subjects having r value

(Spearman's correlation) of 0.686 and 0.729 were observed ( $p < 0.01$ ) (Figure 1 and 2).

## DISCUSSION

The increasing burden of autoimmune diseases like RA and SLE have quizzed researchers to find newer modalities of treatment. Prolactin promotes autoimmunity by stimulating the immune system via disrupting the normal process of immunological tolerance among maturing B-cells towards self-antigen, enhances lymphocyte proliferative response to antigens and increase synthesis of cytokines, immunoglobulins, and autoantibodies<sup>10</sup>.

The significant role of prolactin in the pathogenesis and severity of chronic autoimmune inflammatory diseases like RA and SLE among local population is demonstrated in our study by the higher serum prolactin levels among both RA and SLE subjects, while statistically significant strong correlation of serum prolactin with disease severity was also found. Other studies have also found higher prolactin levels and strong correlations between serum prolactin and disease severity of chronic autoimmune inflammatory diseases<sup>17,18,19</sup>. Contrary to findings of our study, fewer studies have also shown no correlation between serum prolactin and disease severity<sup>20</sup>.

Various studies have indicated that prolactin act as immuno-stimulant and can directly influencedisease severity in chronic autoimmune inflammatory diseases<sup>21</sup>. Most immune cells secrete prolactin which stimulates proliferation, differentiation and maturation of T and B lymphocytes<sup>22,23</sup>. Not only the demonstration of higher serum prolactin among RA and SLE subjects but also higher prolactin levels in inflammatory tissue and synovial fluid with strong relation to disease activity suggests that the locally infiltrated immune cells, chondrocytes and fibroblasts secrete prolactin in higher amounts<sup>19</sup>. This locally produced prolactin in the inflammatory tissues stimulates the immune system and adjuncts by producing more inflammatory cytokines and matrix metalloproteinases leading to structural changes associated with RA and SLE<sup>24</sup>.

Thus, the results of our study showing strong correlation between serum prolactin and disease severity among RA and SLE supports the hypothesis that serum prolactin may be used as a biochemical parameter to assess disease severity among RA and SLE subjects. However, the study design and small sample size warrant careful interpretation of the results. We further recommend multi-centric studies on larger population to establish the external validity.

## CONCLUSION

In this study, statistically significant strong correlation of serum prolactin with disease severity confirms the role of prolactin as a biochemical parameter for assessing the disease severity among RA and SLE subjects. In addition, our findings also suggest that the

therapeutic modulation of prolactin secretion may also help to decrease the disease severity among RA and SLE subjects.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency of Obesity in Medical Students of Multan Medical & Dental College, Multan

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## ABSTRACT

**Objective:** To measure the frequency of obesity in male and female medical students of Multan Medical and Dental College using BMI for quantification of Obesity.

**Study Design:** Descriptive / cross-sectional study

**Place and Duration of Study:** This study was conducted at the Multan Medical and Dental College, Multan in March, 2017

**Materials and Methods:** A total of 100 medical students from all five years, 50 males and 50 females of ages 18-25 were included in the study. A questionnaire was filled out by subjects asking them about their age, gender, weight in kilograms and height in meters.

**Results:** Students were classified into different categories of obesity according to their BMI with reference to world health organization (WHO) criteria. Out of 100 students, 68% fell into the normal range of BMI, 23% were overweight and 7% fell into Obese Class 1. Out of 50 male students, 33% had normal BMI, 26% were overweight and 8% fell in obesity class 1. Out of 50 female students, 35% had normal body mass index (BMI) 20% were overweight and 6% fell in Obesity Class 1.

**Conclusion:** This study suggests that obesity and overweight are prevalent among both male and female medical students. There is an increasing need to carry out more studies, preferably with larger sample size, to assess the burden and impact of this problem.

**Key Words:** Body mass index, Overweight, Obesity, Medical students

**Citation of article:** Arshad S, Afzal W, Khan Z, Hashir MM. Frequency of Obesity in Medical Students of Multan Medical & Dental College, Multan. Med Forum 2017;28(6):61-63.

## INTRODUCTION

Obesity is defined as the presence of excess amount of adipose tissue in the body.<sup>1</sup> The amount of body fat is difficult to measure directly and is usually determined from an indirect measure.<sup>2</sup> One such measure is the body mass index (BMI), which has been shown to correlate with the amount of body fat in most individuals (notable exceptions are athletes who have large amounts of lean muscle mass, hence, a greater BMI despite less amount of adipose tissue). Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obese in adults.<sup>3</sup> The BMI is calculated in both men and women as:  $BMI = \text{Weight in kilograms} / (\text{height in meters})^2$  or  $BMI = 703 \times (\text{weight in pounds}) / (\text{height in inches})$ .

According to WHO, overweight is defined as  $BMI = 25.0-29.9$  and obesity is defined as  $BMI \geq 30.0$ . Class I obesity is  $30.0-34.9$ , class 2 obesity is  $35.0-39.9$ , and

class 3 (extreme) obesity is BMI greater than 40.<sup>4</sup> The WHO classification is primarily based on the association between BMI and mortality.

As obesity is a pandemic and developing countries have the highest number of overweight and obese individuals, it is least surprising that Pakistan ranked 9<sup>th</sup> out of 188 countries in terms of obesity<sup>5</sup>, according to a study published by Marie.<sup>6</sup> It is a major risk factor in natural history of many debilitating chronic diseases for example, hypertension, diabetes and coronary heart diseases e.t.c.<sup>3</sup> All chronic diseases associated with obesity have high mortality rates, so indirectly, obesity can lead to death.

## MATERIALS AND METHODS

This descriptive / cross-sectional study was carried out at Multan Medical and Dental College, Multan in March, 2017. It was a cross-sectional descriptive study. It was the first time that a study on this topic was carried out in this institute. A questionnaire was designed which inquired about the age, gender, weight (in kilograms) and height (in meters). The study population was selected randomly by using random table. The questionnaire was distributed randomly amongst hundred students from all five years of medical studies (ages 18-25), fifty of those were males and fifty were females. The data collected from the questionnaire was used to calculate the BMI. The data

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Received: April 20, 2017;

Accepted: May 11, 2017

for hundred students was analyzed collectively and also separately for males and females by dividing them into two groups of fifty each, and their BMI was categorized into the WHO classification of obesity.<sup>2</sup> Frequency charts, bar charts and Pie charts were drawn to analyze the data.

## RESULTS

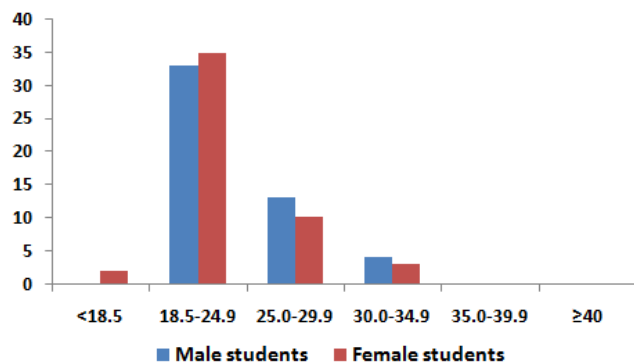
Our study was aimed at observing the frequency of obesity according to WHO classification of BMI<sup>2</sup> in MBBS students of Multan Medical and Dental College, Multan. Frequency for each category of obesity WHO<sup>4</sup> was analyzed for male and female students separately and also collectively as a group of 100. Out of 100 students, 68% fell into the normal range of BMI, 23% were overweight and 7% fell into Obese Class 1.

**Table No.1: Frequency of body mass index (kg/m<sup>2</sup>) (n=100)**

Classification	No.	%
Underweight (<18.5)	2	2.0
Normal range (18.5-24.9)	68	68.0
Overweight (25.0-29.9)	23	23.0
Obese Class I (30.0-34.9)	7	7.0
Obese Class II (35.0-39.9)	-	-
Obese Class III (≥40)	-	-

**Table No.2: Frequency of body mass index according to genders (n = 100)**

Classification	Male		Female	
	No.	%	No.	%
Underweight (<18.5)	-	-	2	4.0
Normal range (18.5-24.9)	33	66.0	35	70.0
Overweight (25.0-29.9)	13	26.0	10	20.0
Obese Class I (30.0-34.9)	4	8.0	3	6.0
Obese Class II (35.0-39.9)	-	-	-	-
Obese Class III (≥40)	-	-	-	-



**Figure No. 1: Frequency of students according to BMI**

Out of 50 male students, 33% had normal BMI, 26% were overweight and 8% fell in obesity class 1. Out of 50 female students, 35% had normal BMI 20% were overweight and 6% fell in Obesity Class 1 (Tables 1-2, Fig. 1).

## DISCUSSION

In our study 68% students had normal BMI. This finding was comparable to a study conducted at Islamabad Medical and Dental College in 2014, which showed that 59.7% of the students in their study had normal BMI.<sup>7</sup> A similar study conducted at Lahore Medical and Dental College in 2011 showed that 60% of the students had BMI in the normal range.<sup>8</sup> From one study at a medical college in UAE, 58.8% of the students had normal BMI.<sup>9</sup>

In this study, 23% were overweight. A study reported similar figures, 27% being overweight.<sup>8</sup> A larger study that involved university students of same age group from different countries, stated that 22% were overweight or obese.<sup>10</sup> A similar study carried out in Kerala showed that 24.57% students were overweight.<sup>11</sup> Seven percent of the students fell into the Obesity Class I. A study conducted at a medical college in Tamil Nadu, India concluded that obesity was prevalent in 6.25% of the students.<sup>12</sup> Results of other studies reported obesity in 2%, 7% and 6.9%.<sup>7-9</sup>

## CONCLUSION

This study suggests that obesity and overweight are prevalent among both male and female medical students. There is an increasing need to carry out more studies, preferably with larger sample size, to assess the burden and impact of this problem.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Epilepsy Patients at Suicidal Risk with Psychological Distress, Cognitive Failure and Perceived Social Support

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## ABSTRACT

**Objectives:** Core objective of present study was to explore the relationships between Suicidal risk, Psychological Distress, Perceived Social Support and Cognitive failure among the individuals with epilepsy and to find out gender differences (if any) on all variables.

**Study Design:** Co-relational research study.

**Place and Duration of Study:** This study was conducted at the Department of Applied Psychology, Bahauddin Zakariya University, Multan from 15<sup>th</sup> January, 2016 to 22<sup>nd</sup> March, 2016.

**Materials and Methods:** Correlational research design was used for the present study. Total N=80 (both men and women) participants (all were diagnosed epilepsy patients) were recruited from different hospitals (Nishtar, CMH and Ibn-e-Seena hospital) of Multan, Pakistan by using purposive and convenient sampling technique. Data was collected from participants on Suicidal risk, Psychological Distress, Perceived Social Support and Cognitive failure by using relevant valid and reliable scales.

**Results:** It was revealed that psychological distress, cognitive failure were positively associated with suicide risk whereas perceived social support negatively correlated with suicidal risk among individuals with epilepsy. Furthermore, perceived social support negatively related with psychological distress and cognition failure. Significant gender differences were found on Suicidal risk, Psychological Distress, Perceived Social Support and Cognitive failure in individuals with epilepsy.

**Conclusion:** It was concluded that psychological distress and cognitive failure exacerbate the chance of suicidal risk whereas social support play vital role in decreasing the suicide risk, psychological distress and cognitive failure among epilepsy patients. So, the pertinent importance should be paid to the element of social support to enhance the overall quality of psychological health of people with epilepsy.

**Key Words:** Epilepsy, Suicidal risk, Psychological distress, Perceived Social Support, Cognitive failure

**Citation of article:** Batool I, Afzal N, Younis M. Epilepsy Patients at Suicidal Risk with Psychological Distress, Cognitive Failure and Perceived Social Support. Med Forum 2017;28(6):64-68.

## INTRODUCTION

Present study intends to examine relationships between psychological distress, cognitive impairment, perceived social support and suicidal ideation in adults with epilepsy. Furthermore, to identify the gender differences on psychological distress, cognitive impairment, perceived social support and suicidal ideation in adults with epilepsy.

Epilepsy is a neurological disorder that involves the abrupt, unstructured and frequent seizure. The term "seizure" depicts the conditions which involve the period of sudden decrease in the normal activity of brain cells and they act more rapidly than the normal

neural functioning. Seizure usually comes to end within seconds and few minutes when brain get control over the increased activity of brain cells<sup>1</sup>. Most common clinical test that are used to diagnosed epilepsy include Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Electroencephalogram (EEG)<sup>2</sup>. According to epidemiological study in Pakistan, the prevalence of epilepsy in Pakistan to be assessed is that every 10<sup>th</sup> person suffered from epilepsy out of 1000 individuals. Epilepsy seen to be more prevalent at the younger age than 30 years whereas slightly less prevalent at the age between 40 and 59 years. Furthermore, highest prevalence of epilepsy is documented in rural areas of Pakistan<sup>3</sup>.

Suicidal ideation is medical term that involves the thoughts, ideas, wishes and plans to provide physically harm to one's self to the extent that one can commit suicide even after planning and wishing suicide<sup>4</sup>. Suicide rate among individuals with epilepsy reported 11% that is higher than the normal population<sup>5</sup>. Nilsson et al<sup>6</sup> reported that 26 individuals committed suicide out of 171 individuals who also had epilepsy. It was concluded that psychological distress such as depression, anxiety and psychosis was associated with 10% increase in the risk of suicide in individuals with

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Received: April 22, 2017;

Accepted: May 19, 2017

epilepsy whereas antipsychotic drugs proved to be increased 10 % in the risk of suicide in individuals with epilepsy.

A vast array of literature has been done to examine the correlates and risk factors of suicidal ideation in individuals with epilepsy. Young age, psychosocial problems, male sex, temporal lobe seizure, brain injuries, seizure episodes, unemployment and financial stress are proved to be risk factors of suicide in individuals with epilepsy<sup>7, 8, 9</sup>.

Previous literature showed that individuals with epilepsy experienced more psychological distress than normal individuals or healthy controls<sup>10</sup>. Comorbidity of psychological disorder such as anxiety, depression, psychosis, attention deficit disorder and frequent seizures have been documented<sup>11, 12</sup>. Adolescents with epilepsy reported higher level of depression and anxiety than the healthy controls and individuals who had not epilepsy<sup>13</sup>. Social support proved to be significant predictors to lessen the severity of psychological issues in individuals with epilepsy. Lack of social support and stigmatization exacerbate the psychological distress, poor mental health and bad physical condition in individuals with severe medical conditions including epilepsy<sup>14, 15</sup>.

Cognitive deficit in survey based study was proved to be highest in the ranking of different concerns that individuals with epilepsy experienced in their life<sup>16</sup>. A previous study was done to evaluate the nature and extent of subjective and objective deficit in the individuals with epilepsy. Results revealed that epileptic patients scored lower on the measures of learning, attention and speed of information processing. It was concluded that individuals with epilepsy who had normal daily life functioning and even performing different jobs had impaired health related quality of life and cognition<sup>17</sup>.

There is very limited and up to dated literature regarding the suicidal behaviors in individuals with epilepsy in Pakistan. So in order to fill this gap in literature present study is being done that would provide worthwhile data related to suicidal risk and behaviors in individuals with epilepsy and other related factors such as perceived social support, psychological distress and cognitive deficits.

**Hypotheses:** Following hypotheses were formulated on the basis of previous literature.

1. There would be positive association between psychological distress, cognitive failures and suicide risk in individuals with epilepsy.
2. Social support would be negatively correlated with suicide risk, psychological distress and cognitive failures.
3. Gender differences would exist on Suicidal risk, Psychological Distress, Perceived Social Support and Cognitive failure among individuals with epilepsy.

## MATERIALS AND METHODS

**Participants:** For the present co-relational study, sample of N=80 (both men= 47 and women 33) adults, who were diagnosed with epilepsy, were recruited from different hospitals of Multan, Pakistan by using purposive and convenient sampling technique. Their age range was 18-43 years old. Only those individuals recruited who diagnosed as epileptics by concerned physician and neurologist. Individuals with severe condition or had any other comorbidity of physical ailment were excluded from the study.

### Instruments

#### 1. Suicidal Risk Assessment Form

To assess suicide risk in the individuals with epilepsy, suicidal of risk assessment form developed by Beck, Kovacs, & Weissman<sup>18</sup> in 1979 was used. The internal consistency of scale was .89 and inter-rater reliability was .83.

#### 2. Kessler Psychological Distress Scale (K10)

In order to measure psychological distress, Kessler Psychological Distress Scale Developed by Kessler et al<sup>19</sup> was used. It is a self-report measure consisting on 10 items based on depression and anxiety symptoms.

#### 3. Multidimensional Scale of Perceived Social Support (MSPSS)

Perceived social support was measured by Multidimensional Scale of Perceived Social Support (MSPSS) which was developed by Zimet, Dahlem, Zimet & Farley<sup>20</sup> in 1988. It measure Perceived social support for family, friend, and significant others. Internal consistency of scale was .88 whereas test-retest reliability was .85.

#### 4. Cognitive Failures Questionnaire (CFQ)

CFQ developed by Broadbent et al<sup>21</sup> in 1982 was used to assess cognitive failures in respondents. It is a self-report measure of perception, memory and motor function. Alpha reliability of the scale was .89.

**Procedure:** First of all, in order to collect data permission was obtained from the MS of different hospitals. After completing all the ethical concerned, participants were approached in different hospitals of Multan by using purposive and convenient sampling technique. Participants were debriefed about the study and informed consent was taken. Then they were requested to fulfill different self-report questionnaires regarding suicidal risk, psychological distress, perceived social support and cognitive impairment. Obtained data was entered in SPSS and different analysis was carried out.

## RESULTS

For the present study, eighty participants diagnosed with epilepsy (Men= 47, Women=33) were recruited in order to examine the relationship between psychological distress, cognitive impairment, perceived social support and suicidal ideation in adults with

epilepsy. Pearson correlation analysis was carried out after entering data in SPSS. Results showed that psychological distress is positively associated with suicidal risk ( $r = .20, p = .00$ ) whereas perceived social support negatively associated with suicidal risk ( $r = -.165, p = .00$ ). Furthermore, cognitive failure is positively associated with suicidal risk in individuals with epilepsy ( $r = .38, p = .00$ ). Additionally, there was negative relationships between perceived social support and psychological distress ( $r = -.190, p = .00$ ) and between perceived social support and cognitive failure ( $r = -.002, p = .00$ ). Detailed results can be seen in Table 1.

To test another hypotheses independent sample t-test was carried out to examine the gender differences in all

variables of study such as suicidal risk, perceived social support, psychological distress and cognitive impairment in individuals with epilepsy. Results showed significant gender differences on suicidal risk, perceived social support, psychological distress and cognitive impairment in individuals with epilepsy. Men experienced more suicidal risk ( $M = 16.15, SD = 3.10$ ), psychological distress ( $M = 54.83, SD = 8.98$ ), cognitive failure ( $M = 49.68, SD = 5.82$ ) than women with epilepsy. Whereas females ( $M = 28.90, SD = 3.93$ ) perceived more social support than males ( $M = 21.86, SD = 4.29$ ). Detailed results can be seen in Table 2.

**Table No.1: Table shows relationships between Suicidal risk, Psychological Distress Perceived Social Support and Cognitive failure in individuals with epilepsy**

Variables	Suicidal Risk	Perceived Social Support	Psychological Distress Scale	Cognitive Failure
Suicidal Risk	-	-0.165	0.209	0.382
Perceived Social support		-	-0.190	-0.002
Psychological Distress			-	0.131
Cognitive Failure				-

Note. N = 80 ,  $p < 0.05$

**Table No.2: Table shows the gender differences on the constructs of Suicidal risk, Psychological Distress, Perceived Social Support and Cognitive failure in individuals with epilepsy**

Variables	Gender	N	M	SD	t	p
SR	Men	47	16.159	3.102	2.408	0.020*
	Women	33	13.739	5.150		
PD	Men	47	54.873	8.980	3.867	0.000***
	Women	33	46.963	9.049		
CF	Men	47	49.681	5.829	5.210	0.000***
	Women	33	40.392	8.988		
PSS	Men	47	21.863	4.291	7.589	0.000***
	Women	33	28.907	3.931		

SR= Suicidal risk, PD= Psychological Distress, CF= Cognitive failure, PSS=Perceived Social Support

## DISCUSSION

Present study examined the relationship between Suicidal risk, psychological distress, perceived social support and cognitive failure in the individuals with epilepsy. For this purpose Pearson correlation was carried out. Results revealed that there was significant positive relationship between suicidal risk and psychological distress in individual with epilepsy. Previous researches also documented the same results that psychological distress like depression, anxiety, and other psychological comorbidities exacerbate and proved to be risk factor in suicidal ideation in individuals with epilepsy<sup>22</sup>. Furthermore results of present study revealed that cognitive failure and suicidal risk were positively associated in individuals with epilepsy. Reason behind that individual with epilepsy experienced cognitive failures such as poor memory, concentration and speed of information

processing even they performed everyday life activities<sup>17</sup>. So the cognitive impairment becomes source of distress and mental burden for the individuals with epilepsy that exacerbate the suicidal risk.

Additionally, results indicated that there was negative relationship between perceived social support and suicidal risk in individuals with epilepsy. Pakistani culture is a collectivistic culture where values and concerns are shared with each other. In this culture usually the individuals with some deficits or physical or mental disabilities received the extra social support, sympathy and extra care particularly from their family members, and friends that increase the psychological well-being of such kind of individuals that lessen the chance of suicide.

Results of present study revealed that there is negative relationship between perceived social support and psychological distress and cognition failure. Previous studies evident that deficiency or lack of perceived

social support associated with higher level of psychological distress and poorer physical health<sup>14</sup>. Social supports proved to be necessary and important predictor in lessen the psychological distress in patients with severe diseases<sup>15</sup>.

Gender differences were also examined by carried out independent sample t-test in individuals with epilepsy on suicide risk, psychological distress, cognitive failure and perceived social support. Results indicated that there was significant gender difference on the variables of suicide risk, psychological distress, cognitive failure and perceived social support. Results revealed that men with epilepsy had higher risk of suicide, psychological distress, and of cognitive failure than women with epilepsy whereas women with epilepsy experience more social support than men with epilepsy. Previous study results consistent with present study that men are higher at suicide risk than men. Previous study revealed that nonfatal injuries were most common in women than men whereas the rate of complete suicide was higher in men than women<sup>23</sup>.

Presents study revealed that women with epilepsy had higher score on perceived social support than men. Previous study results supported the present study findings as it was concluded that women with epilepsy reported higher perceived social support than men with epilepsy<sup>24</sup>. Another previous study concluded that women received higher familial support than men with epilepsy<sup>25</sup>. Underlying reason behind these findings may be the emotional and sharing nature of women. Women tend to share their feeling and more rely on social support and maintain relationships whereas men in our patriarchal society considered the dominant and strong figure. For men it seems odd to share their weakness and miseries and they considered strong and fearless subjects.

## CONCLUSION

Clinicians and other practitioners should also take into consider psychological and social factors in the treatment of individuals with epilepsy and referred to them for psychological intervention to lessen their psychological distress such as anxiety, depression and suicide risk so that the overall quality of life of individuals with epilepsy will improved. Furthermore, social support proved to be an important variable that lessen the suicidal risk, psychological distress, and cognitive failures. So, the availability of social support can be enhanced by disseminate the awareness about the epilepsy and value of social support in its better rehabilitation by conducting different seminars, and workshops in society.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Regarding Hepatitis B and its Vaccination among Medical students of Nishtar Medical College Multan

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## ABSTRACT

**Objective:** To determine the level of knowledge, and practices regarding HBV transmission and vaccination among students of the first year and final year class in Nishtar Medical Multan.

**Study Design:** Cross-sectional descriptive study

**Place and Duration of Study:** This study was conducted at the Department of Community Medicine, Nishtar Medical College Multan 15 February to 25 March 2017

**Materials and Methods:** A semi-structured questionnaire was used to collect the data. SPSS version 21 (Statistical package for social sciences) was used to analyze the data. Chi-square test of significance was applied to see the association between the groups.

**Results:** The present study was conducted among 160 students, among the respondents 43.1% were male, and 56.9% were female. Mean age: 20.49 SD $\pm$  1.9. The mean knowledge score of 1<sup>st</sup> Year and Final Year respondents was 1.45 SD  $\pm$  0.29 and 1.26 SD  $\pm$  0.02 respectively so the knowledge of final year student was better than first-year students. Only 50% respondents were vaccinated and only 43(26.9%) of them had received the three recommended doses. P= (0.06)

**Conclusion:** The overall knowledge of Hepatitis B virus was good among the study participants. But their practices were not reasonable and significant.

**Key Words:** Hepatitis B, HBV vaccine, Medical students, Multan

**Citation of article:** Malik AY, Iram A, Hameed A. Knowledge and Practices Regarding Hepatitis B and its Vaccination among Medical students of Nishtar Medical College Multan. Med Forum 2017;28(6):69-73.

## INTRODUCTION

Hepatitis B is a serious blood-borne infection. It is estimated that about one-third of world population is infected with HBV.<sup>1, 2</sup> WHO reported in 2009 that about 2 billion persons all over the world are being infected by HBV.<sup>3</sup> HBV is second to tobacco as well-known cancer-causing agent and is responsible for 75 to 90% of liver cancer worldwide.<sup>4</sup> The danger of Hepatitis B infection is 2-10 times greater in health-care workers than in general population.<sup>5,6</sup> People with chronic infection are known as carriers and are a big source of HBV transmission.<sup>7</sup> Hepatitis B infection is highly contagious and it can be conveyed during blood transfusion, vertically from mother to child, during unprotected sexual intercourse, needle-stick injuries, sharing equipment in a barber shop and beauty salon, ear piercing, acupuncture, dialysis.<sup>11</sup>

Doctors, nurses, and medical students are highly vulnerable to get needle-prick injuries. The danger of accidental exposure among trainees may be higher due to lack of experience, work overload, hurries and fatigue.<sup>12, 13</sup> Most of the Studies showed that there is a solid gap between knowledge among medical students and risk of job-related exposure to HBV infection.

The purpose of our study was to determine the level of knowledge and practice towards HBV infection and vaccination among medical students of Nishtar Medical College Multan. We also made a comparison between levels of awareness of students of class first year to students of class final year

## MATERIALS AND METHODS

One hundred and sixty students (80 students of 1st year and 80 students of final year) of Nishtar Medical College Multan were involved in the study. A semi-structured questionnaire proforma was used to collect the data. One male and one female doctor approached the students of 1st year in dissection hall conveniently, after taking the consent of the teachers. The questionnaire was distributed among the students of free batches one after the other and they were given 15 to 20 minutes to fill in the response to all the questions. While the students of the final year were approached conveniently outside the auditorium and made request to fill the proforma.

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Received: April 20, 2017; Accepted: May 10, 2017

**Variables and measurements:** The questionnaire contained demographic details, knowledge level and the practices of respondents regarding hepatitis B virus vaccination. We calculated the mean proportion of the correct answers and made two groups with good and poor knowledge. If the mean proportion was equal and greater than 75% then they were considered as having “good” knowledge while “poor” if less than 75%. Respondents were considered “adequately vaccinated” if they have received three doses of vaccine and “inadequately vaccinated” if got less than three doses.

**Data Analysis:** Data was coded, entered and analyzed by using SPSS (Statistical Package for Social Sciences) version 21. Data was summarized by using Descriptive statistics like frequencies and proportions. Two sample T- test was applied to compare the variables and chi - square test was applied to see the association among variables.

## RESULTS

Among the respondents 43.1% were male, 56.9% were female. Mean age: 20.49 SD± 1.9. About 76.9% respondents were living in urban areas while 23.1% belong to rural areas. Table 1

**Table No.1: Socio-demographic Profiles of the Participants**

Variables		Number (n)	Percentages (%)
Age group (yrs.)	17-21	93	58%
	22-26	67	41.8%
Sex	Male	69	43.1%
	Female	91	56.9%
Year of study	1 <sup>st</sup> Year	80	50%
	2 <sup>nd</sup> Year	80	50%
Residence	Urban	123	76.9%
	Rural	37	23.1%
Mean age: 20.49 SD± 1.9			

Overall knowledge level of the final year respondents was better than the respondents of 1<sup>st</sup> year Table 2.

The general attitude of respondents about vaccination was positive as 81.3% respondents fully agreed with the importance of vaccination for the protection of public health. Respondents believed that hepatitis B vaccine is safe and effective. The majority of 1<sup>st</sup>-year students who were not vaccinated because they thought that they were not at risk of getting hepatitis B. (Table 2).

Comparison and Association of Knowledge with selected socio-demographic variable, by using independent two samples T-test and chi-square.

The mean knowledge score of 1<sup>st</sup> Year and Final Year respondents was 1.45 SD ± 0.29 and 1.26 SD ± .021 respectively so the knowledge of final year student was better than first-year students. This was statistically significant. The comparison about mean knowledge score of male respondents & female respondents was 1.41 SD ± 0.28 and 1.32 SD ± 0.26 respectively.

**Table No.2: Overall knowledge level of the final year respondents**

Variables		Frequency (n)	% age
Hepatitis B virus causes liver cancer?	Yes	127	79.4
	No	21	13.1
	Not Sure	12	7.5
Hepatitis B Virus Carriers can Transmit Infection?	Yes	138	86.3
	No	13	8.1
	Not Sure	9	5.6
Can Hepatitis B virus spread by casual contacts, such as handshaking, sharing clothes and utensils?	Yes	27	16.9
	No	119	74.4
	Not Sure	14	8.8
Hepatitis B virus spread by open wound/contact?	Yes	116	72.5
	No	32	20.0
	Not Sure	12	7.5
Does Hepatitis B virus spread by unsterilized syringes/needles?	Yes	149	93.1
	No	6	3.8
	Not Sure	5	3.1
Does Hepatitis B virus spread by unsafe sex?	Yes	131	81.9
	No	16	10.0
	Not Sure	13	8.1
Has Hepatitis B virus post exposure prophylaxis?	Yes	74	46.3
	No	23	14.4
	Not Sure	63	39.4
Can Hepatitis B virus be cured/treated?	Yes	118	73.8
	No	20	12.5
	Not Sure	22	13.8
Can Hepatitis B virus be transmitted during childbirth?	Yes	121	75.6
	No	23	14.4
	Not Sure	16	10.0
Can the vaccine prevent hepatitis B?	Yes	138	86.3
	No	13	8.1
	Not Sure	9	5.6
Do you think hepatitis B virus has laboratory test?	Yes	132	82.5
	No	8	5.0
	Not Sure	20	12.5
Can Vaccination be important for the protection of public health?	Yes	130	81.3
	No	29	18.1
	Not Sure	1	0.6
	No	36	22.5
	Not Sure	4	2.5
Have you ever screened for hepatitis B virus?	Yes	81	50.6
	No	79	49.4
Have you been vaccinated against hepatitis B virus?	Yes	80	50.0
	No	80	50.0
If yes, report number of doses?	1	24	15.0
	2	6	3.8
	3	43	26.9
	4	2	1.3
	5	2	1.3
If no, please specify why?	Lack of Time	44	27.5
	Fear of Side Effects	6	3.8
	Not a risk	30	18.8
Is Hepatitis B vaccine safe and effective?	Yes	135	84.4
	No	2	1.3
	Not Sure	23	14.4

This was statistically not significant. P= (0.38) As far as comparison with the address is concerned, mean knowledge score of urban and rural respondents was 1.34 SD ± 0.24 and 1.41 SD ± 0.3 respectively which was statistically significant. P= (0.03) Table 3

**Table No.3: Mean knowledge score of urban and rural respondents**

Year of Study	N	Mean	Std. Deviation	P value
1 <sup>st</sup> Year	80	1.4542	0.29970	0.05
Final year	80	1.2658	0.21499	
Gender of Respondent				0.38
Male	69	1.4106	0.28523	
Female	91	1.3216	0.26506	
Resident of Respondent				0.03
Urban	123	1.3423	0.24481	
Rural	37	1.4189	0.36084	
Year of Study	Hepatitis B Virus Causes Liver Cancer			P Value
	Yes	No	Not Sure	
1 <sup>st</sup> Year	52 (65.0%)	16 (20.0%)	12 (15.0%)	0.00
Final Year	75 (93.8%)	5 (6.3%)	0 (0.0%)	
Year of Study	Hepatitis B Virus Carriers can Transmit Infection			0.04
	Yes	No	Not Sure	
1 <sup>st</sup> Year	67 (83.8%)	5 (6.3%)	8 (10.0%)	
Final Year	71 (88.8%)	8 (10.0%)	1 (1.3%)	
Year of Study	Hepatitis B virus spread by casual contacts, such as handshaking, sharing clothes and utensils?			0.00
	Yes	No	Not Sure	
1 <sup>st</sup> Year	19 (23.8%)	51 (63.8%)	10 (12.5%)	
Final Year	8 (10.0%)	68 (85.0%)	4 (5.0%)	
Year of Study	Hepatitis B virus spread by unsterilized syringes/needles?			0.01
	Yes	No	Not Sure	
1 <sup>st</sup> Year	70 (87.5%)	5 (6.3%)	5 (6.3%)	
Final Year	79 (98.8%)	1 (1.3%)	0 (0.0%)	
Year of Study	Hepatitis B virus spread by unsafe sex?			0.087
	Yes	No	Not Sure	
1 <sup>st</sup> Year	63 (78.8%)	12 (15.0%)	5 (6.3%)	
Final Year	68 (85.0%)	4 (5.0%)	8 (10.0%)	
Year of Study	Has Hepatitis B virus post exposure prophylaxis?			0.00
	Yes	No	Not Sure	
1 <sup>st</sup> Year	21 (26.2%)	14 (17.5%)	45 (56.3%)	
Final Year	53 (66.3%)	9 (11.3%)	18 (22.5%)	

Year of Study	Can Vaccine prevent Hepatitis B?			0.00
	Yes	No	Not Sure	
1 <sup>st</sup> Year	62 (77.5%)	12 (15.0%)	6 (7.5%)	
Final Year	76 (95.0%)	1 (1.3%)	3 (3.8%)	
Year of Study	Do you think hepatitis B virus has laboratory test?			0.00
	Yes	No	Not Sure	
1 <sup>st</sup> Year	56 (70.0%)	8 (10.0%)	16 (20.0%)	
Final Year	76 (95.0%)	0 (0.0%)	4 (5.0%)	
Year of Study	Have you ever screened for hepatitis B virus?			0.00
	Yes	No		
1 <sup>st</sup> Year	19 (23.8%)	61 (76.3%)		
Final Year	62 (77.5%)	18 (22.5%)		
Year of Study	Is Hepatitis B vaccine safe and effective?			0.04
	Yes	No	Not Sure	
1 <sup>st</sup> Year	62 (77.5%)	1 (1.3%)	17 (21.3%)	
Final Year	73 (91.3%)	1 (1.3%)	6 (7.5%)	

There was a strong association between different knowledge related variables with year of study. Table 3

## DISCUSSION

Infection with HBV is not only preventable and treatable but also has post-exposure prophylaxis.<sup>11-12</sup> Medical students are at risk of acquisition of infection and should take precautions while dealing with patients<sup>13, 14</sup> because previous studies have reported that during health professional training there is high occupational risk of getting HBV infection<sup>15</sup> the current study was done to evaluate knowledge, attitude and practice toward hepatitis B among medical students of 1<sup>st</sup> year and final year. Results showed that they had deficiencies in their knowledge and poor practice towards hepatitis B virus and its Vaccination. A study was done among students of medicine and health sciences in Northwest Ethiopia, most of the variables were same in both studies although the knowledge level of most of our respondents about modes of transmission and prevention was good inconsistent with that study but our respondents knowledge about post-exposure prophylaxis was low 46.3%(26.3% of 1<sup>st</sup> year and 66.3% of final year) while in their survey it was (67.1%). Our practice towards HBV was better as among our respondents 50.6%(23.8% of 1<sup>st</sup> year and 77.5% of final year) were screened and 50% (36.3% of 1<sup>st</sup> year and 63.8% of final year) were vaccinated and among those who vaccinated 57.1% (33.3% of 1<sup>st</sup> year and 76% of final year) were fully vaccinated while in that study only 9.3% were screened,4.9% were

vaccinated and 2% were fully vaccinated.<sup>1</sup>A study was done in Cameroon among medical students which showed their knowledge level regarding modes of transmission was also good, inconsistency with our study but among their respondents only 36.9% were aware about the safety of vaccine while 84.4% (77.5% of 1<sup>st</sup> year and 91.3% of final year)of our respondents were aware of its safety and less number of their respondents were adequately vaccinated only 30.6%.<sup>16</sup> To optimize the level of prevention among medical students, scientific knowledge regarding modes of transmission of hepatitis B virus is of great importance<sup>17, 18</sup> A previous study from Karachi showed that their clinical students had better knowledge than pre-clinical ones similarly in our study final year students had better knowledge than 1<sup>st</sup> year respondents.<sup>19</sup> A study which was carried out among medical students of Karachi which showed better results as 79% of their students were vaccinated against hepatitis B and 70.6% of them were fully vaccinated.<sup>20</sup> and their knowledge level was satisfactory. A previous study among medical students of Iraq showed that 22% of their preclinical while 68% of their clinical students were vaccinated against HBV<sup>21</sup>this study shows similar results to our study, as in our settings final year students have more exposure to the patients and have better knowledge and awareness about the disease than 1st year students, so this might be the reason that more respondents of final year were vaccinated and among those who were not vaccinated from final year main reason was lack of time(86.2%) while among non-vaccinated 1<sup>st</sup> year students main reason was they believe that they were not at risk(51%) other reason was fear of side effects (11.8%). The commonest reason of not being vaccinated against HBV is lack of awareness<sup>22</sup>

## CONCLUSION

The overall knowledge of Hepatitis B virus was good among the study participants. But their practices were not reasonable and significant. So, consistent training and awareness seminar about Hepatitis B desired to be carried out. Further studies are directed involving all kind and ranks of health care professionals.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Bullying in Classrooms: The Role of Parental Physical and Psychological Aggression

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## ABSTRACT

**Objective:** To investigate the relation of parental education and their physical and psychological aggression towards children, and to explore the impact of parental aggression (Physical and psychological) on classroom bullying.

**Study Design:** Observational / descriptive study.

**Place and Duration of Study:** This study was conducted at the Secondary schools of Mansehra, Abbotabad, and Haripur Districts of Hazara Division from October, 2013 to March, 2014.

**Materials and Methods:** A sample of 1438 was selected to collect data by using two questionnaires. One questionnaire was about Bullying while the other was about parental aggression. Analysis of collected was done through mean, standard Deviation, and multiple regression model using SPSS 20 version.

**Results:** The mean and standard deviation value of physical aggression of parents was (3.96±1.23) while that of psychological aggression was (3.97±1.08). Additionally, the education level of father was negatively correlated with their physical aggression ( $r=-0.29$ ,  $\alpha=0.000$ ) as well as psychological aggression ( $r=-0.28$ ,  $\alpha=0.000$ ). Similarly, mothers' level of education was significantly negatively correlated with both physical aggression ( $r=-0.16$ ,  $\alpha=0.000$ ) and psychological aggression ( $r=-0.14$ ,  $\alpha=0.000$ ). The results further indicated that parental physical aggression ( $\beta=0.16$ ,  $t=5.20$ ,  $\alpha=0.000$ ) positively predicted classroom bullying.

**Conclusion:** The highly educated parents show less aggression towards their children. Aggressive behavior of parents paves the way for their children to become victims of bullying in classroom.

**Key Words:** Bullying, Physical Aggression, Psychological Aggression, Secondary School Students

**Citation of article:** Shah SA, Majoka MI, Elahi H. Bullying in Classrooms: The Role of Parental Physical and Psychological Aggression Med Forum 2017;28(6):74-77.

## INTRODUCTION

The multidimensional phenomenon of bullying is commonly observed in quite a few nations of the world<sup>1</sup> and is strongly linked with school environment. It has also links with family environment, relationship with peers, as well as community and culture<sup>2</sup> having many significant effects<sup>3</sup>. Globally, about 32% of the children face bullying<sup>4</sup>. Social skills play important role in dealing with bullying which are acquired in home environment and reflected in their behavior<sup>5</sup>. Further, these skills affect their relation with peers in schools<sup>6</sup>. Therefore, researchers remain interested in effect of family environment and classroom bullying<sup>7</sup>. Usually the victims face aggression from an individual or group among the peers<sup>8</sup>. Those who cause inconvenience to others or become victims are called bully/victim<sup>9</sup>. The victims who become target of bullying<sup>10</sup> usually belong to adverse family environments<sup>11</sup> and from the perspectives of social learning<sup>12</sup> the victims having

unpleasant relations with their peers belong to homes where parents adopt undesirable behaviors towards them in the form of shouts, hitting, and hostility<sup>6</sup>. Consequently they become victims to peer bullying<sup>13</sup>. On the other hand, desirable behaviors of parents help children to avoid such adjustment problems<sup>14</sup>. Therefore, contrary to general parental styles<sup>15</sup>, the individual parental behaviors have found to have their significant effects on children in research studies<sup>16</sup>. Such studies like supervision style of parents<sup>17</sup>, parental warmth<sup>18</sup>, their overprotective behaviors<sup>19</sup>, have been conducted globally to explore their individual effects on children. Studies regarding bully and victims have been conducted in Pakistan as well<sup>20</sup>. But the questions remain in mind that to what extent parental aggression is used and whether such aggression adds to the children to become victims to bullying. To find the answers of these questions, the current study was conducted to investigate the relation of parental education and their physical and psychological aggression towards children, and to explore the impact of parental aggression (Physical and psychological) on classroom bullying.

## MATERIALS AND METHODS

The following headings represent the aspects of conducting this study.

**Sample:** A sample of 1438 students was randomly selected from tenth class of Hazara Division.

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Received: April 20, 2017; Accepted: May 12, 2017

**Procedure:** The required information was collected from 84 schools of Mansehra, Haripur, and Abbotabad Districts of Khyber Pakhtunkhwa by personally visiting the selected schools. The questionnaires regarding bullying and parental aggression were developed after careful review of literature related to the topic. The developed questionnaires were validated experts of the field. A sample of 1438 students was selected through stratified random sampling technique. After receiving formal consent from the heads/ principals of respective schools, the students were approached. After ensuring the anonymity and confidentiality to the selected students, they were requested to respond about the specific behaviors of their parents rating from always (5) to Never (1). Similarly, they were requested to reflect on existence or otherwise of bullying behaviors in the class. Such behaviors were to be rated from always (5) to Never (1) as well.

**Questionnaires:** Two questionnaires were used to conduct this research study. One Questionnaire was about parental physical and psychological aggression while the other was about bullying practices in classroom.

**RESULTS**

A pilot study was conducted on hundred students for the purpose of finding the reliability of the questionnaires. The Cronbach Alpha reliability coefficient of parental physical and psychological was 0.93 whereas Cronbach Alpha reliability coefficient of questionnaire about bullying was 0.72.

**Table No. 1: Mean and standard Deviation score of the variables**

Variables	N	Mean	S. D
Physical aggression of parents	1438	3.96	±1.2
Psychological aggression of parents		3.79	±1.1
Bullying in classrooms		3.99	±0.8

**Table No.2: Relationship of parental level of education and their physical and psychological aggression**

		Physical aggression	Psychological aggression
Father's education	Pearson Correlation	-0.293**	-0.276**
	Sig. (2-tailed)	0.000	0.000
	N	1438	1438
Mother's Education	Pearson Correlation	-0.157**	-0.136**
	Sig. (2-tailed)	0.000	0.000
	N	1438	1438

The average and standard deviation scores of parental physical aggression, psychological aggression, and bullying in classrooms are highlighted in table 1. The results reflect that parents use physical aggression (3.96±1.2) more towards their children. Similarly, bullying practice in classrooms is high (3.99±0.8). Table 2 highlights the relationship of parental level of education and their physical and psychological aggression. The results depict that there is significant negative relationship ( $r = -0.293, \alpha = 0.000$ ) between fathers' level of education and their physical aggression. Similarly, there significant relationship ( $r = -0.276, \alpha = 0.000$ ) between fathers' level of education and their level of psychological aggression. These results indicate that the more educated fathers do not use aggression as a tool to regulate the behavior of their children.

Table 2 further elaborates the relationship of mothers' level of education and their use of physical and psychological aggression. The results depict that there is significant negative relationship ( $r = -0.157, \alpha = 0.000$ ) between mothers' level of education and their physical aggression. Similarly, there significant relationship ( $r = -0.136, \alpha = 0.000$ ) between mothers' level of education and their level of psychological aggression. These results indicate that the more educated mothers do not use aggression as a tool to regulate the behavior of their children.

**Table No. 3: Impact of Parental Aggression on Classroom Bullying**

	B	Standard. Error	t-value	$\alpha$ value
Physical aggression of parents	0.16	0.03	5.20	0.000
Psychological aggression of parents	0.06	0.04	1.70	0.090
R=0.188	R <sup>2</sup> =0.035	Adj. R <sup>2</sup> =0.034	F=26.250	$\alpha = 0.000$

Dependent variable: Classroom bullying

Table 3 highlights the impact of physical aggression and psychological aggression on becoming victim to bullying. The results indicate that parental aggression (both physical and psychological) causes 3.5% changes in classroom bullying. Furthermore, one unit increase in parental physical aggression cause 0.16 units significant increase ( $t = 5.20, \alpha = 0.000$ ) classroom bullying. Similarly, one unit increase in parental psychological aggression leads to bring 0.06 units insignificant increase ( $t = 1.70, \alpha = 0.090$ ) in classroom bullying.

**DISCUSSION**

This research is conducted for the purpose of finding the level of parental use of physical as well as

psychological aggression to their children of secondary level, and to find out their effects on classroom bullying. The results of this research may help to public in general and health practitioners in particular about the effects of parental aggression on social adjustment and developing relationships of children with their peers.

A high parental aggression (both physical and psychological) was highlighted in the results of this study. Same results were produced by Connolly and O'Moore, (2003)<sup>21</sup>. Similarly, results indicated high classroom bullying in the target population. These results are consistent with results of Craig, (1998)<sup>22</sup> who explored that 77% physical, mental, or verbal bullying caused to the victims.

Our results further elaborate that as the parents become more educated, their level of awareness improves and they use less aggression towards their children. Parental education, especially fathers' increase in level of education significantly decreases the chances of children becoming victim to bullying in the classroom. It true that low educated parents are likely to have children having greater risk of becoming victims of violence<sup>23</sup>.

Our results indicate that parental aggression has a profound positive influence on bullying in classroom. It is confirmed that home environment having inconsistent behavior from parents, relying on punishment, and show of hostility towards children creates a chance that they become victims in schools<sup>24</sup> while support and tender feeling from parents towards children help their children to effectively deal with problems<sup>25</sup>.

## CONCLUSION

The highly educated parents show less aggression towards their children. Aggressive behavior of parents paves the way for their children to become victims of bullying in classroom.

**Acknowledgment:** The Authors are thankful for the cooperation of school Principals/Heads, class teachers, and students of tenths class of respective schools in conducting this research.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency of Raised HbA1c in Patients Presenting with Ischemic Stroke

Sumaira Saleem, Raheela Shaheen and Nabeela Saher

## ABSTRACT

**Objective:** To determine the frequency of increased level of HbA1c in patients with previously normal blood glucose level within the last 6 months came with ischemic stroke in a tertiary care hospital.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the Medical indoor of Nishtar Hospital Multan from august 2015 to January 2016.

**Materials and Methods:** Total 90 patients from medical indoor were selected. Raised HbA1c level was set according to American Diabetes Association criteria.

**Results:** The patient Mean age was  $55.6 \pm 12.6$  years. The 53.2% of patients were found in the age group range from 61-80 years. Total 90 patients, 59 (66%) were males and 31 (34%) were females. The ratio of male to female was 2: 1. Out Of the 90 cases, 34 (37%) were with raised HbA1c level while 56 (63%) were with normal HbA1c. In the cases with the raised HbA1c, 20 (60%) cases with raised HbA1c patients were males and 14 (40%) were females. Fifty-six patients had normal HbA1c, 41 (73%) were males and 15 (27%) were females.

**Conclusion:** There is a significant correlation between HbA1c and stroke in the patients those who have normal blood glucose levels over the past 6 months. HbA1c should be used as a regular screening test because it indicates the chronic status of blood Glucose level with a single blood sugar level. Further researches should be done to explore HbA1c with ischemic stroke that can help us in the better management of Stoke patients in future.

**Key Words:** ischemic stroke, HbA1c.

**Citation of article:** Saleem S, Shaheen R, Saher N. Frequency of Raised HbA1c in Patients Presenting With Ischemic Stroke. Med Forum 2017;28(6):78-80.

## INTRODUCTION

The rapid development of clinical symptoms of focal or diffuse neurological deficits (limb weakness, loss of sensation, speech, dysphagia) lasted for more than 24 hours with no apparent cause, just vascular findings on CT scan.<sup>1</sup> The symptoms of cerebral ischemia may be transient for a second to a few minutes, or may last longer period of a time<sup>2</sup> which may be due to ischemia caused by obstruction or hemorrhage.<sup>3</sup> The affected area of the brain cannot perform function, which will lead to one or more limbs weakness of the body, unable to understand or develop speech, or cannot see the visual field.<sup>4</sup>

The most important risk factors for stroke are hypertension and atrial fibrillation.<sup>5</sup> Other risk factors include high blood cholesterol, diabetes, cigarette smoking (active and passive),<sup>6</sup> alcohol consumption<sup>7</sup> and drug use<sup>8</sup>, lack of physical activity, obesity, red meat consumption<sup>9</sup> and Unhealthy diet<sup>10</sup>.

The stroke by the drug use is mostly due to cocaine, amphetamine causing hemorrhagic stroke.<sup>11</sup>

Stroke is 4<sup>th</sup> leading causes of death and disability among adults in most of the countries.<sup>12</sup> Men 25% are more likely to suffer from stroke than women<sup>13</sup>. Disability affects 75% of stroke survivors enough to lower their employability<sup>14</sup>. Stroke can affect the body, the spirit, the mood, or the combination of the three. The results of stroke are broadly dependent on the size and location of lesion<sup>15</sup>. The 30 to 50% of stroke survivors have post-stroke depression, which is characterized by lethargy, irritability, sleep disorders, reduced self-esteem and withdrawal<sup>16</sup>.

Diabetic patients have more than doubled chances to develop ischemic stroke as compared to the individuals without diabetes. HbA1c levels are proportional to the average blood glucose levels over the previous four weeks to three months.<sup>17</sup> The monitoring of HbA1c in diabetic patients may improve outcome.<sup>18</sup> There are plenty of people, do not know about their elevated HbA1c levels before they have blood lab work.<sup>19</sup> The values of HbA1c  $\geq 6.5\%$  is considered as abnormal<sup>20,21</sup>.

There is a strong linked between elevated HbA1c and ischemic stroke shown by a study on Caucasian population. There are also bulge in HbA1c and strong correlation with the ischemic stroke in Caucasian population. The study by the Geberhiwot et al<sup>22</sup>

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Received: April 16, 2017; Accepted: May 20, 2017

showed that 23% of patients with normal blood glucose levels had elevated HbA1c level. Establishment of association of HbA1c with stroke; we can prevent this catastrophic disease from causing major mortality and permanent disability.

## MATERIALS AND METHODS

This is a cross-sectional study was carried out at Medical indoor of Nistar Hospital Multan, Punjab over a period of 6 months from august 2015 to January 2016. Ninety patients from medical ward were selected. Raised HbA1c level was set according to American Diabetes Association criteria. Patient with above 20 years of age, ischemic stroke and blood glucose levels normal in the past 6 months were included. All patients taking steroids in the long run, patients with neurological dysfunction due to occupying lesions and meningitis or encephalitis were excluded. The data was analyzed by SPSS v 21.

## RESULTS

The patients Mean age was  $55.6 \pm 12.6$  years. 53.2% of patients were found in the age group range of 61-80 (Table 1). Total 90 patients, 59 (66%) were males and 31 (34%) were females. The ratio of male to female is was 2: 1 (Table 2). Of the 90 cases, 34 (37%) had raised HbA1c level while 56 (63%) were with normal HbA1c (Table 3). In the cases with the raised HbA1c, 20 (60%) cases with raised HbA1c patients were males and 14 (40%) were females. (Table 4). Fifty-six patients had normal HbA1c, 41 (73%) were males and 15 (27%) were females. (Table 5).

**Table No. 1: Distribution of Patients with age**

Age	Frequency	Percentage
20-40	10	11.11
41-60	32	35.56
61-80	48	53.2

**Table No. 2: Distribution of Patients according to Sex**

Sex	Frequency	Percentage
Male	59	65
Female	31	35
Male: Female Ratio		2:1

**Table No. 3: Distribution of Patients according to HbA1c**

HbA1c	Frequency	Percentage
Raised	34	37
Normal	56	63

**Table No. 4: Gender Distribution according to HbA1c**

Gender	Frequency	Percentage
Males	41	73
Females	15	27

**Table No. 5: Gender Distribution according to normal HbA1c**

Gender	Frequency	Percentage
Male	20	60
Female	14	40

## DISCUSSION

Diabetic patients are at double risk of ischemic stroke as compared to non diabetic after correction of other associated risk factors. Many cohort studies have investigated the relationship between blood glucose levels and stroke and associated with the relationship between the fasting blood glucose levels and the postprandial blood glucose levels linked with stroke.<sup>23</sup> However, previous studies of fasting plasma glucose levels and prevalence of strokes in non-diabetic showed mixed results,<sup>24</sup> This may be due to a single glucose measurement with high self-alteration, is not a measure of a person's chronic hyperglycemia, especially in people without dominant diabetes.

HbA1c levels is accurate and is accurate to measure the risk of chronic blood glucose levels and more closely related complications than single or sequential blood glucose levels. The patient presented to us does not represent the population or class of a particular region; however, the majorities are of moderate or lower socioeconomic status. We investigated total 84 patients of ischemic stroke and identified the frequency of HbA1c in these patients.

We compare our findings with other international published data. The study by the Geberhiwot et al<sup>22</sup> in 2004 showed that 23% of patients with normal blood glucose levels had high HbA1c level, which was 34% in our study. The study of HG et al in non-diabetic patients with elevated HbA1c is associated with an odd number of ischemic strokes (9.59 odd's ratio).<sup>25</sup> According to a case-control study, HbA1c > 6.5% was associated with odds ratio of 2.95 for stroke.<sup>26</sup> According to a cohort study with a HbA1c > 7% associated with a relative risk of 2.83 odds ratio of stroke<sup>27</sup>. Elevated levels of chronic hyperglycemia indicated by HbA1c are associated with an increased risk of stroke by 17% for each 1% of elevation of HbA1c<sup>28</sup>. Our study showed a positive relationship between raised HbA1c and ischemic stroke.

## CONCLUSION

There is a significant correlation between HbA1c and stroke in the patients those who have normal blood glucose levels over the past 6 months. HbA1c should be used as a regular screening test because it indicates the chronic status of blood Glucose level with a single blood sugar level. Further researches should be done to explore HbA1c with ischemic stroke that can help us in the better management of Stoke patients in future.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency of Anemia in Patients Visiting a Tertiary Care Hospital in Multan, Pakistan

Anemia in Female and Children of Multan

Nabeela Saher, Raheela Shaheen and Sumaira Saleem

## ABSTRACT

**Objective:** To identify the frequency of anemia among the patients who visited the Medical Outdoor and Indoor of a Nishtar Medical College and Hospital, Multan.

**Study Design:** Observational / descriptive / cross sectional study

**Place and Duration of Study:** This study was conducted at the Medical Outdoor and Indoor of a Nishtar Medical College and Hospital, Multan from May to June 2015

**Materials and Methods:** All non-pregnant women, all female patients with Hb  $\leq$  10gm / dl and the children up to 14 years of age were included. All children above 14 years of age, all pregnant women, and patients with history of surgery within two months, and blood transfusions within two months before admission were excluded. The non probability convenient sampling technique was used. Total 120 anemic patients were included in our study, Out of which 84 were females and 36 were children.

**Results:** The Mean  $\pm$  SD of Hb in female was  $11.15 \pm 2.10$  and in children  $12.25 \pm 2.75$  respectively. Total 120 anemic patients were included in our study, Out of which 84 were females and 36 were children. The 47 (56%), 20(23%), and 17(21%) females were suffering from mild, moderate and severe form of anemia respectively. The 23(65%), 9(24%), and 4(11%) children were suffering from mild, moderate and severe form of anemia respectively.

**Conclusion:** The frequency of anemia in patients visiting a tertiary care hospital Multan is high. The frequency of anemia is higher in female patients as compared with children even in the case of pregnant women and patients with a history of surgery within two months were excluded.

**Key Words:** Hemoglobin; Anemia; Children.

**Citation of article:** Saher N, Shaheen R, Saleem S. Frequency of Anemia in Patients Visiting a Tertiary Care Hospital in Multan, Pakistan. Med Forum 2017;28(6):81-83.

## INTRODUCTION

Anemia comes from ancient Greek: the lack or decreased of blood. Anemia is defined as a reduction in RBC or hemoglobin in the blood.<sup>1</sup> Anemia has been defined as "the number of red blood cells or their oxygen carrying capacity that is not sufficient to meet the physiological needs of the situation, which vary due to age, gender, and height, smoking and pregnancy status."<sup>2</sup> It is considered as an important global health problem consequences of the human health, social and economic well-being.<sup>3</sup> It is widely prevalent in the developing countries and according to World Health Organization (WHO); the world population of two billion is anemic.<sup>2</sup> There are several complications of anemia, especially in pregnant women and children and most lethal complication observed in pregnant women and causes adverse effects on both mother and child.<sup>4</sup>

The According to the World Health Organization estimates; non-pregnant women with age 15-49 years in Pakistan, 51% of the non pregnant had the hemoglobin concentration that is less than 12g / dl, the overall average hemoglobin concentration is 11.7g / dl. Out of the pregnant women age 15 to 49-year, 50% of the pregnant women had hemoglobin concentrations 11g / dl or less, the overall average hemoglobin concentration of pregnant women is 10.9gm / dl.<sup>5</sup>

## MATERIALS AND METHODS

This cross sectional study was conducted among the patients who visit the Medical outpatient or inpatient department of a tertiary care hospital Multan, Pakistan, The sample was collected from patients (both indoors and outdoors) visited Nishtar Hospital Multan from May to June 2015.

All non-pregnant women, all female patients with Hb  $\leq$  10gm / dl and the children up to 14 years of age were included. All children above 14 years of age, all pregnant women, and patients with history of surgery within two months, and blood transfusions within two months before admission were excluded. The non probability convenient sampling technique was used. Total 120 anemic patients were included in our study, Out of which 84 were females and 36 were children..

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Received: April 18, 2017; Accepted: May 15, 2017

## RESULTS

This retrospective cross sectional study was conducted at a teaching hospital Multan. The samples were collected from patients (both indoors and outdoors) visited Nishtar Hospital Multan from May to June 2015. Hemoglobin levels below 10 gm / dl were considered anemic.

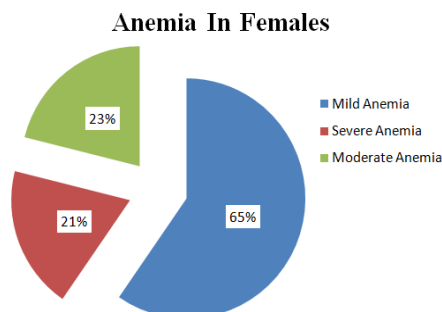
The Mean  $\pm$  SD of Hb in female was  $11.15 \pm 2.10$  and in children  $12.25 \pm 2.75$  respectively. (Table 1) .Total 120 anemic patients were included in our study, Out of which 84 were females and 36 were children. The 47 (56%), 20(23%), and 17(21%) females were suffering from mild, moderate and severe form of anemia respectively. The 23(65%), 9(24%), and 4(11%) children were suffering from mild, moderate and severe form of anemia respectively. (Table 2).

**Table No. 1: Hb in Study population**

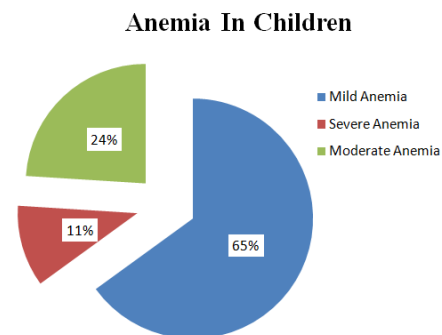
Hb (gm/dl)	Females	Children
Mean $\pm$ SD	11.15 $\pm$ 2.10	12.25 $\pm$ 2.75
Ranges	7.5-11.25	8.5-12.50
Total	84	36

**Table No. 2: Grades of anemia in study population**

Grades	Females	Percentage	Children	%age
Mild	47	56%	23	65%
Moderate	20	23%	9	24%
Severe	17	21%	4	11%
Total	84		36	



**Figure No.1: Grades of anemia in females**



**Figure No.2: Anemia in children**

## DISCUSSION

Anemia is prevalent in Pakistan, and its prevalence in males and pregnant women has been reported in many World health organization and local reports. In this study, we found that the frequency of anemia in children and non-pregnant women was very high. Pakistan National Health Survey estimates that the urban and rural differences and socioeconomic status, the prevalence rate of anemia among young men in Pakistan ranged from 12% to 28%, while anemia rate among women of childbearing age ranged from 3.8% - 51.5%.<sup>6</sup>

Several studies have been conducted on this issue. In South Asia anemia is (53%) more prevalence than in the rest of the world. A study in Taiwan highlights the prevalence of anemia among children and the adults as a public health problem in the people with intellectual disabilities.<sup>7</sup> A study conducted in the underdeveloped area of Vehari, showed that the prevalence of anemia among children was 47%.<sup>8</sup> The prevalence of anemia in pregnant women was 90.5%, indicating a physiological status of anemia.<sup>9</sup>

Iron fortification has been used to prevent anemia in certain countries, depending on the type of food being fortified.<sup>10</sup> According to Assuncao et al report in Brazil, there was no affect on Hb level or anemia reduction when used iron fortified wheat. Arcanjo et al reported that by using iron fortified rice, Hb levels increased, the prevalence of anemia decreased<sup>11</sup>. This difference in the different types of fortified results can be attributed to the fact that phytates present in wheat reduce iron absorption and lead to no improvement in hemoglobin levels.

Anemia during pregnancy is gaining attention more and more around the world; it applies not only to developing countries but also to the developed countries. According to a study by Adnan Bashir et al. (2015) that was conducted to analyze the frequency of anemia among pregnant women, the frequency of anemia was 57% in pregnant women who participated in prenatal clinics in tertiary care hospital in Pakistan.<sup>12</sup> This ratio is much higher (40.4%) than in Nigeria. This difference may be due to poverty, and people are less likely to have access to health education and health facilities.<sup>13</sup> However, Adnan Bashir's work rate was lower (91%) as compared to previous Pakistani studies.<sup>14</sup> In our study, we excluded reports from antenatal clinics, and the female population reported in this study was young women and the elderly population. The high frequency (48.33%) found in the female population in this study showed that women who are at increase the risk of pregnancy complication due to anemia, but women generally suffer from

anemia. All women should be encouraged / prescribed iron supplements before and after pregnancy to avoid the adverse effects of anemia in later life.

Anemia is also one of the major health problems prevalent in children, especially in developing countries. In our study, the frequency of anemia among children was 25%, compared with the frequency of anemia among school going children in Karak in Khyber Pakhtun khwah, Pakistan.<sup>15</sup> The proportion of anemia in Karak was 34%. The prevalence of anemia in children in the United States was (7%). This means that an appropriate diet is needed to reduce the incidence of anemia in children.<sup>16</sup>

## CONCLUSION

The frequency of anemia in patients visiting a tertiary care hospital in Multan is very high. The frequency of severe and moderate anemia is more common in female patients, and mild anemia is common in children is more. The frequency of anemia is higher in female patients as compared with children even in the case of pregnant women and patients with a history of surgery within two months were excluded. The High frequency is very alarming and requires an effective strategy to prevent this public health problem.

**Recommendation:** This frequency of anemia is high. Most of the time, patients with mild and moderate anemia have little or no attention. This study shows a significant contribution to the incidence of anemia in both groups. Therefore, we recommend revising the anemia control methods in our guidelines so that the prevention strategy must be directed to all patients, regardless of their hemoglobin levels or clinical status. Routine screening should be provided for anemia. A sustainable health education program should be developed. In children the prevention strategies are included continuous use of insecticide-treated nets, supplementation for low birth weight infants, and use of fortified foods. Foods such as meat, ascorbic acid-rich foods (fruits, juices) or both can eat as a variety of diets to enhance iron absorption. Avoid tea or coffee with meals.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency, Types and Immediate Outcome of Corrosive Ingestion in Children

Adnan Bashir<sup>1</sup>, Khadijah Abid<sup>2</sup>, Nabeel Naem Baig<sup>3</sup> and Om Parkash<sup>3</sup>

## ABSTRACT

**Objective:** To determine the frequency, types of common corrosives ingested & assess their immediate outcome in terms of survival, admission to intensive care unit and mortality in children presenting with acute poisoning.

**Study Design:** Cross-sectional study.

**Place and Duration of Study:** This study was conducted at the Department of Pediatric Medicine, National Institute of Child Health, Karachi, from 6 Oct 2010 to 5 Apr 2011.

**Materials and Methods:** A total of 105 children with history of ingestion of poisoning substance were enrolled in the study after informed consent on justification of inclusion and exclusion criteria. Children were evaluated for frequency of corrosive ingestion and the type of corrosive substance ingested. Immediate outcome in terms of discharge, admission within 24 hours and death were also recorded. The data was analyzed by using SPSS version 16.

**Results:** Mean age of children was  $3.9 \pm 2.9$  years including 56(53.3%) males and 49(46.7%) females. Corrosive ingestion was found in 14 (13.3%) of children. Ingestion of sodium hypochlorite was found in 8 (57.1%) children followed by NaOH in 4 (28.6%) and sulphuric acid in 2 (14.3%) children. Ten (71.4%) of the children were discharge from ED while 3 (21.4%) children admitted in ICU and 1 (7.1%) child was died. Although the frequency corrosive ingestion with respect to age and gender was insignificant ( $P$ -value $>0.05$ ).

**Conclusion:** Proportion of corrosives ingestion was high (13.3%) in this study. Sodium hypochlorite was the most common corrosive substance ingested while sulphuric acid was the least common. Regarding the outcomes, survival rate was high (92.9%) with relatively high death rate 7.1%.

**Key Words:** Corrosive ingestion, Acid, Alkali, NaOH

**Citation of article:** Bashir A, Abid k, Baig NN, Parkash O. Frequency, Types and Immediate Outcome of Corrosive Ingestion in Children. Med Forum 2017;28(6):84-87.

## INTRODUCTION

An unsafe environment is a substantial risk factor for child injury and violence. In this manner speaking to a huge reason of child death and disability especially in developing countries, where 95% of all youngster injury deaths occur.<sup>1,2</sup> Among those injuries that are caused by an hazardous situation, the accidental ingestion of corrosive substances is declining in high-income countries<sup>3-5</sup> but not in developing countries,<sup>6</sup> where it is very huge, particularly among uneducated individuals with poor financial status.

Accidental poisoning was found in 41.8% of children, 86.5% cases were found to use the poison orally where as 13.4% of cases were found due to inhalation.

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Received: April 01, 2017;

Accepted: May 04, 2017

Half of the poisoning cases (50.7%) had to be admitted because of their seriousness but 37.3% were discharged from emergency after emergency treatment.<sup>7</sup>

Corrosive ingestion in a local study was found to be 11% in children attending emergency of a tertiary care hospital.<sup>8</sup> A three year study from 2005-2008 showed that among the children with corrosive ingestion the age range was 14 months to 15 years, 58.4% were male and 41.6% females, there were 19.6% of admission within 24 hours and the rest 80.4% discharged after giving emergency treatment and only 2(6.8%) died.<sup>9</sup> In a study by Al-Binali et al, reported that mean age of patients was  $28 \pm 20$  months. Different types of corrosives were encountered. The most common type were sodium hypochlorite (Bleach) in 50%<sup>10</sup> caustic soda (NaOH) 48% and sulphuric acid 39%.<sup>11</sup>

The present study is planned to estimate the burden of corrosive poisoning its type and immediate outcome, so that the data generated could be used for planning and resource allocation for management and awareness program so as to cut down its morbidity and mortality.

## MATERIALS AND METHODS

This cross-sectional study was carried out at the Department of Pediatric Medicine, National Institute of Child Health, Karachi, from 6 Oct 2010 to 5 Apr 2011. The sample size was calculated by using WHO sample

size calculator, based on frequency of corrosives ingested as 11%<sup>8</sup>, margin of error as 6%, n= 105 children. Non- probability consecutive sampling was done. All pediatric patients of 6 months to 12 years of age of either gender with history of acute poisoning were included in the study. Patients with known other substance like drugs, kerosene oil ingestion, organ phosphorus poisoning, animal or insect bite were excluded.

Approval from ethical committee and an informed consent from the attendant were taken. All children brought to the emergency department of National Institute of Child Health fulfilling the inclusion criteria were included in the study. Children were labeled as a case of Corrosive ingestion and the type of corrosive substance ingested. Immediate outcome in terms of discharge, admission within 24 hours and death was also being recorded at 24 hours. These findings along with the demographic data were recorded in proforma.

All the data were analyzed through Statistical Package for Social Sciences (SPSS) version 16. All quantitative variables were presented as mean and standard deviation while qualitative variables were presented as frequency and percentages. Chi square test was applied with 95% confidence interval & p-value≤0.05 was taken as significant.

## RESULTS

A total of 105 Children brought to the emergency department of National Institute of Child Health with history of ingestion of poisoning substance from 6 months to 12 years were included in the study. Out of 105 children, 56 (53.3%) were male and 49 (46.7%) were female. The Mean±SD of children age was 3.9±2.9 years. Majority 72 (68.6%) of children had age between 1–5 years (Table 1).

**Table No.1: Characteristics of Children (n=105)**

Characteristics	No. of children (%)
Gender	
Male	56(53.3%)
Female	49(46.7%)
Age in years (Mean±SD)	3.9±2.9years
Age Groups	
<1 years	19(18.1%)
1-5 years	72(68.6%)
>5 years	14(13.3%)

**Table No.2: Mean volume ingested & time from ingestion to presentation to emergency (n=14)**

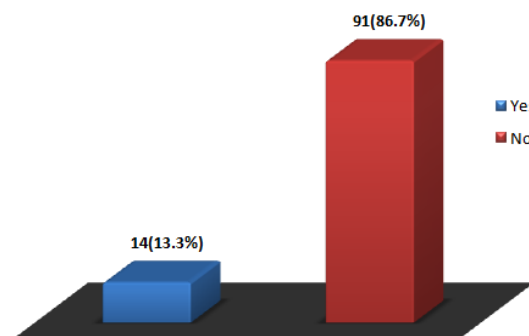
	Min - Max	Mean ±SD
Estimated Volume Ingested (ml)	10-50	25.3 ±16.4
Time from Ingestion to Presentation to Emergency (Hours)	1.4 – 4.5	2.6 ±0.90

**Table No.3: Immediate outcome of children with corrosive ingestion (n=14)**

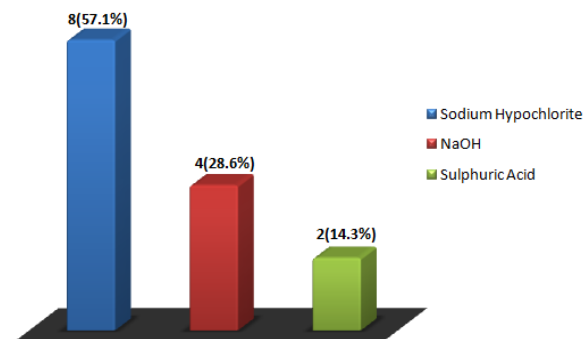
Outcomes	No. of children (%)	Time from ingestion to presentation to emergency (Mean ±SD)
Discharged	10(71.4%)	2.3±0.7
Admit in ICU	3(21.4%)	2.9±1.2
Died	1(7.1%)	4.2±1.5

**Table No.4: Stratification of corrosive ingestion with respect to age and gender**

Variable				P-value
Age	<1 year 2(10.5%)	1-5 years 11(15.3%)	>5 years 1(7.1%)	0.661
Gender	Male 9(16.1%)		Female 5(10.2%)	0.378



**Figure No.1: Corrosives ingested (n=105)**



**Figure No.2: Mean volume ingested & time from ingestion to presentation to emergency (n=14)**

However 14 (13.3%) children were ingested corrosive substances while 91 (86.7%) of children ingested non-corrosive substances (Fig. 1). Sodium hypochlorite was the most common corrosive substance ingested in 8(57.1%) of children followed by NaOH in 4(28.6%) children and 2(14.3%) of children ingested sulphuric acid (Fig. 2).

Mean±SD of estimated volume ingested was 25.3 ±16.4 ml range from 10 – 50 ml while mean time from Ingestion to presentation to emergency 2.6 ±0.90 hours range from 1.4 – 4.5 hrs(Table 2).

Most 10 (71.4%) of the children with corrosive ingestion were discharge from emergency department while 3 (21.4%) children were admitted in ICU and 1 (7.1%) child was died. Mean time from ingestion to presentation to emergency according to immediate outcomes is shown in (Table 3).

Frequency of corrosive ingestion with respect to age & gender is shown in (Table 4). 9 (16.1%) children were male and 5 (10.2%) female. Frequency of corrosives ingestion was high in age between 1 – 5 years i.e. 11 (15.3%). However, corrosive ingestion with respect to age & gender are statistically in insignificant (P-value>0.05).

## DISCUSSION

In children, corrosive substance injury is an important health problem that can cause severe complications and even death affecting upper gastrointestinal system, mainly esophagus, and adjacent tissues.<sup>13</sup> Generally, it occurs in pre-school childhood, but newborn cases with higher morbidity and mortality has also been reported.<sup>14</sup> More than 100,000 cases in children per year were reported in the USA<sup>15</sup> and thousands developed morbidity or mortality. The incidence is still under reported in Thailand. Children under the age of 5 years are most likely to unintentionally ingest these toxic agents.<sup>16,17</sup> They are prone to this incidence due to their unawareness of danger and their nature of curiosity. Most of the ingested agents are alkali and only about 20% are acidic agents.<sup>17</sup> According to Nuutinin et al,<sup>18</sup> the acidic agents cause burn injuries more often than alkali which more often develop into scars which is a result of coagulation necrosis of the tissue in contact. Severity may vary from no injury to a fatal outcome. One of the most important complications of corrosive acid injuries is gastric outlet obstruction.

In this study, 105 children with history of acute poison were included from emergency department over a period of six months. The mean age of cases was 3.9 ( $\pm 2.9$ ) years; the most frequent age of ingestion was between 1-5 years. 86.7% of children were under 5 years old. In a study by Al-Binali et al, reported that mean age of patients was  $28 \pm 20$  months.<sup>10</sup> Male to female ratio was found close to each other. Although corrosive ingestion has been reported a bit more frequently in boys, generally gender distribution is equal in the world.<sup>19</sup> A three year study from 2005-2008 showed that among the children with corrosive ingestion the age range was 14 months to 15 years, 58.4% were male and 41.6% females.<sup>9</sup>

Out of 105 children of acute poison, corrosive poisoning was seen in 13.3% children with mean age 3.5 ( $\pm 2.3$ ) years. Corrosive ingestion in a local study was found to be 11% in children attending emergency of a tertiary care hospital.<sup>8</sup> A study from Lahore reported corrosives poisoning in children was 23%.<sup>20</sup>

In a study from Hyderabad reported corrosive poisoning was 1.61% child who ingested detergent powder and presented with nausea.<sup>21</sup> A Brazilian study was reported the corrosive poisoning in children was 6.1%.<sup>22</sup>

Sodium hypochlorite was the most common corrosive substance ingested by 57.1% of children followed by NaOH in 28.6% children and 14.3% of children ingested sulphuric acid in this study. These results are in accordance with other national and international studies. A Saudi Arabian study reported the most common type was sodium hypochlorite (Bleach) in 50%<sup>10</sup> while a study from Nigerian reported that caustic soda (NaOH) 48% and sulphuric acid 39%.<sup>11</sup> In another study Bleach was the most ingested CS with the rate of 45.3% while NaOH was found in 10.8% of children.<sup>23</sup> Regarding outcomes 71.4% of the children with corrosive ingestion were discharge from emergency department while 21.4% children were admitted in ICU and only one (7.1%) child was died. A study from Lahore reported that out of 70 children with corrosive admitted in emergency, 95.7% were discharged and only 4.3% expired.<sup>24</sup>

Another study from Lahore also reported that 91% of 22 children aged less than 15 years exposed to poisons were discharged due to immediate response of the parents and 9% children were dead this death rate is high as compare to this study.<sup>20</sup> Discharged rate reported in study from Hyderabad was 85.5% with 3.2% death rate.<sup>21</sup>

Death rate in different studies reported from Turkey was 0.4% that is much lower than in this study and in Indian study it was 4.66% that is also lower than in this study.<sup>25,26</sup> In Lahore and Multan revealed mortality rates were 8% and 15% respectively.<sup>27,28</sup> Results can be enhanced, by distinguishing the substance ingested, route of exposure, amount of time poison was since ingested, signs and symptoms and any related disease or injury, the name of item and quality, immediate access to emergency medical services (EMS).

In brief accidental corrosive ingestion is still one of the tragic incidences in children especially in developing countries, as the result of poor education and other socioeconomic problems. Other than the potential damage both physical and mental to the child, it leaves a permanent scar in the hearts of the parents. Therefore, no treatment in any modality is better than prevention. Education of parents, adequate storage of potentially hazardous substances and satisfactory parental supervision could be the most critical activities for prevention of childhood poisoning.

## CONCLUSION

Proportion of corrosives ingestion was high (13.3%) in this study as compare to other national and international studies. Sodium hypochlorite was the most common corrosive substance ingested while sulphuric acid was

the least common corrosive ingestion. Regarding the outcomes in children with corrosives ingestion, survival rate was high (92.9%) with relatively high death rate (7.1%). To improve public awareness in this respect, Childproofing home and educational programs from the Ministry of Health and other Non-Governmental Organizations could be the most effective prevention methods to decrease morbidity and mortality from accidental poisoning in children.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency and Outcome of Hypoglycemia in Children Having Severe Protein Energy Malnutrition Presenting With Diarrhea

Hypoglycemia in Malnourished Children Presenting With Diarrhea

Waseem Sajjad, Muhammad Akhtar and Muhammad Ishtiaq

## ABSTRACT

**Objective:** The objective of this study was to determine the frequency and outcome of hypoglycemia in severely malnourished children suffering from diarrhea at the time of admission in pediatric department of a teaching hospital.

**Study Design:** Cross Section Study

**Place and Duration of Study:** This study was conducted at the Pediatric Unit 1 of Bahawal Victoria Hospital Bahawalpur from May to November 2015.

**Materials and Methods:** Total 220 patients were selected in this study. Non-probability sampling technique was used. All the patients suffering from severe malnutrition and acute diarrhea at the time of admission were included. Serum sugar level of patients of was checked and the results were noted. Data was analyzed by using SPSS version 19.

**Results:** Out of 210 children, 76 (36.19%) were expired in hospital within 48 hours at hospital stay. 50 (66.5%) children died within 48 hours from hypoglycemic group of 76 children, though 26 (15%) out of 134 children with normoglycemic group expired from this group. ( $P = 0.0001$ ). In the Expired hypoglycemic group 32 (64.41%) were female and 18 (36%) were male, while in the expired normoglycemic group 14 (55%) were female and 12 (45%) were male ( $P = 0.4615$ ). Expired due to hypoglycemia in 50 children, 47 (95%) were having history of vomiting while Expired due to hypoglycemia in 26 children, 19 (75%) had vomiting and died ( $P = 0.0264$ ). The children died with hypoglycemia 24 (47.7%) received I/V fluids before hospital admission while the children died with normoglycemia 12 (46%) of the children had access to the venous fluid before admission. ( $P = 0.9$ ).

**Conclusion:** The incidence of hypoglycemia in severe malnourished children suffering from diarrhea at admission time was higher and significantly associated with higher mortality in hypoglycemic children.

**Key Words:** Malnutrition; Serum Sugar Levels; Hypoglycemia; Mortality.

**Citation of article:** Sajjad W, Akhtar M, Ishtiaq M. Frequency and Outcome of Hypoglycemia in Children Having Severe Protein Energy Malnutrition Presenting With Diarrhea. Med Forum 2017;28(6):88-90.

## INTRODUCTION

Malnutrition includes both under or over nutrition.<sup>1</sup> Nutritional deficiencies are preventable causes of illness and death in children under five years of age<sup>2</sup> and severe malnutrition is the leading cause of hospital admission in under developed countries.<sup>3-5</sup> Diarrhea is the world's second most common cause of life-threatening disease with all infectious diseases in children younger than 5 years of age.<sup>6</sup> Diarrhea and malnutrition are inter-related.<sup>7,8</sup> Hypoglycemia is usually linked with severe malnutrition<sup>9-12</sup> and constant diarrhea.<sup>13</sup> Decreased supplies of glycogen, augmented tangential consumption of glucose, intestinal mal absorption all

these have been linked with hypoglycemia in children. Impaired Glucogenesis in children with hypoglycemia is associated with mortality from infectious diarrhea, regardless of their nutritional status. Long term severe hypoglycemia causes nerve damage leading to mental retardation, cognitive disorders, neurological discrepancy and recurrent convulsions.<sup>14-18</sup> Since both malnutrition as well as diarrheal disease is common in Pakistan so the objective of this study was to determine the frequency and outcome of hypoglycemia in severely malnourished children suffering from diarrhea at the time of admission in pediatric emergency of a teaching hospital.

## MATERIALS AND METHODS

This cross sectional study was conducted at pediatric unit 1 of Bahawal Victoria Hospital Bahawalpur from May to November 2015.

The study was approved by the Hospital Ethics Committee. Children with age 6 months to 59 months with severe malnutrition (less than 60% of body weight) and diarrhea (more than three daily watery

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Received: April 10, 2017; Accepted: May 15, 2017

stools) were included in the study. Diarrhea from more than 14 days, having an unknown age at the time of admission or if the parent / guardian did not agree to participate were excluded. Total 220 cases were examined.

After Verbal Consent from parents/guardian a detailed history from mother or guardian about age, the number of stools in the past 24 hours, the last meal intake time / fluid and its nature and vomiting complaints were taken.

After taking the weight of the children the blood sugar level was checked by the use of glucometer. In the case of hypoglycemia (blood glucose levels <54 mg / dL), venipuncture was done to obtain the patient's blood sample and was sent to the pathology lab of Bahawal Victoria Hospital for confirmation of hypoglycemia. Patients were examined for time to time and their results (mortality) were noted in the first 48 hours of hospitalization. Data was analyzed by using SPSS version 19. The frequency of hypoglycemia was noted. The chi-square test was used to compare the two groups (hypoglycemic and normoglycemic) and level of significance was 5%.

**RESULTS**

210 children were included in this study. The ratio of male to female was 1: 1.ninty one children (43.7%) were belong to the children with age group 6-17 months, 39 (19%) were in age group 18-28 months, 30 (14.28%) were age group 29-39 months, 29 (13.80%) were in the age group of 40-50 months and 21 (10%) of the children's age group was 51-59 months. The average weight of the children was 6.5 ± 2.75 kg and the average time of diarrhea before admission was 5.65 ± 3.75 days. The average stay in the hospital was 5.25 ± 5.50 days. The overall frequency of hypoglycemia in this study was 70 (33.4%). Hypoglycemic children 41 (58%) were females, and 29 (42%) were males.

**Table No. 1: Mortality Among Hypoglycemic and Normoglycemic Children**

Outcome	Hypoglycemic No	Normoglycemic No	
Survived	26	108	0.0001
Expired	50	26	
Total	76	134	

**Table No. 2: Gender Distribution among Hypoglycemic expired and Normoglycemic expired Children**

Sex	Hypoglycemic Expired No	Normoglycemic Expired No	
Female	32	14	0.4615
Male	18	12	
Total	50	26	

Out of 210 children, 76 (36.19%) were expired in hospital within 48 hours at hospital stay. 50 (66.5%)

children died within 48 hours from hypoglycemic group of children, though 26 (15%) out of 134 children with normoglycemic group expired from this group. (P = 0.0001) (Table 1). In the Expired hypoglycemic group 32 (64.41%) were female and 18 (36%) were men, while in the expired normoglycemic group 14 (55%) were females and 12 (45%) were males (P = 0.4615) (Table 2). Expired due to hypoglycemia in 50 children, 47 (95%) were having history of vomiting while Expired due to hypoglycemia in 26 children, 19 (75%) had vomiting and died (P = 0.0264) (Table 3). The children died with hypoglycemia 24 (47.7%) received I/V fluids before hospital admission while the children died with normoglycemia 12 (46%) of the children had access to the venous fluid before admission. (P = 0.9) (Table 4).

**Table No. 3: Vomiting among Hypoglycemic expired and Normoglycemic expired Children**

Vomiting	Hypoglycemic Expired No	Normoglycemic Expired No	P Value
Yes	47	19	0.0264
No	3	7	
Total	50	26	

**Table No. 4: Intravenous fluid before admission among Hypoglycemic expired and Normoglycemic expired Children**

I/V fluids given	Hypoglycemic Expired No	Normoglycemic Expired No	
Yes	24	12	0.9
No	26	14	
Total	50	26	

**DISCUSSION**

Severe malnutrition is the leading cause of all children death under five year of age.<sup>18,19</sup> The evidence shows hypoglycemia acute complication of diarrhea is a common problem in countries where co-morbidity is malnutrition.<sup>13,18</sup> Chisti et al<sup>16</sup> and Talbert et al<sup>17</sup> used same cut off value, similar to our study while Bennish et al<sup>18</sup> uses 39.6 mg / dl as the cut value.

The Children with age group 6 month to five year were included in our study. In Huq et al study population age was under five year of age while, the infants in Chisti et al study,<sup>16</sup> 6 months to 12 years by Tal study et al<sup>17</sup> study and less than 15 years by Bennish et al study were included.<sup>18</sup>

The ratio of male to female is equal in the current study while in a study of Talbert et al where 52% were male. Children were facing serious malnutrition in current study. In a study by the Chishti et al & by Talbert et al showed that children were severely malnourished, at the same time in a study by Huq et al<sup>13</sup> population was both normal as well as malnourished.

The children suffering from diarrhea less than 2 weeks were included in our study while other did not have any time-limited diarrhea. The finding of our scrutiny indicating that the frequency of hypoglycemia in the current study was 30.4% and Chisti et al<sup>16</sup> showed low blood glucose in 16.39% & Huq et al study showed 11%.low frequency of other studies compared to our study of hypoglycemic causes may be due to the type of child selection.

In the current study the overall mortality rate was 33.2%, while 67% in children with low blood sugar and 15.6% of in children with normal blood sugar level (normoglycemic). Mortality was more pronounced in hypoglycemic children. Baby with fatal results more often have hypoglycemia at the time of admission than those who do not have fatal outcome.<sup>16</sup>

Talbot et al<sup>17</sup> showed a mortality rate of 24.35% of children with hypoglycemic. Bennish et al<sup>18</sup> showed a 8.04% mortality rate. Hypoglycemic infant mortality rate was 42.9%, compared with 6.9% in normoglycemic children. Huq et al<sup>13</sup> showed mortality at 28% in 11% of children with hypoglycemia. Overall mortality and hypoglycemic mortality were higher in our study compared to others may be due to the choice of patients and the most likely to delay child referral to tertiary care centers. There was no association between vomiting, sex, and prior intravenous rehydration on the history of the mortality of hypoglycemic children..

## CONCLUSION

The incidence of hypoglycemia in severe malnourished children suffering from diarrhea at admission time was higher and significantly associated with higher mortality in hypoglycemic children.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Hysterosalpingography in Uterine and Tubal Factor Subfertility - An Outdated Procedure or a Reemergent Study?

Hysterosalpingography  
in Uterine and Tubal  
Factor Subfertility

Fauzia Afridi<sup>1</sup>, Arzoo Gul Bangash<sup>2</sup>, Aysha Afridi<sup>3</sup> and Zainab Afridi<sup>4</sup>

## ABSTRACT

**Objective:** to determine frequency of various abnormalities detected on hysterosalpingography in patients presenting with subfertility.

**Study Design:** Descriptive / cross-sectional study

**Place and Duration of Study:** This study was conducted at the Department of Obstet. and Gynae, Noshera Medical College, Noshera. from October 2013 to March 2014.

**Materials and Methods:** This study involved 318 patients presenting to outpatient Gynae clinic of Northwest General Hospital and Research Hospital, Peshawar with primary or secondary infertility of at least one year. After initial history, examination and consent, HSG was performed using set criteria and the films reported by consultant radiologist.

**Results:** Mean age of the patients was 29.6 years with 25-36 years being the commonest age group. 58.5% patients had primary infertility whereas 41.5% patients had secondary infertility. Majority of the patients (84%) had normal HSG whereas only 16% showed some abnormality. The abnormalities detected on HSG included Tubal block (13.8%...unilateral:9.4%; bilateral:4.4%), Hydrosalpinx (2.5%...unilateral:2.5%; bilateral:0.6%), Peritubal adhesions(1.6%) and uterine abnormalities (2.8%). The most frequent uterine abnormality was bicornuate uterus (1.6%) which was more common in primary infertility patients, followed by submucous fibroid/ polyp (0.6%). Proximal tubal block was more common than distal tubal block.

**Conclusion:** The majority of patients in this study had normal HSG and most of these can be spared laparoscopy, given the high specificity of HSG for tubal patency. Therefore, HSG is still the 1<sup>st</sup> line investigation in the workup of tubal factor for infertility.

**Key Words:** Infertility, Hysterosalpingography, tubal block.

**Citation of article:** Afridi F, Bangash AG, Afridi A, Afridi Z. Hysterosalpingography in Uterine and Tubal Factor Subfertility - An Outdated Procedure or a Reemergent Study? Med Forum 2017;28(6):91-95.

## INTRODUCTION

The desire to procreate is intrinsic to every woman. Inability to do so leads to unimaginable physical, psychological, economic and social distress.<sup>1,2,3</sup> Infertility is defined as the inability of a couple to conceive following 12 months or more of regular unprotected intercourse.<sup>4,5,6</sup> According to WHO, 1 in every 4 couples in developing countries are affected by infertility.<sup>7</sup> However, its incidence ranges from 6.6-32.6%<sup>8</sup>, depending on the duration of infertility used in definition and the population studied, e.g., community or hospital clinics.<sup>9</sup>

The causes of infertility include anovulation (20%), tubal factor (11-30%), male factor (20-30%).<sup>10</sup> Initial workup of infertile couple should include Semen analysis (analysis of male factor), transvaginal ultrasound scan (pelvic anatomy), follicular phase gonadotrophins and mid-luteal progesterone (ovarian reserve and ovulation).<sup>11,12</sup>

Routine tubal patency testing, being invasive, is debatable in the infertility workup.<sup>12</sup> It should be offered after taking into account the overall treatment needs of the couple. The most commonly used tests of tubal patency include Hysterosalpingography (HSG), Laparoscopy and Dye test and Hysterocontrast sono-salpingography.<sup>13,14</sup> Other less commonly used tests include Selective Salpingography and tubal catheterization, transvaginal hydrolaparoscopy, fertiloscopy, salpingoscopy, fallopscopy and chlamydia antibody testing.<sup>15,16,18,19</sup>

Laparoscopy is widely considered to be the gold-standard for assessing tubal patency, as it enables direct visualization of pelvis and allows treatment of mild endometriosis and periadnexal adhesions.<sup>20</sup> However, it is more invasive, requires general anesthesia and carries risk of injury to abdominal organs.<sup>21</sup> In contrast, HSG being cheap, widely available, less invasive and an outpatient procedure, can be regarded as a better 1<sup>st</sup> line investigation for assessing tubal patency. It has a high specificity of 83%, making it a better test for

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identification of tubal patency. Its limitations include failed catheterization or instrumentation., and false positives ( sensitivity 65%) due to tubal spasm or debris.<sup>22,23,24</sup>

HSG is a several decades old investigation now. The improvements in radiology/ fluoroscopic services, in addition to the advent of several new techniques for assessing tubal pathology has necessitated the need to re-appraise its role in the current era of ART. This study was conducted with the aim to evaluate its role in this context.

**MATERIALS AND METHODS**

This descriptive study was carried out at Northwest General Hospital and Research Center, Peshawar from October 2013 to March 2014. The subjects were 318 patients, selected by non-purposive convenience sampling, presenting to outpatient Gynae clinic, with primary or secondary subfertility of at least 1 year. Those patients whose husbands were abroad for the last one year or had abnormal semen parameters were excluded from the study. The procedure and purpose of the study was explained to the subjects and informed

consent was taken. Subjects were given an intramuscular injection of Diclofenac Sodium 15 minutes before the procedure. With patient in dorsal position, uterine size and position were assessed first digitally and then with uterine sound. After introducing Cuscos speculum and holding anterior cervical lip with tenaculum, size 8 F catheter was introduced through cervix and retained. In Radiology department, 10-20 ml of radio-opaque dye (Urograffin) was introduced through the catheter under fluoroscopic control and X-ray films taken. Antibiotic prophylaxis was given to all patients after the procedure.the findings on HSG films were reported by consultant radiologist.

All the relevant data was entered on to a proforma and analysed using SPSS 20. Results were presented as graphs and tables.

**RESULTS**

This study involves 318 patients presenting with infertility. The ages of the patients ranged from 17-45 years. Mean age was 29.64+/\_5.32 SD. The results are tabulated as below:

**Table No.1: Age Groups**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 20 yrs	9	2.8	2.8	2.8
	20-25	67	21.1	21.1	23.9
	26-30	113	35.5	35.5	59.4
	31-35	77	24.2	24.2	83.6
	36-40	46	14.5	14.5	98.1
	> 40	6	1.9	1.9	100.0
	Total	318	100.0	100.0	

**Table No.2: Type of Infertility**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	primary	186	58.5	58.5	58.5
	secondary	132	41.5	41.5	100.0
	Total	318	100.0	100.0	

**Table No.3: HSG findings**

	Frequency	Percent	Valid Percent	Cumulative Percent
Normal	267	84.0	84.0	84.0
Abnormal	51	16.0	16.0	100.0
Total	318	100.0	100.0	

**Table No.4: Tubal Block Laterality**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	274	86.2	86.2	86.2
	unilateral	30	9.4	9.4	95.6
	bilateral	14	4.4	4.4	100.0
	Total	318	100.0	100.0	

**Table No.5 :Hydrosalpinx**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	310	97.5	97.5	97.5
	unilateral	6	1.9	1.9	99.4
	bilateral	2	.6	.6	100.0
	Total	318	100.0	100.0	

**Table No.6: Peritubal Adhesion**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	313	98.4	98.4	98.4
	1	5	1.6	1.6	100.0
	Total	318	100.0	100.0	

**Table No.7: Uterine Abnormalities**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	309	97.2	97.2	97.2
	uterus didelphys	1	.3	.3	97.5
	bicornuate uterus	5	1.6	1.6	99.1
	infantile uterus	1	.3	.3	99.4
	submucous fibroid/polyp	2	.6	.6	100.0
	Total	318	100.0	100.0	

**Table No.8: Tubal Block Site**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	274	86.2	86.2	86.2
	proximal	26	8.2	8.2	94.3
	distal	18	5.7	5.7	100.0
	Total	318	100.0	100.0	

## DISCUSSION

This study involves 318 women presenting with subfertility. Most of the patients (35.5%) were in the age group / of 26-30 years. This is in accordance with studies conducted in other developing and under-developed countries,<sup>25</sup> where early marriage and child bearing is a norm, but in contrast to studies in the developed world<sup>26</sup> where there is trend to delaying marriage and child birth, hence infertile couple present later in age.

In this study, Primary infertility was the major type of infertility, comprising of 58.5% of patients whereas 41.5% of patients presented with secondary infertility. Studies on infertility have shown a similar trend in that secondary infertility ,although less frequent than primary infertility , is on the rise.<sup>7, 27</sup> This is probably due to increasing rates of caesarian sections and Pelvic inflammatory disease, resulting in tubal block and also due to increasing age of patients and prolonged birth-spacing resulting in diminishing ovarian reserve with time.

Regarding HSG findings, 84% of subjects had normal HSG findings whereas 16% had one or more abnormal findings on HSG. Studies on HSG conducted so far report wide variations in the proportions of abnormal HSG.<sup>25,26,27</sup> This depends on whether patients have been referred after initial workup elsewhere and also on the prevalence of PID in that set-up; both situations leading to increased rates of abnormal HSG as much as 50%. In our study, the yield of HSG was low (only 16% abnormal HSG). This could be either because the indication was too broad or there was a selection bias in that those who were considered to have pelvic

pathology like PID, endometriosis, adhesions were directly referred for laparoscopy.<sup>26</sup>

The commonest abnormality detected on HSG was Tubal block (13.8%.....unilateral:9.4%; bilateral: 4.4%). Similar results were obtained in a study conducted in Oman by Subhi et al.<sup>28</sup> Hydrosalpinx accounted for 2.5% cases, out of which unilateral were 1.9% and bilateral were 0.6%. The diagnosis of hydrosalpinx is significant in that preventive salpingectomy is recommended in such patients prior to IVF to improve implantation rates.<sup>29</sup>

Peritubal adhesions, detected by convoluted fallopian tubes and/or loculation of spillage of contrast medium in the peritoneal cavity,<sup>30</sup> were seen in 1.6% patients. Although HSG can detect peritubal adhesions in upto 75% cases,<sup>30</sup> laparoscopy is the gold-standard for their diagnosis and HsG should not be used for this purpose<sup>22</sup>.

Uterine abnormalities were detected in 2.8% patients. The most frequent uterine abnormality was bicornuate uterus( 1.6%) which was more common in primary infertility patients, followed by submucous fibroid/polyp(0.6%) which was more common in secondary infertility patients. Abnormalities in the uterine cavity detected on HSG should be further evaluated by hysteroscopy.

Determination of tubal block site is important as it can help us in choosing the type and determining prognosis of tubal reconstructive surgery.<sup>31</sup> In this study, 8.2% of patients had proximal tubal block as evident by the lack of tubal filling on HSG whereas 5.7% of patients had distal tubal block in which the tube was outlined however there was no spill of the dye. A similar result was obtained by a study conducted in Nepal by Poonam.<sup>27</sup>

In this study, majority of patients (84%) had normal HSG. Studies have revealed that , in infertile couples having normal HSG, there is a four-fold increase in pregnancy rate during first three months after HSG and, although not by the same proportion, but the trend remains so up to one year after HSG.it is in this subset of patients who can be spared initially from invasive investigations like laparoscopy and hysteroscopy. Only those patients can be referred for laparoscopy who fail to conceive within 3-12 months of HSG. After 12 months, there is no difference in the rate of pregnancy among those who had and those who didn't have HSG. By following such criteria for laparoscopy, the chance of finding a pelvic pathology, and/or the need for change in treatment plan after laparoscopy is increased, hence making it more cost effective. Thus, HSG can not only short-list patients for laparoscopy,<sup>32</sup>it may have a therapeutic effect on the remaining patients.<sup>33</sup>.

## CONCLUSION

HSG is a valuable initial investigation in the work up of infertility, even in the modern era of ART. It is fairly reliable in establishing patency of tubes. However, the small minority of patients with blocked tubes or intracavitary pathology need to be evaluated further by hysterosalpingography and hysteroscopy respectively..

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Causes of Recurrent Pneumonia among the Children Visiting a Tertiary Care Hospital

Shahzeb Ahmed, Muhammad Irfan Bhatti and Shifa

## ABSTRACT

**Objective:** The aim of this study was to determine the relative frequency of various causes of recurrent pneumonia.

**Study Design:** Observational / descriptive study

**Place and Duration of Study:** This study was conducted at the BV Hospital Bahawalpur, from March 2015 to December 31, 2015.

**Materials and Methods:** Total 300 patients visiting the pediatric department and diagnosed with recurrent pneumonia were included in this study.

**Results:** Total 300 patients diagnosed with recurrent pneumonia. 180(60%) were males and 120(40%) were females. Underlying cause was identified in 285 (95%) cases, and in 15 (5%) cases, the underlying cause could not be identified. Children with potential neurodevelopmental disorders suffering from recurrent pneumonia, mostly (90%) suffering from cerebral palsy, while 63% of the patients were with age under 1 year of age, 27% were 1-5 years old, 10 % were more than 5 years of old.

25 patients with underlying cause congenital heart disease, there were 10 patients with ventricular septal defect. Respiratory tract and gastrointestinal system anomalies in patients, Out of 10 cases, 4 cases had cleft palate, 3 cases had laryngomalacia/tracheomalacia, and 1 case had tracheoesophageal fistula, congenital cystic adenomatoid malformation and pulmonary sequestration.

**Conclusion:** Recurrent pneumonia as a recurrent respiratory tract infection is more common in our country. Common underlying diseases include neurodevelopmental disorders, recurrent bronchiolitis with aspiration pneumonia, congenital heart disease, Down syndrome, bronchiectasis, bronchial asthma, respiratory abnormalities, and cleft palate.

**Key Words:** Recurrent pneumonia; Neurodevelopmental disorder; Congenital heart defects; Aspiration pneumonia; Children.

**Citation of article:** Ahmed S, Bhatti MI, Shifa. Causes of Recurrent Pneumonia among the Children Visiting a Tertiary Care hospital. Med Forum 2017;28(6):96-100.

## INTRODUCTION

Respiratory tract infections are still the main cause of morbidity and mortality in children, especially children under the age of 5 years.<sup>1</sup> On average, 6 to 10 respiratory infections episodes per year occur in a child.<sup>2</sup>

These are benign and self-limiting infections; however, sometimes children may suffer from potentially life-threatening infections such as epiglottitis, bacterial bronchitis, bronchiolitis and pneumonia. Where pneumonia is the most common infection and is the main cause of children under the five year of age worldwide. Although even a single pneumonia episode can be fatal, but in some children it may be repeatedly occur, which causes difficult to diagnose and treatment challenges for clinicians.<sup>3</sup>

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Received: April 23, 2017;

Accepted: May 27, 2017

There are many reasons for the recurrence of pneumonia. Many of them are benign and simple to manage, such as recurrent viral respiratory infections or bronchial asthma, however, in other cases; there may be more serious pathological causes such as neuro developmental disorder, congenital heart disease, cardiovascular events, bronchiectasis and congenital structural anomalies of respiratory tract. Early and accurate diagnosis has become an important factor in distinguishing between relatively benign and more serious underlying causes in order to achieve optimal management, thereby minimizing the risk of progressive or irreversible lung disease.<sup>4</sup>

There are some general risk factors that cause children to suffer from recurrent respiratory infections. Lower respiratory tract infections are more common in male than girls,<sup>5</sup> Peak incidence is 6-12 months of life, acute bronchiolitis occurs almost entirely in the first two years of life, two-thirds of children died because of respiratory infections also occurred in infancy.<sup>6</sup> Premature babies, especially those who develop lung disease after ventilation, often require admission for the respiratory tract infections in infancy and early life. The only immune protective effect of breastfeeding, the only natural way of infants feeding against recurrent

respiratory tract infection, is the well-known reality in recent decades.<sup>7</sup> The incidence of respiratory infections is more industrialized countries than non-industrialized countries.<sup>8</sup> Large family size and parental smoking increase the risk of all respiratory diseases, especially lower respiratory tract infections. Pregnant mothers smoking and postnatal passive contact with smoking causes recurrent respiratory infections in children.<sup>8,9</sup> In a small number of children with recurrent chest infections, complex immune system may be defective, often protecting the lungs from any hostile microbial environment and are used together to prevent ingress or ingestion of foreign substances from the lungs. These include physical defense such as coughing, sneezing and mucus clearance, resident cell defense such as lung macrophages, and a series of local body fluids or secretory mechanisms such as lysozyme and lactoferrin<sup>10-13</sup>. More specifically, in countries like Pakistan, large amounts of nutrients and micronutrient deficiencies (such as iron, vitamin A and D, zinc, etc.) and many other forms are ultimately associated with body defense against infections is one of the important causes of recurrent pneumonia. In fact, several of these defects may coexist and may interact with each other among the causes of recurrent infections.<sup>14,15</sup> Surprisingly, despite a relatively common problem, the study of recurrent pneumonia is less and available in medical literature. The local data on this issue is more limited. The aim of this study was to determine the relative frequency of various causes of recurrent pneumonia.

## MATERIALS AND METHODS

This descriptive study was conducted from March 2015 to December 31, 2015 at BV Hospital Bahawalpur. Total 300 patients diagnosed with recurrent pneumonia were included in this study.

Written consent was obtained from the parents, the research approved by Institutional Ethics Committee of the hospital. Recurrent pneumonia is defined as two episodes of radiologically diagnosed pneumonia in the same year, or three or more times during any time period, with complete resolution between clinical and radiological during acute episodes. In all suspected cases of recurrent pneumonia, detailed history of respiratory system and cardiovascular system (fever, cough, sweating too much, breathing difficulties, shortness of breath and wheezing, etc.) complaints, the history of birth, feeding history, development history and family history was taken. Perform detailed clinical examinations, including oral, respiratory, cardiovascular and central nervous system. After recovery from Pneumonia developmental and CNS examination must be performed.

CBC and chest x ray were performed in all cases while latest blood C / S, serum profile, ABG, ECG, echocardiography, barium swallowing, pulmonary function tests, laryngoscopy, bronchoscopy,

quantitative serum immunoglobulin , IgA and IgM) and CT chest and brain was carried out in selective cases for. Data analyzing was done by SPSS V 20..

## RESULTS

Total 300 patients diagnosed with recurrent pneumonia. 180(60%) were males and 120(40%) were females. Underlying cause was identified in 285 (95%) cases, and in 15 (5%) cases, the underlying cause could not be identified. (Table-1) Children with potential neurodevelopmental disorders suffering from recurrent pneumonia, mostly (90%) suffering from cerebral palsy (Table 2), while 63% of the patients were with age under 1 year of age, 27% were 1-5 years old, 10 % were more than 5 years of old.

**Table No.1: Frequency of underlying causes of recurrent pneumonias. (N = 300)**

Cases	No	Percentage
Neurodevelopmental disability	182	64
Recurrent bronchiolitis with aspiration pneumonia	32	11
Congenital heart disease	23	8
Bronchiectasis	8	2.5
Bronchial asthma	8	2.5
Anomalies of the respiratory system	5	1.5
Cleft palate	5	1.5
Gastroesophageal reflux disease	4	1.3
Down syndrome without CHD	4	1.3
Severe malnutrition	3	1
Ciliallary dyskinesia	3	1
Foreign body	2	0.5
Thalassemia	2	0.6
Nutritional rickets	2	0.5
Immunodeficiency disorder	1	0.4
Sickle cell anemia	1	0.4
Undiagnosed	15	5
<b>Total</b>	<b>300</b>	

**Table No. 2: Number of cases of recurrent pneumonia with type of underlying neurodevelopmental disability**

Neurodevelopmental disability	No	Percentage
Cerebral palsy	164	90
Neurodegenerative brain disease	7	4
Werdnig Hoffman disease	6	3.5
Undiagnosed neuromuscular diseases	5	2.5

25 patients with underlying cause congenital heart disease, there were 10 patients with ventricular septal defect (Table 3). Respiratory tract and gastrointestinal system anomalies in patients, Out of 10 cases, 4 cases had cleft palate, 3 cases had laryngomalacia/tracheomalacia, and 1 case had tracheoesophageal fistula, congenital cystic adenomatoid malformation and pulmonary sequestration.

**Table No. 3: Types of Congenital heart defects leading to recurrent pneumonia. (n = 25)**

Ventricular Septal Defects	10
Patent Ductus Arterioses	3
Atrio Ventricular Septal Defects	4
Complex congenital heart defects	7
Atrial Septal Defects	1

## DISCUSSION

The incidence of pneumonia may reach 10 per 100 children per year in developing countries<sup>17-19</sup> Subgroup of children with recurrent pneumonia, which is often caused by defects in local lung / systemic host defense system or from a potential disease that changes lung defense mechanism.<sup>20</sup>

In our study, a neurodevelopmental disorder was the most common cause of recurrent pneumonia and was present in 182(64%) patients. The Mean age at the time of diagnosis was 9 months. In Abdullah F study 114(48%) cases while in Rakesh L study 10.5% cases of pneumonia were reported.<sup>21</sup> Neurodevelopmental disorders in children with respiratory complications are multiple factorials; several of these factors are coexisting, and may affect each other to damage the quality of life of these disabled children. These factors include repeated aspiration, dysfunctional mucus enhancers, Invalid cough reflex, lack of muscle, lack of exercise / physical activity, malnutrition and recurrent infections, in addition to the respiratory system, these people are prone to .<sup>22,23</sup> Direct aspiration which occurs directly from the mouth, including feed / food material (liquid solids) as well as oral and upper respiratory tract secretions into the lower respiratory tract due to poor neuromuscular coordination and inadequate protective reflex.

In 32(11%) cases there was recurrent bronchiolitis with recurrent pneumonia with the mean age of 06 months of diagnosis. Although it is not well documented in the literature, according to our experience, breathing difficulties lead to the inhalation of milk and other liquid feeds due to "taking turn" failure between swallowing and breathing, the need for admission may be the most common complication of bronchiolitis. This may lead to secondary bacterial pneumonia. Cycle In the first two years of life, bronchiolitis is more common. As a baby is hospitalized, children with bronchiolitis have a higher incidence of asthma, but it is

not clear whether children with asthma are more likely to be hospitalized with bronchiolitis.<sup>24</sup>

23 (8%) patients had congenital heart defects. 4 cases were Down's syndrome. The Mean age of the diagnosis was 13 months. Abdullah F et al reported 22 cases (9.2%).<sup>3</sup> The cardiac and lung pathophysiology were closely related. Direct pulmonary complications of chronic heart disease causes atelectasis and secondary infection, and also causes abnormal pathophysiological mechanism resulting in increased pulmonary fluid abnormalities, difficulty in breathing caused by inhalation. The severity of the disease is due to malnutrition, anorexia, reduced intake, repeated CCF and frequent infection.<sup>25</sup>

Eight patients (2.5%) developed bronchiectasis. In 2 cases Past history of measles and tuberculosis was present, and 3 patients had no predisposing factors. Eight patients (2.5%) had bronchial asthma. Because of the multiple episodes of airway obstruction that responded to asthma treatment, these cases were clinically diagnosed with bronchial asthma. Pulmonary function tests also support the diagnosis of wherever it was applied. Other investigations were normal. The Mean age of the diagnosis was 4.5 years. In the Indian study, Rakesh L et al reported 26% of bronchial asthma cases, leading to recurrent pneumonia, which is very high, compared to our study.

Cleft Palate was the next common cause of recurrent pneumonia in 5 (1.5%) cases. Recurrent aspiration due to structural defects and coordination disorders is very well known complication of cleft palate. In our study, the other two components of Pierre Robin's syndrome, micrognathia, and glossoptosis also exist in all cases. It should be noted that in the presence of micrognathia, and glossoptosis, the chance of inspiration increases.

5 patients (1.5%) had congenital respiratory abnormalities. 2 cases of the Laryngomalacia / tracheomalacia were present in our study. One case of tracheoesophageal fistula, congenital cystic adenomatous malformations and pulmonary sequestration each was present in our study. Compared with study conducted by Abdullah F et al., the numbers of cases were less than that of congenital anomalies 18 patients with recurrent pneumonia were present in his study.<sup>26</sup>

Four patients (1.3%) had recurrent gastrointestinal disease in patients with recurrent pneumonia. In these patients, it was reported that there was a significant association between respiratory and subsequent vomiting leading to respiratory symptoms.<sup>27</sup> All of these children were neurologically normal on both history and clinical examinations. The mean age of diagnosis was 7 months. The Four patients (1.3%) had recurrent pneumonia with Down's syndrome, without chronic heart disease. The rate of infections particularly pneumonia is 12 times more in Down syndromic children as compared with general population.<sup>28,29</sup>

primary ciliary muscle dyskinesia 3(1%) cases with recurrent pneumonia were present. The diagnosis was basically made on clinically based on the presence of situs inversus and recurrent respiratory tract infections. The Mean age of diagnosis was 2 years old. As a diagnostic test for mucus clearance, such as a saccharin test and a nitric oxide test is not available in our setup, we might have missed a few cases of primary ciliary dyskinesia.<sup>30</sup>

03 (1%) cases had severe malnutrition. In these cases, all other etiological investigations were normal except the presence of severe malnutrition. In severe malnutrition, the incidence of all types of infection is generally higher, especially pneumonia. In these children, not only pneumonia is more fatal, and clinical diagnosis is also difficult. WHO-recommended clinical signs (age-specific rapid breathing and chest wall ablation) are less sensitive to predictors of radiographic pneumonia. A foreign body in the lungs with recurrent pneumonia was present in 2(0.5%) cases. Although there is no history of foreign body inhalation, however, the presence of recurrent pneumonia associated with the same valve in the right lung requires rigid bronchoscopy in both cases, foreign body from the middle of the right lung was recovered. 5% of recurrent pneumonia cases were due to the presence of foreign bodies in an Indian study. The Mean diagnosis age was 13 months. The 2(0.6%) cases had recurrent pneumonia with thalassemia. Recent prospective studies in Thailand had shown that patients with thalassemia have a higher frequency of mild and severe infection.<sup>31</sup> In general, fluid overload and overloaded pulmonary circulation, especially due to chronic anemia, can lead to recurrent pneumonia among thalassemia children.<sup>32</sup>

2 (0.5%) cases had nutritional rickets with recurrent pneumonia. Rickets was confirmed from biochemistry and radiological. In a study in Ethiopia, 210 cases out of 500 cases of pneumonia had ricket.<sup>33</sup> In addition, another study was conducted in Ethiopia, and similar observations were made between the nutritional diseases with pneumonia in children.<sup>34</sup> One patients (0.4%) with recurrent pneumonia had sickle cell anemia. It has long been recognized that even with penicillin prophylaxis, homozygous sickle cell anemia was also associated with an increased risk of pneumonia in children.<sup>35-37</sup>

Since video fluoroscopy swallowing studies (VFSS) are not available, direct demonstration of the respiratory tract is not possible, so the evidence of aspiration was indirect, ie clinical plus radiological. In addition, due to different financial and geographical barriers, cannot carry out certain tests, such as sweat chloride test and complete immunological workup. Therefore, we may have missed several fundamental causes of recurrent pneumonia. On the other hand, the radiological diagnosis of pneumonia in our study is susceptible to bias because the differentiation between atelectasis and

the lung consolidation is not always possible, so the diagnosis of pneumonia may be overestimated.

## CONCLUSION

Recurrent pneumonia as a recurrent respiratory tract infection is more common in our country. Common underlying diseases include neuro-developmental disorders, recurrent bronchiolitis with Aspiration pneumonia, congenital heart disease, Down syndrome, bronchiectasis, bronchial asthma, respiratory abnormalities, and cleft palate.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency and Type of Red Cell Alloimmunization in Blood Transfusion Dependent Patients of $\beta$ – Thalassaemia Major

Amna Nazir<sup>1</sup>, Nazia Raffique<sup>1</sup> and Imran Hussain<sup>2</sup>

## ABSTRACT

**Objective:** To determine red cell alloimmunization in blood transfusion dependent patients of  $\beta$  – thalassaemia major by measuring its frequency and type.

**Study Design:** Cross sectional study

**Place and Duration of Study:** This study was conducted at the blood bank of Benazir Bhutto Hospital, Rawalpindi from December 2010 to December 2011

**Materials and Methods:** 150 patients of beta thalassaemia major, according to inclusion criteria were enrolled in the study. Indirect Coombs' test (ICT) was performed on serum of all these patients for antibody detection. Patients with positive ICT were subjected to panel test to detect the type of alloantibody.

**Results:** All the statistical analysis was done using SPSS version 10.0. Out of 150 patients, 90 were males (60%) and 60 were females (40%). The age of patients ranged between 4 and 18 years with mean age of 8.78 years ( $\pm 4.15$ ). ICT was positive in 8 (5.3%) patients. Panel test showed six alloantibodies. One patient had two antibodies while all other patients had single antibody. Alloantibodies detected were anti E in 3 patients (37.5%) while one patient each had anti C (12.5%), anti D (12.5%), anti e (12.5%) and anti D (12.5%). One patient had anti E + anti K (12.5%).

**Conclusion:** The study showed that alloimmunization to red cell antigens is an important complication of blood transfusion. Most of the alloantibodies were against Rh antigens. Hence it is recommended that blood should be matched at least for Rh antigens from the start of transfusion.

**Key Words:** Thalassaemia major, Alloimmunization, Blood Transfusion

**Citation of article:** Nazir A, Raffique N, Hussain I. Frequency and Type of Red Cell Alloimmunization in Blood Transfusion Dependent Patients of  $\beta$  – Thalassaemia Major. Med Forum 2017;28(6):101-104.

## INTRODUCTION

Thalassaemias are inherited disorders characterized by reduced synthesis of one or more globin chains.<sup>1,2</sup> In world, the birth rate for symptomatic thalassaemia is 0.44/ 1000 births and about 1-2 million people with thalassaemia major worldwide would require blood transfusion.<sup>3</sup> The carrier frequency of beta thalassaemia in Pakistan is approximately 6% but awareness of thalassaemia among general public is very low.<sup>4,5</sup> Thalassaemia major is the homozygous form of disease in which there is severe anaemia and associated with significant mortality and morbidity.<sup>6</sup>

Bone marrow transplant is the only curative treatment for thalassaemia major but associated with different complications and high cost<sup>7</sup> so the main stay of treatment for thalassaemia major is regular blood transfusion<sup>8</sup>. Multiple blood transfusions lead to different complications. Alloimmunization is among the most common risk of blood transfusion<sup>9,10</sup> which means the formation of antibodies in an individual when there is exposure to non self-antigen.<sup>11,12</sup> Alloantibodies produced in response to multiple transfusions due to immune system activation leads to difficulty in cross matching moreover some alloantibodies cause hemolytic transfusion reaction and increased and frequent need of transfusion thus further complicate the therapy<sup>13,10</sup>. The rate of alloimmunization is variable in different parts of the world.<sup>14</sup> Hence to avoid alloimmunization especially in patients on regular transfusions, blood should be cross matched for major as well as minor blood groups.<sup>15</sup> This study aims at determining the frequency and type of different alloantibodies in blood transfusion dependent patients of  $\beta$  thalassaemia major in our setup so that blood could be cross matched against those minor blood group which are responsible for development of alloantibodies, hence different alloantibody associated

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problems could be minimized and quality of life in these chronic patients could be improved.

## MATERIALS AND METHODS

This Cross sectional study was carried out in 12 months from December 2010 to December 2011. Samples of the patients were taken from Pakistan Thalassaemia Welfare Society (Regd.) and were processed in blood bank of Benazir Bhutto hospital Rawalpindi. A total of 150 beta thalassaemia major patients diagnosed on haemoglobin electrophoresis were enrolled in the study by Non probability, Consecutive sampling. Inclusion Criteria include cases of  $\beta$  thalassaemia major patients diagnosed on Haemoglobin electrophoresis with HbF level 30 – 90 % from the age of 3 years upto 20 years of both genders. Exclusion Criteria includes  $\beta$  thalassaemia minor and intermedia. Patients newly diagnosed and had not received any blood transfusions and Patients receiving blood transfusions for other medical problems. After approval from the ethical committee of RMC allied hospitals and Thalaasaemia welfare society, patients of  $\beta$  thalassaemia major fulfilling the inclusion criteria were selected. After receiving an informed written consent from parents/guardian, relevant details were noted in Proforma. 10ml of clotted blood was taken and was immediately shifted to blood bank of Benazir Bhutto Hospital Rawalpindi and indirect coombs' test was performed to detect the presence of alloanti bodies. In patients with positive indirect Coombs' test a standard Panel test was performed to detect type of alloantibodies. All data collected was entered and analyzed in Statistical Package for Social Sciences (SPSS) version 10.0. Means and standard deviation was calculated for continuous variables e.g. age. Frequency and percentages were calculated for categorical variables: gender, indirect Coombs' test, and Panel test in transfusion dependent patients of  $\beta$  thalassaemia major.

## RESULTS

A total of 150 beta thalassaemia major patients, selected according to inclusion criteria were enrolled in the study. Out of 150 patients, 90 were males (60%) and 60 were female (40%). Gender distribution is represented by a bar chart. (figure 1)

The age of patients ranged between 4 to 18 years. The mean age of the patient was 8.78 years ( $\pm 4.15$  years). Summary of age statistics is shown in table 1

The catchment area include Rawalpindi 61.33% (92 patients), Chakwal 9.33% (14 patients), Islamabad 8.67% (13 patients), Gujar khan 8.67% (13 patients), Azad Khasmir 4% (6 patients), Attock 2.67% (4 patients), Wah Cantt 2% (3 patients), Taxila 1.33% (2 patients), Talagang 1.33% (2 patients), and Jehlum 0.67% (1 patient)

**Table No.1: Summary of age statistics**

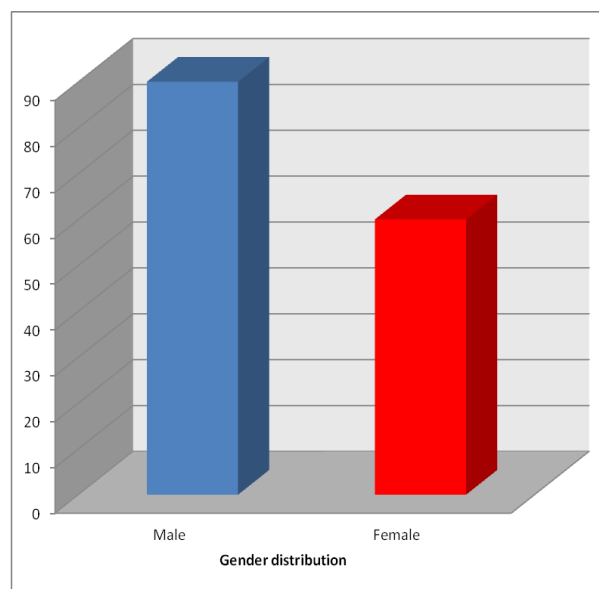
Minimum age (years)	Maximum age (years)	Mean age (years)	Standard Deviation
4	18	8.78	$\pm 4.15$

**Table No.2: Catechment area distribution**

Catechment Area	No. of cases	Percentage
Rawalpindi	92	61.33%
Chakwal	14	9.33%
Islamabad	13	8.67%
Gujar khan	13	8.67%
Azad Kashmir	06	04%
Attock	04	2.67%
Wah Cantt	03	02%
Taxila	02	1.33%
Talagang	02	1.33%
Jehlum	01	0.67%

**Table No.3: Frequency of different types of alloantibodies**

Alloantibody	No. of cases	Percentage
ANTI E	03	37.5%
ANTI D	01	12.5%
ANTI e	01	12.5%
ANTI C	01	12.5%
ANTI c	01	12.5%
ANTI E +ANTI K	01	12.5%



**Figure 1: Gender distribution in the study**

Catchment area distribution is represented in table 2. ICT was performed on serum of all the patients and was found to be positive in 8 patients (5.3%). Antibody identification by panel test was performed on serum of those 8 patients in which indirect coombs' test was positive. six antibodies were detected in these 8 patients. one patient had two antibodies while all other patients

had single antibody. Alloantibodies detected were anti E in 3 patients (37.5%) while one patient each had anti C (12.5%), anti c(12.5%),anti e(12.5%) and anti D(12.5%).one patient had anti E + anti K(12.5%) shown in table 3

## DISCUSSION

Beta thalassaemias are inherited disorders due to reduced or absent production of beta globin chains<sup>1</sup>. It is a common condition particularly in Mediterranean region and South east Asia. In Pakistan around 6% population is carrier of Beta thalassaemia.<sup>4</sup>

BMT is the curative treatment for these patients but associated with different complications and high cost<sup>7</sup> so lifelong regular blood transfusion is the main stay of treatment for these patients.<sup>8</sup> Usually they require 2-3 units every 4-6 weeks, however the frequency of transfusion is variable in each patient.<sup>6</sup> Various complications arise as a result of transfusion therapy. One of the major complication is development of alloantibodies against red cell antigens which complicates the selection of compatible blood for subsequent transfusions and results in increased and frequent need of transfusion hence adding into the miseries of these chronic patients.<sup>9,13</sup>

My study aimed at determining the frequency and type of alloantibodies in patients of Beta thalassaemia major in our setup so that blood could be cross matched against those minor blood groups which are responsible for development of alloantibodies.

The frequency of allo immunization in my study is relatively low (5.3 %) percent and is similar to many previous studies

Shahin et al analysed the frequency of alloimmunization in 121 beta thalassaemia major patients in Iran. The frequency of alloimmunization in their study was also low. They reported alloantibodies in 9 (7.4%) patients. Alloantibodies detected were anti K and anti D type. They also concluded that age at first transfusion and splenectomy were not statistically significant as a risk factor for alloimmunization<sup>16</sup>

Similarly another study was conducted by Sadeghian and colleagues, which also supported our results. The study was done on 313 thalassaemic patients in north east of Iran. Antibody screening was positive in 9 (2.87%) patients. The most common alloantibody detected was anti D(88.88%) followed by anti C and anti E<sup>13</sup>

Pahuria et al observed red cell alloimmunization and autoimmunization in 211 multitransfused thalassaemic patients of indian origin. The frequency of alloimmunization in their research was found to be 3.79% and that of autoimmunization to be 0.47%.Alloantibody detected were anti E, Anti K, Anti D, anti Kp(a),anti C(w), anti c and JK(a)<sup>17</sup>

In another study in Iran.Autoantibody was found in 1.7% and alloantibody in 5.3%.then a standard panel

test was performed to find the type of alloantibody. Alloantibody detected were anti Kell(50%), anti Rh D(15.8%) and anti Rh E (10.5%)<sup>15</sup>

Noor Haslina and colleagues performed screening and identification of alloantibodies on 58 multitransfused Malay patients. 46(79.3%) patients were with Hb E/Beta thalassaemia, 8(13.8%) with beta thalassaemia major ,3(5.2%) with HbH Constant spring and 1 (1.7%) patient with HbH disease. Alloantibodies were detected in 8.6% patients and alloantibodies identified were anti E, anti c, anti K, anti JKa, anti N and anti S.<sup>18</sup>

Joudi et al observed the prevalence of alloantibodies in Malaysia. they enrolled 5719 Patients in their study . Alloantibodies were detected in 65(1.13%)patients which also support our results. Anti E was most common (24.6%) followed by anti lewis (a) in 18.5% and anti M In 13.8%<sup>14</sup>

In Pakistan a study was conducted in Karachi by Bilwani and colleagues on 97 thalassaemic patients. The rate of alloimmunization was found to be 9.2%.three patients had anti K, two had nonspecific antibodies, one patient each developed anti D and anti E, two patients had anti D+ anti C and one had anti E + anti K<sup>19</sup>

Some international studies showed different results and have higher frequencies of alloimmunization. Wang Ly and colleagues performed a study on 30 thalassaemic patients in Taiwan. 28 patients had thalassaemia major while 2 had HbH disease. Alloantibodies were found in 11 (37%) of patients alloantibodies detected were anti E , anti E + c , anti Mi (a), anti Mi (a) +E, anti D and anti S.<sup>20</sup>

Chaudhari SCN conducted a cross sectional study on 32 thalassaemia patients and detected alloantibodies in 6 (18.8%) patients. All these patients had received > 20 units of transfusion. the commonest antibodies detected were against Rh antigens, anti E and anti c.<sup>21</sup>

Thompson and colleagues enrolled 697 participants in their study who had ever received blood transfusion the rate of alloantibody and autoantibody production was measured and compared with respect to splenectomy. Alloantibody was seen in 115(16.5%) and autoantibodies in 34(4.9%) participants. In their study they also concluded that alloantibodies mostly develop in splenectomized patients.<sup>22</sup>

Gader and colleagues performed a retrospective study in Saudi Arabia on 68 multi transfused patients of thalassaemia and sickle cell anaemia. They detected alloantibodies in 22.06% patients.<sup>23</sup>

We have done an effort to find the frequency and type of alloantibodies in multi transfused patients of beta thalassaemia major in our setup. The results are similar to many previous studies. The specificity of RBC alloantibodies were against Rh blood group system. So, If blood is matched for at least Rh blood group antigens, it can lead to a much lower rate of

alloimmunization and decreasing the miseries of these chronically transfused patients.

## CONCLUSION

Alloimmunization to red cell antigens is an important complication in transfusion dependent thalassaemic patients in our setup. Mostly antibodies are produced against Rh blood group antigens. Hence it is recommended that to decrease the rate of alloimmunization, blood should be matched at least for Rh antigens from the start of the transfusion.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# In-Hospital Outcomes of Acute Coronary Syndrome in Diabetic Versus Non-Diabetic

Muhammad Usama Khan, Sana Aslam and Hamna Javed

## ABSTRACT

**Objective:** In present study we evaluated the in-hospital outcomes of Acute Coronary Syndrome in diabetic versus non-diabetic patients.

**Study Design:** Descriptive / comparative study.

**Place and Duration of Study:** This study was conducted at the Department of Coronary Care Unit, DHQ hospital Kasur from November 1st 2016 to April 30th 2017.

**Materials and Methods:** A total number of one hundred and fifty (150) patients who presented with acute coronary syndrome were included. Patient who presented with ACS between November 2016 to April 2017 were included in this analysis. Diagnosis of diabetes mellitus was based on previous history of patients of patients (i.e. a patient already taking oral or subcutaneous diabetic treatment) or new diagnosis of diabetes mellitus on routine clinical labs (fasting blood sugar levels >125 mg/dl). Development of left ventricular failure, cardiogenic shock, and in-hospital mortality were the primary study endpoints.

**Inclusion and Exclusion Criteria:** Patients who were presented with ST segment elevation myocardial infarction and non-ST segment elevation myocardial infarction were included. Patients with stable angina pectoris were excluded

**Results:** Out of 150 patients, 72 (48.0%) patients were diabetic and 78 (52.0%) patients were non-diabetic. 63 (87.5%) diabetic patients were presented with acute ST-elevation myocardial infarction (STEMI) and 9 (12.5%) were presented with non-ST elevation myocardial infarction (non-STEMI). While there were 71 (91.0%) non-diabetic patients who were presented with STEMI and 7 (9.0%) with non-STEMI (p-value 0.48). Regarding in-hospital outcomes of study patients. left ventricular (LV) failure occurred in 17 (23.6%) diabetic patients and in only 7 (9.0%) non-diabetic patients (p-value 0.01). incidence of occurrence of cardiogenic shock was not-significantly different between the patients (p-value 0.20). However, in-hospital mortality was very high in diabetic patients 12 (16.7%) versus only 4 (5.1%) in non-diabetic patients (p-value 0.02).

**Conclusion:** Diabetes mellitus significantly increases the risk of LV failure and in-hospital mortality in patients with acute Coronary Syndrome.

**Key Words:** Diabetes mellitus, acute coronary syndrome, in-hospital mortality.

**Citation of article:** Khan MU, Aslam S, Javed H. In-Hospital Outcomes of Acute Coronary Syndrome in Diabetic Versus Non-Diabetic. Med Forum 2017;28(6):105-108.

## INTRODUCTION

Diabetes mellitus has now become a major risk factor for early development of cardiovascular disease. Studies have found a higher incidence of cardiovascular disease in diabetic patients as compared to non-diabetic patients.<sup>1</sup> Diabetes not only increases the risk of cardiovascular disease but is also associated with significantly higher morbidity and mortality in these patients.<sup>2-4</sup> Studies have also found 2.5 times higher incidence of heart failure in diabetic patients as compared to non-diabetic patients, with a 10 times higher risk in patients with age <45 years.<sup>5</sup>

South Asians have a much higher prevalence of acute coronary syndrome (ACS) as compared to Europe and other countries.<sup>6</sup> Studies have also found much higher prevalence of diabetes in Asian population. Even it is also said that may be it is the diabetes mellitus that is responsible for early onset of ACS and mortality due to ACS syndrome in South Asian patients.<sup>7</sup> Even in White population there is no decrease in the incidence of ACS in diabetic population despite there is an overall reduction in the incidence of ACS in normal general population. And studies conducted in these populations have also found a significantly higher mortality due to ACS even after adjusting other modifiable risk factors of mortality in ACS patients.<sup>8-10</sup> Studies have concluded that increased mortality in diabetic patients may be due to the reasons that diabetic patients have a more severe coronary artery disease and also there is a higher risk of arrhythmias in diabetic patients and these factors are the major reason of increased mortality in diabetic patients.<sup>11-13</sup> In present study we evaluated the in-

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Received: April 23, 2017;

Accepted: May 25, 2017

hospital outcomes of Acute Coronary Syndrome in diabetic versus non-diabetic patients.

**MATERIALS AND METHODS**

This descriptive study was conducted in department of coronary care unit, DHQ hospital Kasur. A total number of one hundred and fifty (150) patients who presented with acute coronary syndrome were included. Patient who presented with ACS between November 2016 to April 2017 were included in this analysis. Patients who were presented with ST segment elevation myocardial infarction and non-ST segment elevation myocardial infarction were included. Patients with stable angina pectoris were excluded. All patients signed an informed consent before they were included in study. Ethical approval from administration of hospital was also taken.

We noted all the patient variables on a special Proforma designed for this study. Diagnosis of diabetes mellitus was based on previous history of patients of patients (i.e. a patient already taking oral or subcutaneous diabetic treatment) or new diagnosis of diabetes mellitus on routine clinical labs (fasting blood sugar levels >125 mg/dl). Development of left ventricular failure, cardiogenic shock, and in-hospital mortality were the primary study endpoints.

For data analysis we used computer software SPSS v23. We used Chi-square test to compare LV failure, cardiogenic shock and mortality between the diabetic and non-diabetic patients and independent sample t-test for comparison of age considering a significant difference at p-value ≤0.05..

**RESULTS**

Out of 150 patients, 72 (48.0%) patients were diabetic and 78 (52.0%) patients were non-diabetic. The mean age of diabetic patients was 55.06±8.96 years and in non-diabetic patients mean age was 53.52±9.29 years (p-value 0.30). There was no difference in gender distribution in diabetic and non-diabetic patients. 63 (87.5%) diabetic patients were presented with acute ST-elevation myocardial infarction (STEMI) and 9 (12.5%) were presented with non-ST elevation myocardial infarction (non-STEMI) (Fig. 1).

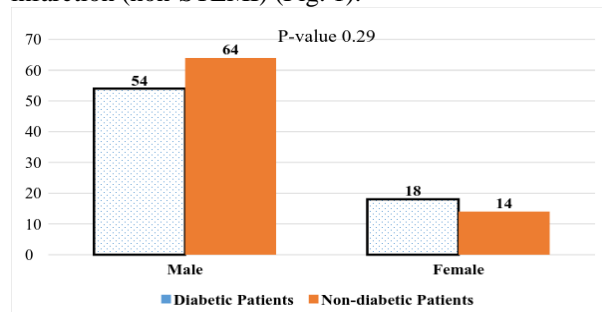


Figure No.1: Frequency of gender distribution in Diabetic and non-diabetic patients.

While there were 71 (91.0%) non-diabetic patients who were presented with STEMI and 7 (9.0%) with non-STEMI (p-value 0.48) (Fig. 2).

Regarding in-hospital outcomes of study patients. left ventricular (LV) failure occurred in 17 (23.6%) diabetic patients and in only 7 (9.0%) non-diabetic patients (p-value 0.01). incidence of occurrence of cardiogenic shock was not-significantly different between the patients (p-value 0.20). However, in-hospital mortality was very high in diabetic patients 12 (16.7%) versus only 4 (5.1%) in non-diabetic patients (p-value 0.02) (Table 1).

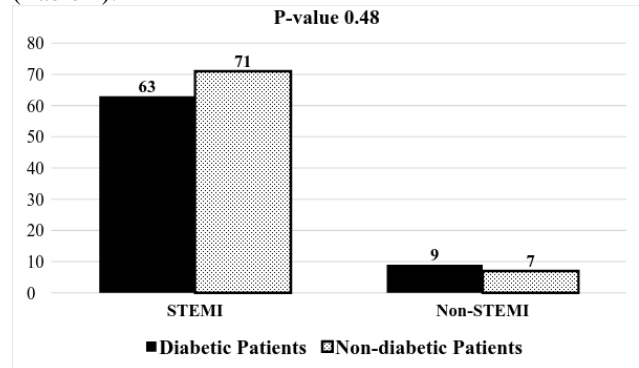


Figure No.2: Frequency of Type of Acute Coronary Syndrome in diabetic and non-diabetic patients. (STEMI= ST elevation myocardial infarction, Non-STEMI= Non-ST elevation myocardial infarction).

Table No.1: In-hospital Outcomes of Study Participants.

	Diabetic Patients (N=72)	Non-diabetic Patients (N=78)	P-value
LV failure	17 (23.6%)	7 (9.0%)	0.01
Cardiogenic Shock	9 (12.5%)	5 (6.4%)	0.20
In-hospital mortality	12 (16.7%)	4 (5.1%)	0.02

LV= left ventricular

**DISCUSSION**

The improved changes in results of patients with ACS over the previous decades have been credited to development of new invasive and noninvasive treatment techniques such as development of new better antiplatelet and antithrombotic drugs. In spite of these advancement, mortality in ACS stays still high, and ideal treatment is still indistinct, particularly in patients with DM. Researches have demonstrated that patients with DM have a 3-fold higher mortality rate after adjusting for age related cardiovascular mortality.<sup>14, 15</sup> Studies have also demonstrated that ACS patients who are diabetic have higher 30-day and 1-year mortality rate as compared to the non-diabetic patients.<sup>16</sup>

In this study, we compared the in-hospital outcomes such as LV failure rate, cardiogenic shock and mortality

in nondiabetic and diabetic patients. we found significant effect of diabetes mellitus on worsening the in-hospital outcomes of patients with ACS. In our study, there were 48.0% diabetic patients who presented with diabetes mellitus. Other studies have also confirmed higher prevalence of diabetic patients in ACS patients. Ali et al. also found similar results, in that study there were 48.5% diabetic patients who presented with ACS.<sup>17</sup> In SPACE trial<sup>18</sup> there was 57.9% proportion of diabetic patients in patients with ACS. In Gulf Registry of Acute Coronary Events (Gulf RACE)<sup>19</sup>, there were 40.0% proportion of diabetic patients. On the other hand, studies conducted in European countries have found significantly low prevalence of diabetics in ACS patients with the prevalence rate ranging from 20.0% to 30.0%.<sup>20,21</sup> A study conducted in Egypt have found only 24.5% prevalence of diabetes in ACS patients.<sup>22</sup> So studies conducted in Asian populations have found a higher proportion of diabetes mellitus in ACS patients as compared to the studies in other regions of the World.

In our study, there were 23.6% patients with diabetes mellitus and only 9.0% patients without diabetes who developed LV failure during hospital stay. Ali et al.<sup>17</sup> found 24.0% incidence of LV failure in diabetic patients and only 8.0% in non-diabetic patients. Ferrer et al.<sup>23</sup> also found a significantly higher incidence of heart failure (17.0%) in diabetic patients versus only 7.0% in non-diabetic patients with Non-STEMI.

In our study, 12.5% diabetic patients and only 6.4% non-diabetic patients underwent in cardiogenic shock during hospitalization but with insignificant difference. Ali et al.<sup>17</sup> also did not found any significant difference in cardiogenic shock in diabetic versus non-diabetic patients with ACS. Iqbal et al.<sup>24</sup> have found contrary results as compared to our study and found significant difference in the incidence of cardiogenic shock in diabetic versus non-diabetic patients with ACS. In their study, 17.1% diabetic patients developed cardiogenic shock and only 9.8% non-diabetic patients developed cardiogenic shock.

In our study, we found higher in-hospital mortality in diabetic patients, 16.7% versus 5.1% in non-diabetic patients. in the study by Ali et al.<sup>17</sup> this mortality rate was 14.0% in diabetic patients and only 4.0% in non-diabetic patients. The GREECS Study also found similar results with 5.60% mortality rate in diabetic patients and 2.0% in non-diabetic patients who admitted in hospital with ACS.<sup>25</sup> Miettinen et al.<sup>16</sup> also found higher mortality rate in diabetic patients with ACS. Other studies have also confirmed higher mortality rate in diabetic patients with acute coronary syndrome.<sup>26,27</sup>

## CONCLUSION

So we found significant negative effects of diabetes mellitus on in-hospital outcomes of patients admitted with ACS and we concluded that diabetes mellitus

significantly increases the risk of LV failure and in-hospital mortality in Acute Coronary Syndrome patients.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Psychological Contract and It's Impact on Employee Attitudes

Naila Nizamani<sup>1</sup>, Muhammad Munir Ahmadani<sup>1</sup> and Hameedullah Kazi<sup>2</sup>

## ABSTRACT

**Objective:** The purpose of the current study is to scrutinize the impact of psychological contract and psychological contract fulfillment on organizational commitment and turnover Intentions of employees.

**Study Design:** Cross sectional study.

**Place and Duration of Study:** This study was conducted at the Hospitals, Banks and Universities of Hyderabad, Jamshoro and Tando Jam from 1<sup>st</sup> August 2014 to 1<sup>st</sup> October 2015

**Materials and Methods:** Responses were gathered using a survey. Responses were collected from 600 individuals. SPSS 23 was used for analysis. Responses were analyzed through hierarchical multiple regression.

**Results:** Influence of relational psychological contract on organizational commitment was positively realized ( $\beta = 0.163$ ,  $p < 0.05$ ). Transactional psychological contract was destructively impacting organizational commitment ( $\beta = -0.089$ ,  $p < 0.05$ ). However, psychological contract fulfillment had a positive impact on organizational commitment ( $\beta = 0.179$ ,  $p < 0.05$ ). Turnover intentions were negatively influenced by relational psychological contract ( $\beta = -0.194$ ,  $p < 0.05$ ), transactional psychological contract ( $\beta = -0.139$ ,  $p < 0.05$ ) and psychological contract fulfillment ( $\beta = -0.135$ ,  $p < 0.05$ ).

**Conclusion:** Relational psychological contract and psychological contract fulfillment positively predicted the organizational commitment whereas transactional psychological contract was a negative predictor. Relational psychological contract negatively predicted turnover intentions. Transactional psychological contract increases turnover intentions. Psychological contract fulfillment deteriorated the turnover intentions.

**Key Words:** Psychological Contract, Psychological Contract Fulfillment, Organizational Commitment, Turnover Intentions, Closed-ended questionnaire, Hierarchical regression.

**Citation of article:** Nizamani N, Ahmadani MM, Kazi H. Psychological Contract and It's Impact on Employee Attitudes. Med Forum 2017;28(6):109-112.

## INTRODUCTION

Psychological contracts implicit the type of contract between the employer and employee (Rousseau 2000)<sup>1</sup>. Rousseau introduced a couple of types of psychological contracts and these include: relational and transactional. Relational contracts are economic in nature and transactional are non- economic in nature.

Psychological contract has a great stimulus on the attitudes of the employees (Usman R et al. 2004)<sup>2</sup>. The attitudes under considerations in this study are organizational commitment and turnover intentions.

Organizational commitment is considered to be essential for any organization as deals with the individuals working in the organization who are considered to be the back bone of any organization.

In the growing competitive business environment the importance of the workers working in the organization has enhanced to significant level (Kleinman et al.

2001)<sup>3</sup>. Human capitals (skill full workers) are crucial for any organization as it gives them competitive advantage.

Turnover intentions are beliefs of leaving the organization willingly without any external pressures based on some incidents or acts of injustice in the organization.

**Theoretical background and research hypotheses:** In prior researches, there are strong links found between psychological contract and organization commitment (Grimmer et al. 2007)<sup>4</sup> in their work argued that employees realizing a state of relational psychological contract will presumably show high levels of organizational commitment. Thus, it is assumed that H1a: Relational psychological contract has constructive influence on organizational commitment. Employees showing short-term relationship with the organization will realize lower levels of organizational commitment (Grimmer et al. 2007)<sup>4</sup>. Thus, to testify the assumption the hypothesis is formulated.

H1b: Transactional psychological contract has adverse influence on organizational commitment.

When employees receive what they expected at workplace from their employer they feel comforted and will realize a state of fulfillment of their psychological contract. It is claimed that when employees recognize such a state they will be more committed to their

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organization. To test this relationship among the above variables it is hypothesized that

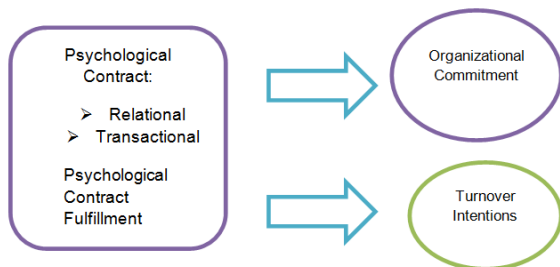
H2: Psychological contract fulfillment has constructive influence on organizational commitment.

Turnover intention is identified as an employee’s intentions of leaving the organization (Mobley, 1977).<sup>5</sup> It is not a state when employees actually leave the organization; it’s only the state of consideration of leaving the organization. Willingly turnover might be because of uncomplimentary atmosphere at workplace. The relational contract embraces extended responsibilities, grounded on socio-emotional mechanisms for example devotion, commitment and trust (Robinson et al. 1994)<sup>6</sup>. Previous work on the subject back this thought that lower levels of turnover intentions are demonstrated by employees when they experience relational psychological contract. Vice versa is the case when employees are having transactional psychological contract, in that case they show higher levels of turnover intentions (Morrison et al. 1997)<sup>7</sup>. In light of existing writings it is proposed in this study that H3a: Relational psychological contract has destructive influence on turnover intentions. H3b: Transactional psychological contract has constructive influence on turnover intentions.

Evidences of the association among psychological contracts fulfillment and attitudes and behaviors of employees at workplace are found in literature. Amongst the behaviors there was employees’ intention to leave the organization (Psycones, 2006)<sup>8</sup>. According to Bunderson (2001)<sup>9</sup> “when an employer is perceived to be failing in their role obligations, continued employment is seen as an unfair exchange and withdrawal from the employment relationship may result (p.722)”. In this way we can indisputably say that lower are the levels of psychological contract satisfaction, more prominent are the odds that sentiments of leaving the organization will emerge in the heart of employee.

H4: Psychological Contract Fulfillment has negative impact on turnover intentions of employees

CONCEPTUAL FRAMEWORK



MATERIALS AND METHODS

It was a cross - sectional study in nature. Stratified random sampling method was used. Total 600 questionnaires were distributed in the banks, hospitals and universities of Hyderabad, Jamshoro and Tando

Jam. The study was conducted from 1<sup>st</sup> August 2014 to 1<sup>st</sup> October 2015. A total of 600 questionnaires were distributed. Questionnaires were equally distributed among males and females. All responses were collected through self-reported questionnaire. Participants registered their responses on 5 point Likert scale.

Psychological contract was measured through Raja et al. (2004) questionnaire. Psychological contract fulfillment was measured by Robinson and Morrison (2000). Organizational commitment was measured through Meyer and Allen (1997). Turnover intentions were measured by using the instrument of Kelloway et al. (1999). All the measures showed the cronbach’s alpha score of above 0.70, making them reliable to use in the study. All the categorical variables were kept constant.

RESULTS

**Descriptive Statistics:** Table 1 is depicting the descriptive statistics. For relational psychological contract mean = 3.1192, S.D = 0.63963, transactional psychological contract mean = 2.8995, S.D = 0.82838, psychological contract fulfillment mean = 3.4818, S.D = 0.51005, organizational commitment mean = 3.5378, S.D = 0.64161, turnover intentions mean = 2.5109, S.D = 0.95617.

Table No.1: Descriptive Statistics

Variable	Mean	Std. Deviation
Relational Psychological Contract	3.1192	0.63963
Transactional Psychological Contract	2.8995	0.82838
Psychological Contract Fulfillment	3.4818	0.51005
Commitment	3.5378	0.64161
Turnover Intentions	2.5109	0.95617

Inferential Statistics:

**Correlation Analysis:** Relational psychological contract was positively associated with organizational commitment  $r = 0.162$ . Transactional psychological contract had negative relationship with organizational commitment  $r = -0.286$ . Psychological contract fulfillment was positively associated with organizational commitment with  $r = .144$ . Relational psychological contract had a negative impact on turnover intentions  $r = -0.286$ . Transactional psychological contract had inverse relationship with turnover intentions with  $r = -0.179$ . Psychological contract fulfillment was adversely related to turnover intentions  $r = -0.139$ . All the relationships were significant at  $p < 0.05$ .

**Regression:** Hypotheses were tested through hierarchical multiple regression (Table # 3). Influence of relational psychological contract on organizational commitment was positively realized ( $\beta = 0.163, p < 0.05$ ). Transactional psychological contract was

destructively impacting organizational commitment ( $\beta = -0.089, p < 0.05$ ). However, psychological contract fulfillment had a positive impact on organizational commitment ( $\beta = 0.179, p < 0.05$ ). Turnover intentions were negatively influenced by relational psychological contract ( $\beta = -0.194, p < 0.05$ ), transactional psychological contract ( $\beta = -0.139, p < 0.05$ ) and psychological contract fulfillment ( $\beta = -0.135, p < 0.05$ ). Thus, all hypotheses were supported.

**Table No.2: Correlation Results**

Variables Description	Correlation Coefficient(r)	Level of Significance(p)
Relational Psychological Contract & Organizational Commitment	.162**	.000
Transactional Psychological Contract & Organizational Commitment	-.098*	.028
Psychological Contract Fulfillment & Organizational Commitment	.144*	.001
Relational Psychological Contract & Turnover Intentions	-.286**	.000
Transactional Psychological Contract & Turnover Intentions	-.179**	.000
Psychological Contract Fulfillment & Turnover Intentions	-.139**	.002

\*\* Correlation is significant at the 0.01 (2- tailed)

\* Correlation is significant at the 0.05 (2- tailed)

**Table No. 3: Results of Hierarchical Multiple Regression**

Hypothesis	R <sup>2</sup>	ΔR <sup>2</sup>	β	Sig.(p)	Result
H1a	.192	.019	.163	.001	Supported
H1b	.179	.006	-.089	.044	Supported
H2	.204	.031	.179	.000	Supported
H3a	.350	.027	-.194	.000	Supported
H3b	.338	.015	-.139	.001	Supported
H4	.340	.018	-.135	.000	Supported

## DISCUSSION

This study aimed at predicting organizational commitment with relational psychological contract. The outcomes of relational psychological contract as a constructive predictor of organizational commitment and transactional psychological contract as a destructive predictor of the organizational commitment are consistent with Usman R et al (2004)<sup>2</sup>. Usman R et al (2004)<sup>2</sup>, Zhou (2014)<sup>10</sup>, Cassar (2011)<sup>11</sup> and others found that when employees perceive to formulate relational psychological contract they get themselves engaged with their respective organization at emotional level and they develop commitment with their respective organizations.

While employees engage with organization at transactional level, they only tend to make employees concern only with their economic rewards and showing no commitment to the organization. This finding is consistent with Usman R et al (2004)<sup>2</sup>.

When employees experience psychological contract fulfillment, they will be committed to the organization, this was predicted and found in the present study. Findings of Deepthi et al (2014)<sup>12</sup> are also in connection with this study.

It was predicted that relational psychological contract has a negative impact on turnover intentions. This impact was significantly established in this study. Other studies also confirmed the negative impact of relational psychological contract on turnover intentions confirming employees perceive to formulate relational psychological contract will have lesser intentions to leave the organization since the employees having relational psychological contract will perceive to engage in long-term emotional attachment with the organization and thus, will rarely experience feeling of leaving the organization.

Transactional psychological contract has positive impact on turnover intentions. This relationship was also confirmed by Ntalianis (2006)<sup>13</sup>.

Employees intend low to leave the organization when they acknowledge psychological contract fulfillment. This prediction was confirmed in this study. Chang (2013)<sup>14</sup> also found similar results.

Statistical evidences showed that relational psychological contract inputs positive influence on organizational commitment whereas transactional psychological contract destructively impacts employees' organizational commitment. Psychological contract fulfillment was found to positively affect organizational commitment of employees. It was found that relational psychological contract, transactional psychological contract and psychological contract fulfillment all have an inverse influence on turnover intentions of employees.

## CONCLUSION

Psychological contract is very important contributor to the attitudes of employees in organizations. These attitudes are then crucial for the survival and success of organizations. Managers need to know more about the formulation of psychological contracts and how the violation and fulfillment of these contracts can influence employee attitudes. Managers should make their effort to towards formation of relational psychological contract of employees and assure that employees' psychological contract is fulfilled as they effect the commitment the employees' show towards organization. This attitude of commitment towards organization will increase their performance and laterally organization's performance.

Focus on formulation of relational psychological contract will reduce employees' attitude of intentions of leaving the organization which will save organization from loss of quality workforce.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Factors Involved in Failure of Exclusive Breastfeeding Practices among Mothers

Shifa, Shaista Parveen and Shahzeb Ahmed

## ABSTRACT

**Objective:** The Objective of this study was to determine the factors associated with failure of exclusive breastfeeding among mothers.

**Study Design:** Cross Section Study

**Place and Duration of Study:** This study was conducted at the Paeds Unit 1, BVH Bahawalpur from June 2015 to December 2015

**Materials and Methods:** In this study, 400 mothers of 6-months old Childs who are not on exclusive breastfeeding were included. A questionnaire was designed and Mothers were interviewed about various risk factors, including maternal education, socioeconomic status, maternal employment status, family type, social mythology, number of children, delivery, maternal systemic disease, Mother breast condition, birth interval and breastfeeding counseling. The data was entered and analyzed by SPSS V 20.

**Results:** 400 mothers who did not practicing exclusive breastfeed to their children, 48 (37%) mothers were un-educated and 300 (75%) were living in the joint family system, 364 (91%) mothers did not have any employment; 208 (52%) mothers were belonging to a lower socioeconomic status.

252(63%) were male and 148(37%) were female. In the case of social myths, water intake at 4<sup>th</sup> month of age was found in 260 (65%) infants, 116 (29%) of mothers considered that their milk is not good for baby. The study found that 224(56%) of all births occurred in private clinics. 152 (38%) infants were born with cesarean section and 111 (73%) caesarean sections were conducted at private clinics. Maternal systemic disease was present in 76(19%) patients and pathologic breast milk breast lesions (19%, engorgement, sore or cracked nipple 17% and abscess in 1% mothers). Studies have found that only 84(21%) cases were counseled at prenatal visit about exclusive breastfeeding of child.

**Conclusion:** Our study showed that most of the mothers who were not on exclusive breastfeeding belong to a lower socioeconomic status, unemployed, lived in a combined family system, and had social mythology, such as using water for more than four months and to habituated baby with bottle feeding. It had also been found that pathological conditions of maternal breast milk and lack of counseling were also important risk factors.

**Key Words:** Exclusive breast feeding, Risk factors, Failure, Counseling.

**Citation of article:** Shifa, Parveen S, Ahmed S. Factors Involved in Failure of Exclusive Breastfeeding practices among Mothers. Med Forum 2017;28(6):113-116.

## INTRODUCTION

Human milk is necessary to fulfill the needs of infants and is uniquely suitable for infants. Human milk is specified and its composition is significantly different from all alternative feed formulations.<sup>1</sup> Breast milk promotes the sensory and the cognitive development also protects infants from infections and chronic diseases. Breastfeeding can reduce infant mortality because of common childhood diseases such as diarrhea or pneumonia as contribute to faster recovery of the disease.

These effects can be measured in underdeveloped and rich societies.<sup>2</sup> Exclusive breastfeeding can be defined as a practice in which babies receive only breast milk for the first six months of life, even without water, other liquids, tea, herbal preparations or foods, vitamins, mineral supplements or drugs.<sup>3</sup> Exclusive breastfeeding is one of the most effective measures to reduce child mortality in developing countries. The use of exclusive breastfeeding can prevent nearly 12% of children mortality under 5 years of age.<sup>4,5</sup>

Although breastfeeding and global breastfeeding initiatives have achieved extraordinary benefits, they are still rare in many countries. In South Asia, the rate of breastfeeding was only 40% in 1995, 45% in 2010. Various social, cultural and health-related factors may lead to the failure of exclusive breastfeeding. Lack of knowledge and confidence were the main reason in mothers for breastfeeding time shorter. The perception of insufficient milk and work out of home were considered to be a common cause of premature weaning or not breastfeeding.<sup>6,7</sup> The Objective of this study was

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Received: April 19, 2017; Accepted: May 19, 2017

to determine the factors associated with failure of exclusive breastfeeding

## MATERIALS AND METHODS

This study was conducted from June 2015 to December 2015 at Paeds Unit 1 BVH Bahawalpur. 400 mothers of 6-months old Childs who are not on exclusive breastfeeding were included. and (non-probable) sampling technique was used for sampling. Already designed questionnaire was used and data was collected by interviewing the mothers of infants. According to the definition by WHO, exclusive breastfeeding is marked as; Exclusive breastfeeding can be defined as a practice in which babies receive only breast milk for the first six months of life, even without water, other liquids, tea, herbal preparations or foods, vitamins, mineral supplements or drugs.

All infants less than six year of age either male or female not receiving exclusive breast feeding or on partially breastfeeding or on bottle feeding was included. Infants with scarring and cleft palate, as well as cases of fail to reactive breastfeeding due illness such as neurological diseases cerebral palsy and severe birth asphyxia (available from the record) were excluded.

After approval from ethical committee of hospital mothers were interviewed about various risk factors, including maternal education, socioeconomic status, maternal employment status, family type, social mythology, number of children, delivery, maternal systemic disease, Mother breast condition, birth interval and breastfeeding counseling. The data was entered and analyzed by SPSS V 20.

## RESULTS

400 mothers who did not practicing exclusive breastfeed to their children, 48 (37%) mothers were uneducated and 300 (75%) were living in the joint family system, 364 (91%) mothers did not have any employment; 208 (52%) mothers were belonging to a lower socioeconomic status.

252(63%) were male and 148(37%) were female. In the case of social myths, water intake at 4<sup>th</sup> month of age was found in 260 (65%) infants, 116 (29%) of mothers considered that their milk is not good for baby.(Table 1) The study found that 224(56%) of all births occurred in private clinics. 152 (38%) infants were born with cesarean section and 111 (73%) caesarean sections were conducted at private clinics. Maternal systemic disease was present in 76(19%) patients and pathologic breast milk breast lesions (19%, engorgement, sore or cracked nipple 17% and abscess in 1% mothers). Studies have found that only 84(21%) cases were counseled at prenatal visit about exclusive breastfeeding of child.(Table 2).

**Table No.1: Sociodemographic factors and social myths among study subjects**

Variables	No	Percentage
<b>Maternal Education</b>		
Uneducated	148	37
Primary	128	32
Matric	108	27
Intermediate & above	16	4
<b>Socioeconomic Status</b>		
Lower	208	52
Middle	172	43
High	20	5
<b>Maternal Employment</b>		
Yes	36	9
No	364	91
<b>Family Type</b>		
Nuclear	100	25
Joint	300	75
<b>Sex of Infant</b>		
Male	252	63
Female	148	37
<b>Maternal Separation</b>		
Yes	44	11
No	364	91
<b>Social myths</b>		
<b>Water intake upto 4 month of age</b>		
Yes	260	65
No	140	35
<b>Milk is not good</b>		
Yes	116	29
No	284	71
<b>To familiarize baby to bottle feeding</b>		
Yes	316	79
No	84	21

**Table No.2: Variables related to failure of exclusive breast feeding**

Variables	No	Percentage
<b>Mode of delivery</b>		
SVD	248	62
Cessarian section	152	38
<b>Place of delivery</b>		
Home	60	15
Private Clinic	224	56
Public Hospital	116	29
<b>Caesarean section done at</b>		
Private Hospital	111	73
Govt.Hospital	41	27
<b>Maternal systemic illness</b>		
Yes	76	19
No	324	81
<b>Mother's breast condition</b>		
Normal	252	63
Engorgement	76	19
Sore/cracked nipple	68	17
Mastitis/abscess	4	1
<b>Birth spacing (years)</b>		
1 year	160	40
2-3 year	144	36
4 year or above	96	24
<b>Proper counseling of mother done for breast feeding at antenatal visit</b>		
Yes	84	21
No	316	79
<b>Proper counseling of mother done for breast feeding after delivery</b>		
Yes	152	38
No	248	62

## DISCUSSION

The Objective of this study was to determine the factors associated with failure of exclusive breastfeeding. In our study, 37% of mothers who did not use exclusive breastfeeding (EBF) were illiterate and 59% were up to metric mothers. A similar trend was found in another study conducted in Lahore.<sup>8</sup>

Our study showed that 300(75%) mothers living in the joint family system, 36 (9%) mothers were employed in the cases of breastfeeding failure. This is contrary to other studies. A study conducted in Ethiopia reported a significant difference in exclusive breast feeding between employment and unemployed mothers (33% vs 73%).<sup>5</sup> This difference may be partly due to the fact that most mothers visited the hospital were housewives belonging to the rural and lower socio-economic status. Our study found that many social myths were exist in the cases of exclusive breastfeeding failure, such as 220 (65%) mothers thought that water is necessary along with breastfeeding, 316(79%) mother considered it necessary to familiar their child with bottle feeding, 116(29%) mothers thought their milk is not good for their baby and is dangerous. Other studies also support the existence of social mythology, for example, in a study conducted by Shazia et al using prelacteals in 31.4%.<sup>9</sup>

With regard to the sex of babies, the current study found more male babies 252 (63%) did not receive exclusive breast feeding. Other local studies also noted gender bias. In a study conducted in Islamabad, the numbers of male infants were 59.7%. Our data show that home deliveries were 60 (15%), private clinics 224 (56%), and 116(29%) in public hospitals cases where mothers did not perform exclusive breastfeeding. These figures were different from other local studies in which the main deliveries occur at home. This encourages people to be aware of the risk of reducing the complications of childbirth and, on the other hand, health care professionals do not have informal and late counseling on mothers for specialized breast feeding.

The current study also showed that in women who had breastfeeding failure in their infants had spontaneous vaginal delivery 248 (62%) and 152 (38%) deliveries by cesarean section. According to the World Health Organization cesarean section rate should not exceed 10-15%<sup>10</sup> Our study further showed that most of these caesarean sections occur in private clinics. This high rate of cesarean section indicates a lack of prenatal care, lack of standard guidelines and programs for compliance and management of labor, and an audit system is not available for C section deliveries. Even spontaneous vaginal delivery babies have a higher breastfeeding failure rate, which is very amazing. The total of 400 mothers who did not provide exclusive breast feeding to their infant found that many women had breast pathology problems, including 76(19%)

patients had breast engorgement, 68 (17%) had pain or nipple cracked nipples, breast abscess in 04 (1%). A study conducted in Tanzania was also supported our results, indicating that 17% of mothers encountered such problems during lactation.<sup>11</sup> Incorrect attachment during breastfeeding and infrequent breast feeding of infants were the main cause of breast problems. Mothers should receive appropriate support, medical advice and encouragement to deal with these issues. They should be taught about breastfeeding positioning and attaching of baby during breast feeding. The current study also found that maternal systemic disease accounted for 19% cases Sohag et al also noted illness in 13.5% mothers.<sup>12</sup>

Our study found that lack of counseling for exclusive breastfeeding. Only 21% mothers had the advice on exclusive breastfeeding at antenatal visits and 38% had postpartum counseling. A study also emphasizes the fact that prenatal counseling is more important for breastfeeding at 4-6 weeks, while prenatal and postnatal counseling is beneficial for exclusive breast feeding at 6 months of age. Imdad A et al also observed that individual and group counseling significantly increased the incidence of exclusive breast feeding.<sup>13</sup> Thus, educational strategies should be carried out in large numbers to help mothers to achieve exclusive breastfeeding goals until 6 months of age and continue breastfeeding until two years of life.

## CONCLUSION

Our study showed that most of the mothers who were not on exclusive breastfeeding belong to low socioeconomic status, unemployed, lived in a combined family system, and had social mythology, such as using water for more than four months and to habituated baby with bottle feeding. It had also been found that pathological maternal breast milk condition and lack of counseling were also important risk factors.

Pure breastfeeding is cost-effective in developing countries to save their lives and reduce infant and under-five mortality rates. In order to improve breastfeeding rates, special breastfeeding support and guidance should be provided specifically for mothers from lower socioeconomic status, mothers with caesarean section and mothers with breast milk pathology. We also recommend using a lady health worker program to educate mothers, and the media should also be involved in highlighting the health benefits of breastfeeding and telling the top feeding hazards.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Study of 100 Cases of Pancytopenia in Swat

Abdul Ahad<sup>1</sup>, Bacha Amin Khan<sup>1</sup> and Mukamil Shah<sup>2</sup>

## ABSTRACT

**Objective:** To diagnose different conditions producing pancytopenia on the basis of clinical, hematological and bone marrow studies.

**Study Design:** Prospective Study

**Place and Duration of Study:** This study was conducted at the Department of Medicine, Saidu Teaching Hospital, Saidu Sharif, Swat from March 2011 to March 2012.

**Materials and Methods:** 100 patients with pancytopenia were analyzed. Peripheral smears of the patients were analyzed for RBC, WBC and platelets morphology along with presence and absence of immature cells and abnormal cells. On bone marrow examination, morphology of all cells lineage, cellularity, parasite and abnormal cells were scrutinized. Trepine biopsy was done where ever indicated

**Results:** Patients age ranging from 12 to 80 years. Most of the patients (70%) were in the 12-30 years of age group. Pallor was the predominant clinical feature (97%) while weakness was the main presenting feature (71%). Aplastic anemia (42%) followed by Megaloblastic anemia (28 %) was found to be the most common cause of pancytopenia as unveiled by bone marrow examination

**Conclusion:** In Swat, the prevalent causes of pancytopenia are Aplastic anemia, Acute leukemia, Megaloblastic anemia and Hypersplenism.

**Key Words:** pancytopenia, acute leukemia, megaloblastic anemia, aplastic anemia, hypersplenism.

**Citation of article:** Ahad A, Khan BA, Shah M. Study of 100 Cases of Pancytopenia in Swat. Med Forum 2017;28(6):117-120.

## INTRODUCTION

Pancytopenia is the characterized by reduced number of all blood cell lines such as decrease number of red blood cells, white blood cells and platelets<sup>1,2</sup>. The basic underlying mechanism is decrease production by hematopoietic cells in bone marrow which may be caused by various infections, infiltration by malignant cells, different toxins, chemotherapeutic agents or radiation exposure<sup>2</sup>. Many studies have been performed at different places which showed that frequency of pancytopenia is quite variable<sup>3-5</sup>. The key to appropriate management is the proper Identification of the underlying disease<sup>3</sup>.

Patients usually presents with sign and symptoms caused by anemia or thrombocytopenia, initial presentation due to leucopenia such as fever or with infection are uncommon but this can be most life threatening as the disease progresses.

In cases of pancytopenia due to different underlying pathology, the composition and cellularity of bone marrow differs.

Pancytopenia, when caused due to defect in production of primary cells, the bone marrow is found to be hypocellular. Other causes of cytopenias in which the process of hematopoiesis is ineffective or there is invasive processes of bone marrow and utilization and destruction of the cells is increased peripherally, the bone marrow is usually normocellular or hypocellular<sup>4</sup>. Geographic distribution as well as genetic disturbances highly affects the incidence of pancytopenia due to various disorders<sup>6,7</sup>. It is the underlying pathology of pancytopenia which determines management and prognosis of the disease.

Aim of this study is to compare the incidence of underlying pathology and the salient clinical features of pancytopenia in Swat.

## MATERIALS AND METHODS

this study was conducted at the department of Medicine in Saidu Teaching Hospital, Saidu Sharif, Swat from March 2011 to March 2012. A total of 100 patients of pancytopenia presented to Medicine Department STH were evaluated. Inclusion criteria in the study was Hb <10 g/dl, TLC <4000 cells/cmm, and platelet count <100,000 cells/cmm. Each case was evaluated with a detail history followed by clinical examination and the information was recorded in a pro forma. Examination of bone marrow was carried out in each case. 8 cases required trephine biopsy. A full blood count was done on hematology analyzer.

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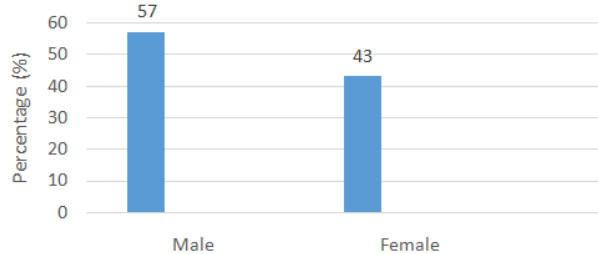
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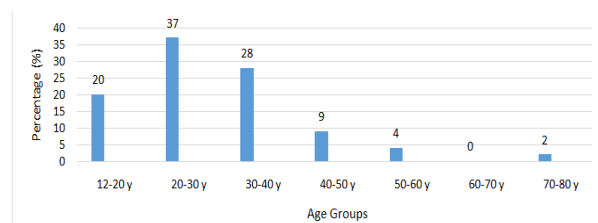
Peripheral smear and reticulocyte count were also performed in each case.

**RESULTS**

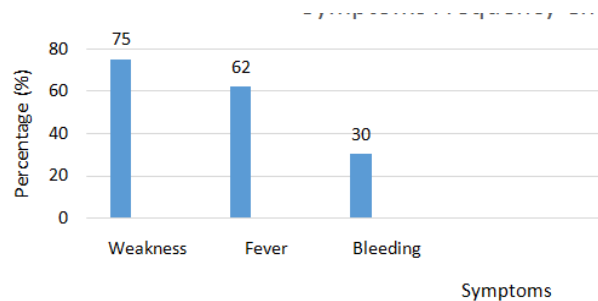
100 cases of pancytopenia presented to the Medicine Department STH were evaluated. Out of these 100 cases 57 (57%) were male and 43 (43%) female. The gender distribution is shown in Fig 1.



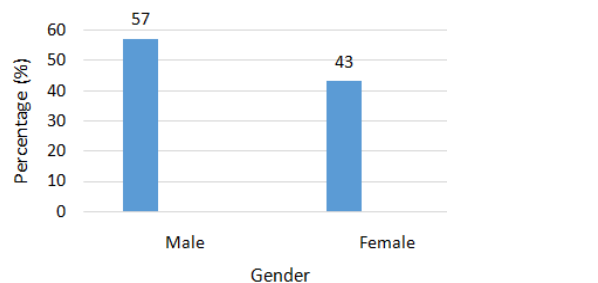
**Figure No. 1: Gender Distribution Chart. Male to Female ratio: 1.33: 1**



**Figure No. 2: Age distribution chart**



**Figure No. 3: Symptoms frequency chart.**



**Figure No. 4: Signs frequency chart.**

Fig 2 demonstrates the age distribution of patients with pancytopenia. In this study, the youngest patient was 13 years old while 77 years was the age of Eldest patient. In patients having pancytopenia, 20-30 years was the common age group.

The most common symptom reported was weakness followed by fever (62%) and bleeding (30%). Fig 3 shows the symptoms frequency.

The most common sign found was pallor along with splenomegaly. Fig 4 shows the frequency of clinical signs.

Table 1 shows different causes of pancytopenia as found in this study. Bone marrow aplasia was found in 42%, megaloblastic anemia in 28%, acute leukemia and hypersplenism represented 14% and 9% respectively.

**Table No.1: Causes of pancytopenia**

Cause	Number (n=100)	%age
Bone Marrow aplasia	42	42%
Megaloblastic anemia	28	28%
Acute leukemia	14	14%
Hypersplenism	9	9%
MDS	2	2%
Peripheral Destruction	2	2%
Malaria	1	1%
TB	1	1%
Abnormal mononuclear infiltrate	1	1%

**DISCUSSION**

Pancytopenia is a rare but serious hematological disorder dealt in everyday clinical practice predisposing to anemia, infections and bleeding manifestation such as hemorrhage, bruises and petechiae. Bone marrow aspiration along with trephine biopsy is performed to diagnose the underlying multiple and various causes. According to our study, as compared with the elder age group the risk of pancytopenia is more common at young age. Commonest age group was 20 - 30 years. From a total of 100 patients, there were 57 males while females were 43 in number. The ratio of male to female was 1.33:1. The results of our study shows great range of similarity to the study performed by Jalbani carried out in larkana<sup>(8)</sup>. In Jalbani's study, 72.5% were male patients while female patients were 27.5% with male to female ratio of 2.6:1. In contrast to this, another study performed by Aziz T<sup>(10)</sup> in Karachi reported that pancytopenia is more common in females (59%) than males (41%). This difference in the incidence of pancytopenia may be associated with geographical variation. This geographical variation in the incidence of pancytopenia can be explained as that, males are the prime source of income in Northern areas, supporting their family by working outdoor specifically in chemical industries and fields; hence they are at a greater risk of exposure to different radiations and industrial toxins or pesticides and insecticides used in agriculture.

The most common presenting clinical features in our study was pallor along with generalized weakness

comprising of 96% and 75% respectively. Ishtiaq<sup>(9)</sup>, Aziz T<sup>(10)</sup>, and Niazi M<sup>(11)</sup> have reported the same results in their studies.

In the current study, aplastic anemia (42%) was the most common cause of pancytopenia in comparison to other review studies where it ranges from 7.7 % to 52.7%<sup>12-15</sup>. Megaloblastic anemia (28%) was the second common cause following aplastic anemia in our study, comparable to other studies where it ranges from 0.8 % to 68 %<sup>6,12,13,15</sup>. In a study conducted in Malaysia, pancytopenia was a common finding in 64% of patients with megaloblastic anemia<sup>16</sup>. In India, the high frequency of megaloblastic anemia is contributed by nutritional deficiencies<sup>14</sup>. In Northern areas of Pakistan, nutritional anemia may be the main underlying cause leading to megaloblastic anemia due to a great deal of social and geographical resemblance. In Pakistan, folate deficiency is less prevalent than vitamin B12 among nutritional anemias<sup>17</sup>.

In west, the incidence of aplastic anemia is 10-25% which is lower than that observed in this study (42%). It is said that aplastic anemia is more common in Orient as compared to West. This higher incidence may be due to exposure to radiations, toxic chemicals and other environmental factors instead of genetics influences. Oriental ancestors currently residing in United State do not have this increase incidence of aplastic anemia<sup>18, 19</sup>. In one of the etiology of aplastic anemia, over the counter medicines could be involved. Studies in Thailand have shown that a common cause for aplastic anemia is exposure to pesticides<sup>20,21</sup>. The higher incidence of aplastic anemia in Pakistan may be due to the fact that Pakistan is an agricultural country and people have frequent exposure to pesticidal agents. According to the observations of Savage et al<sup>1</sup>, Megaloblastic anemia was the most common cause of pancytopenia while aplastic anemia remained at second position followed by acute leukemia, acquired immune deficiency syndrome, and hypersplenism. Whereas Kumar<sup>22</sup> stated that aplastic anemia (29.5%) is the commonest cause of pancytopenia followed by megaloblastic anemia (22 %), aleukemic leukemia, lymphoma (18 %), and hypersplenism (11.4 %). In both these studies, the third common cause of pancytopenia remained to be acute leukemia followed by hypersplenism as in our study.

## CONCLUSION

It was concluded from this study that the commonest cause of pancytopenia was aplastic anemia, followed by megaloblastic anemia and acute leukemia. Young adult males are predominantly affected by aplastic anemia. Furthermore, in assessing the underlying cause of pancytopenia, aspiration biopsy along with trephine biopsy are important diagnostic tools.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Suction versus Forceps Band Ligation –A comparative Analysis

Mirza Arshad Beg, Sheeraz ur Rahman, Faisal Siddiqi, Salman Faridi and Ibrahim Idrees

## ABSTRACT

**Objective:** The objective of this study was to compare mean intra and post procedure pain score of suction band ligation with forceps ligation in the treatment of 2<sup>nd</sup> degree hemorrhoids, at a tertiary care hospital in Karachi.

**Study Design:** Randomized Controlled Trial study.

**Place and Duration of Study:** This study was conducted at the Department of General Surgery at Liaquat National Hospital, Karachi from January 2014 to June 2014.

**Materials and Methods:** Sixty patients of either gender having 2<sup>nd</sup> degree hemorrhoids for more than two months and undergoing band ligation were included in this study. Patients with 1<sup>st</sup>, 3<sup>rd</sup> or 4<sup>th</sup> degree hemorrhoids, presence of concurrent painful anal conditions (anal fissure, anal fistula, perianal sinus, abscess, thrombosed hemorrhoids) and having inability to comprehend and respond to Visual Analog Scale were excluded. The procedure was performed by a consultant surgeon having experience more than five years. Patients were approached immediately after the procedure and responses of patients about intra procedural pain were recorded on proforma according to Visual Analog Score. Post procedural pain was assessed at 2 hours after the procedure by VAS and recorded.

**Results:** Age range in study was from 20 to 40 years with mean age of patients was  $41.83 \pm 14.07$  years. The mean Intra-procedure pain was observed to be  $2.27 \pm 2.31$ . Group A (suction banding) reported a mean intra-procedure pain score of  $1.13 \pm 1.24$  as compared to Group B (forceps banding) reporting a mean score of  $3.62 \pm 2.63$ . The mean Post-procedure pain was observed to be  $0.42 \pm 0.78$ . Participants in the Suction banding group (Group A) reported a mean post-procedure pain score of  $0.20 \pm 0.56$  whereas; Group B participants undergoing forceps banding reported a mean VAS score of  $0.76 \pm 0.97$ , post procedure. Comparatively, the mean post-procedure pain scores were found to be highly significant. (P-value: 0.008).

**Conclusion:** The study has shown that treatment outcome in terms of intra-procedure and post-procedure pain is different in suction band ligation as compared to forceps band ligation in treatment for second degree haemorrhoids. There appears to be a highly significant difference in terms of intra-procedure and post-procedure pain between Suction band ligation and forceps band ligation in second degree hemorrhoids treatment.

**Key Words:** Hemorrhoids, Band ligation, Pain.

**Citation of article:** Beg MA, Rahman S, Siddiqi F, Faridi S, Idrees I. Suction versus Forceps Band Ligation – A comparative Analysis. Med Forum 2017;28(6):121-124.

## INTRODUCTION

Bleeding from hemorrhoids remain the commonest reason for patient attending to the surgical clinics. It has been postulated that 5% of the population at one point in time will have symptomatic hemorrhoids<sup>1</sup>. Bleeding from the hemorrhoids is caused by the excessive straining raising intra-abdominal pressure and increase in venous congestion & passage of hard stools. One would receive treatment of hemorrhoids based on the degree and amount of symptoms they are producing. As a convention, 1<sup>st</sup> degree hemorrhoids are being managed conservatively with the dietary modifications, whereas 2<sup>nd</sup> and 3<sup>rd</sup> degree requires banding<sup>2</sup>.

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Received: April 20, 2017; Accepted: May 10, 2017

Rubber Band ligation can be safely performed as an outpatient / day care procedure. Conventionally for band ligation, Baron's Ligator which bears resemblance to the McGivney apparatus. This forcep instrument is limited by its inability to grasp the full pedicle of the hemorrhoid, increasing increased risk of the slippage, bleeding and repeat procedure. Recently they are now being replaced by the vacuum suction based apparatus, which have taken care of the above mentioned limitations. This can be used a single operator with ease and ensures better gripping<sup>3</sup>. Post procedural pain is one of the most agonizing pains patients experience if the bands are either inadequately placed or placed too close to the dentate line. This will continue the cause pain till the bands have taken its course of shedding which may take up to 2 weeks post procedure<sup>3</sup>.

Recent studies have shown superiority of this device over the conventional forceps based devices in terms of pain, bleeding and complication. Study conducted by Senapati PSP et al. have demonstrated statistically significant reduction in immediate and delayed post procedural pain with the use of Suction band ligation<sup>4</sup>.

The available data on the matter is scarce and limited by the randomized trials. Also the previous studies are limited by the appropriate sample size to ascertain the meaningful inference. Hence the purpose of the study is to evaluate the short-term effectiveness of suction band ligations as compared to forceps band ligators in reducing pain.

## MATERIALS AND METHODS

This randomized controlled trial was conducted in Department of General Surgery at Liaquat National Hospital, Karachi from January 2014 to June 2014.

**Inclusion Criteria:** Sixty patients of either gender having 2<sup>nd</sup> degree hemorrhoids for more than two months and undergoing band ligation were included in this study.

**Exclusion Criteria:** Patients with 1<sup>st</sup>, 3<sup>rd</sup> or 4<sup>th</sup> degree hemorrhoids, presence of concurrent painful anal conditions (anal fissure, anal fistula, perianal sinus, abscess, thrombosed hemorrhoids) and having inability to comprehend and respond to Visual Analog Scale were excluded.

Sample size was calculated with WHO software for sample size determination. Taking P1= 4.0±2.09 and P2=1.92±1.93, with power of 80 and Confidence Interval of 95%. Ethical approval was obtained from the Ethical Review Committee of the Liaquat National Hospital before commencement of the study. Consent form were signed by the study participants, after explanation of the study purpose.

Patients were equally and randomly divided into two groups i.e. Group-A: Suction ligation and Group-B Forceps ligation by lottery method. Patient demographics and clinical history was taken before the procedure.

The procedure was performed by a consultant surgeon having experience more than five years. Patients were approached immediately after the procedure and responses of patients about intra procedural pain were recorded on proforma according to Visual Analog Score. Post procedural pain was assessed at 2 hours after the procedure by VAS and recorded on proforma.

Questionnaire was developed on the basis of published literature<sup>4</sup> and the visual analogue scale was used to assess pain. Questionnaire composed of patient's demographic details (age, gender, hospital case number, date of procedure), method of band ligation used, visual analog scale to assess pain as perceived by the patient during and after procedure. The final outcome analysis were done post procedure, taking into account both immediate and post procedure (2hrs) pain visual analog scores.

Data was entered into SPSS 19 for data compilation and statistical analysis. Analysis included descriptive measures including frequencies, percentages, mean and standard deviation. Mean ± SD were calculated for the

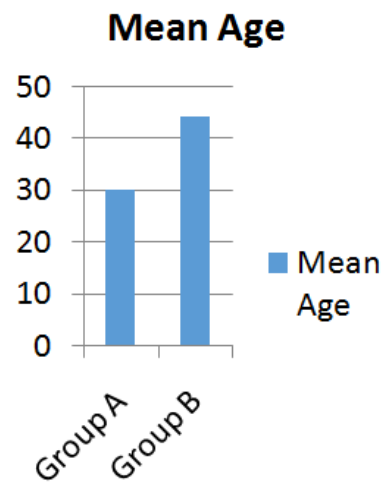
quantitative variables i.e. age and VAS pain score (intra-procedure & post-procedure pain).

Frequency and percentages were calculated for qualitative variables i.e. gender, occupation and t-test applied to compare the mean intra-operative and post-operative VAS scores between the two groups.

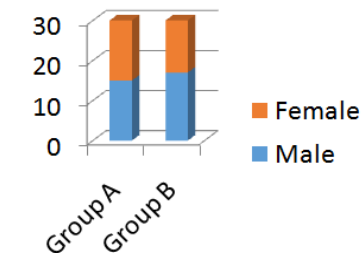
Stratification was performed on gender, age, and occupation to see effect of these modifiers on outcome using independent sample t test. P-value ≤ 0.05 was considered as significant.

## RESULTS

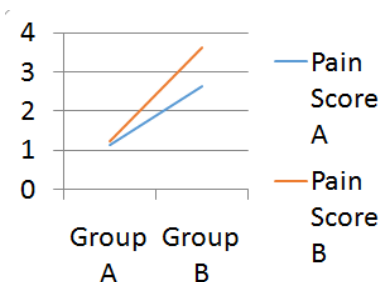
Age range in study was from 20 to 40 years with mean age of patients was 41.83 ± 14.07 years. In Group A (Suction banding), the mean age was observed to be 29.83 ± 8.8 and in Group B (Forceps banding), the mean age was 44.1±21.9 as shown in Graph-I.



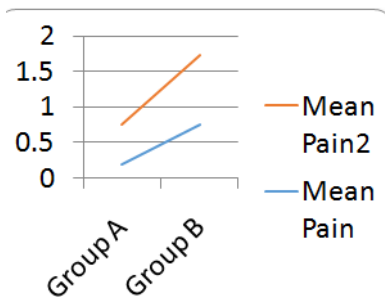
Graph No.1: Mean age of the patients in both groups



Graph No.2: Patients Gender in both groups



Graph No.3: Intra-procedure pain scores in both groups



**Graph No.4: Mean Post-procedure pain in both groups**

There were 32 males (53%) and 28 (47%) females who participated in this study. Group A consisted of 15 (25%) males and 15 (25%) females, whereas, Group B comprised of 17 males (28%) and 13 females (22%) as shown in Graph-2.

Patients were divided between four categories of occupation, including housewife, laborer, professional and retired groups. There were a total of 24 Housewives (40%), 10 Laborers (17%), 20 Professionals (33%) and 6 Retired (10%) personnel participating in the study.

The mean duration of Symptoms was observed to be  $4.37 \pm 4.81$  months. In Group A mean duration of symptoms was  $4.75 \pm 5.187$  months as compared to Group B, the mean duration of symptoms was  $3.93 \pm 4.413$ . Comparatively, the duration of symptoms were found to be statistically insignificant (p-value: 0.511).

Out of 60 patients, the mean Intra-procedure pain according to the Visual Analog Score was observed to be  $2.27 \pm 2.31$ . Group A (suction banding) reported a mean intra-procedure pain score of  $1.13 \pm 1.24$  as compared to Group B (forceps banding) reporting a mean score of  $3.62 \pm 2.63$ . The intra-procedure pain scores were found to be highly significant between the two groups. (P-value: 0.001) as shown in Graph-3.

Out of 60 patients, the mean Post-procedure pain according to the Visual Analog Score was observed to be  $0.42 \pm 0.78$ . Participants in the Suction banding group (Group A) reported a mean post-procedure pain score of  $0.20 \pm 0.56$  whereas; Group B participants undergoing forceps banding reported a mean VAS score of  $0.76 \pm 0.97$ , post procedure. Comparatively, the mean post-procedure pain scores were found to be highly significant. (P-value: 0.008) as shown in Graph-4.

## DISCUSSION

Internal hemorrhoid is a common disease in surgical practice. Treatment varies from medical to surgical, depending on its severity. Usually, dietary control and medications such as bulk forming agents or micronized purified flavonoids are recommended for first and second degree internal hemorrhoid. However, with persistent bleeding, discomfort or the presence of significant prolapse, other types of treatment are indicated.<sup>5,6</sup>

These include rubber band ligation, injection sclerotherapy, infrared coagulation, bicap coagulation, or cryotherapy. However, the most effective and most

popular treatment is rubber band ligation.<sup>7,8</sup> Blaisdel was the first to describe the rubber band ligation technique in 1958<sup>9</sup> but it was Barron who improved the technique and demonstrated its effectiveness in 1963.<sup>10</sup> It is now used worldwide because of its simplicity and safety. The need to treat haemorrhoids is based primarily on the severity of symptoms but the type of treatment is based on traditional classification of haemorrhoids, which may have little to do with symptoms severity.<sup>5,10</sup>

Multiple retrospective series<sup>11,12</sup> involving 100-6600 patients undergoing RBL have also shown efficacy of rubber band ligation. However, the retrospective studies included all grades of hemorrhoid patients and based their results on their available data. In our study, we have only included second degree hemorrhoid patients and excluded patients presenting with other grades of hemorrhoids. Furthermore, prospective randomized controlled trials have also included grades 2 and 3 hemorrhoid patients and compared them to serial banding, hemorrhoidectomy and lateral sphincterotomy.<sup>13-15</sup> Our study, has only compared suction band ligation with forceps band ligation in second degree hemorrhoid patients in a single session.

In our study, a total of 60 patients were included. The overall the mean age of patients was  $41.83 \pm 14.07$  years. In Group A (Suction banding), the mean age was observed to be  $29.83 \pm 8.8$  years and in Group B (Forceps banding), the mean age was  $44.1 \pm 21.9$  years. This is comparable to studies conducted by Ali<sup>8</sup> (Peshawar) and Komborozos<sup>1</sup> (Greece) who reported a mean age of  $45.6 \pm 3.6$  and  $45 \pm 2.8$  years respectively. There were a total of 32 males (53%) and 28 (47%) females who participated in this study. Group A consisted of 15 (25%) males and 15 (25%) females, whereas, Group B comprised of 17 males (28%) and 13 females (22%) **Error! Reference source not found.**

It is comparable to another randomized control trial conducted by Hadi<sup>9</sup> which included 50 patients in both groups. They reported Fifty five (55%) male patients 45 (45%) females patients. Furthermore, studies conducted by Ali<sup>8</sup>, Hadi<sup>9</sup> and Nakeeb<sup>10</sup> analyzed that hemorrhoids were more common in males than females. Similarly, we have noted in our study that there was a male predominance in the included patients presenting with second degree hemorrhoids.

In our study, the mean duration of Symptoms was observed to be  $4.37 \pm 4.81$  months. In Group A, the mean duration of symptoms was  $4.75 \pm 5.187$  months as compared to Group B, the mean duration of symptoms was  $3.93 \pm 4.413$ . Comparatively, the duration of symptoms were found to be statistically insignificant (p-value: 0.511).

This is comparable to present literature<sup>1,2,5,10</sup> which states that patients with hemorrhoids (second degree) usually present to the out-patient department/doctor once they develop complications including, prolapse, pain, tenesmus, itching and bleeding per rectum. The time taken for complications to develop is variable from 4 weeks to 12 weeks (1-3 months).

In our study, we compared the intra-procedure and immediate post-procedure pain in both groups whereas a similar randomized controlled study comparing suction and forceps band ligation conducted by Ramzisham<sup>16</sup> AR compared pain in both groups at 24 hours, 7 days and at 14 days. Pain was evaluated using visual analog score in both studies.

The mean Intra-procedure pain according to the Visual Analog Score was observed to be  $2.27 \pm 2.31$ . Group A (suction banding) reported a mean intra-procedure pain score of  $1.13 \pm 1.24$  as compared to Group B (forceps banding) reporting a mean score of  $3.62 \pm 2.63$ . In comparison, the intra-procedure pain scores were found to be highly significant between the two groups with P-value: 0.001.

Furthermore, the mean Post-procedure pain according to the Visual Analog Score was observed to be  $0.42 \pm 0.78$ . Participants in the Suction banding group (Group A) reported a mean post-procedure pain score of  $0.20 \pm 0.56$  whereas; Group B participants undergoing forceps banding reported a mean VAS score of  $0.76 \pm 0.97$ , post procedure. Comparatively, the mean post-procedure pain scores were found to be highly significant with P-value: 0.008).

Our results are consistent with the results of Ramzisham's<sup>16</sup> study; which reported a mean post-procedure pain score of 6.08 and 3.08 (p-value:<0.001). The forceps band ligation group reported a worse pain perception as compared to the suction banding group with mean post-procedure pain score of 4.0 and 1.92 respectively, at 24 hours post band ligation. Similarly, studies conducted by Mattana et al,<sup>13</sup> Islam M<sup>14</sup> and Sheikh AR<sup>15</sup> reported post procedure pain frequency of approximately 8% with band ligation.

## CONCLUSION

The study has shown that treatment outcome in terms of intra-procedure and post-procedure pain is different in suction band ligation as compared to forceps band ligation in treatment for second degree haemorrhoids. There appears to be a highly significant difference in terms of intra-procedure and post-procedure pain between Suction band ligation and forceps band ligation in second degree hemorrhoids treatment.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Rate of Anxiety and Depression in Cases of Bronchial Asthma

Anxiety &  
Depression in  
Bronchial  
Asthma

Muhammad Fahad Nazar, Ali Hassan Rana and Owais Ahmad

## ABSTRACT

**Objective:** The objective of this study was to determine the incidence of anxiety and depression among the patients suffering from bronchial asthma.

**Study Design:** Observational / cross sectional study.

**Place and Duration of Study:** This study was conducted at the Department of Medicine of Bahawal Victoria Hospital from January 1, 2016 to June 30, 2016.

**Materials and Methods:** Total 250 patients with Mean age of  $45.5 \pm 7.5$  years were included. The Hospital Anxiety and Depression Scale (HADS) were used to assess anxiety and depression.

**Results:** Total 190(76%) patients had anxiety and 160(64%) had depression. 140 (74%) male patients and 50(81%) female patients had anxiety and 122 (65%) male patients and 38(59%) female patients had depression. Note that anxiety and depression were not significantly associated with sex ( $P = 0.3925$  and  $0.464$ ).

Total 150(60%) people belonged to rural areas, 100(40%) patients belonged to urban areas. The anxiety was observed in 134 (89%) and 56 (56%) patients belonged to rural and urban patients, respectively. The prevalence of depression in urban patients was 71 (71%), and the prevalence of depression in rural patients 89(89%) was observed in our study, the difference was not statistically significant ( $P = 0.0617$ ).

In this study, 113(45%) patients were educated and 137(55%) were uneducated. The anxiety and depression were noted in 69(61%) and 51 (45%) among educated patients, respectively. Among the uneducated patients, the anxiety rate was 121(89%) and the depression rate was 109(79%).  $P$  value was highly significant ( $P = 0.001$ ,  $0.001$ ) was observed in the association between anxiety and depression.

**Conclusion:** The results of this study show that the incidence of anxiety and depression in asthma patients is high. Male or female asthma patients equally suffer from anxiety and depression. Rural residents and uneducated people have higher rate of anxiety and depression as compared with urban and educated people.

**Key Words:** Mental disorders; Asthma; Anxiety; Depression; Severe; Chronic.

**Citation of article:** Nazar MF, Rana AH, Ahmad O. Rate of Anxiety and Depression in Cases of Bronchial Asthma. Med Forum 2017;28(6):125-128.

## INTRODUCTION

Bronchial asthma is the main cause of morbidity and mortality, and affects 300 million people worldwide.<sup>1</sup> Bronchial asthma is defined as unexpected and sudden shortness of breath, these asthma attacks are real threat to life in these cases<sup>2</sup>. Bronchial asthma significantly affects the patient's mental health is justified, because of its serious effects on the social life, daily activities and sleep of these patients.<sup>3</sup>

Bronchial asthma deeply linked between psychological, physiological and social factors.<sup>4</sup> The latest hypothesis about the association between bronchial asthma and psychological factors will describe bronchial asthma as

a classic psychosomatic disorder caused by specific psychological conflicts<sup>5</sup>.

About two-thirds of asthma patients are anxious during acute episodes. Anxiety symptoms in asthmatic patients have been revealed as very strong predictors of respiratory disease.<sup>6</sup>

Some negative emotions (anger, panic, fear and depression) are involved in fluctuations of the process of airway bronchial contraction, leading to a more severe asthma crisis. Although these emotions are not enough to be classified as mental disorders, it may lead to asthma attacks or worsening them.<sup>7</sup> On the contrary, these emotions may also deteriorate due to asthma itself. Anxiety and depression are also associated with spontaneous disorders, leading to cholinergic or vagal bias (i.e., vagus nerve sympathetic responses), which increases asthma airway instability. Exposure to stress increases the risk of asthma.<sup>8</sup>

The study was planned to screen asthmatic patients for anxiety and depression. The results of this study may help us to reduce the complications of asthma patients through early management.

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Received: April 15, 2017; Accepted: May 19, 2017

## MATERIALS AND METHODS

This Cross sectional observational study was carried out at Department of Medicine of Bahawal Victoria Hospital from January 1, 2016 to June 30, 2016. Total 250 patients suffering from bronchial asthma, male or female aged between 20-60 years old were included in our study. Patients with a history of diabetes and hypertension were excluded from the study. The Hospital Anxiety and Depression Scale (HADS) were used to assess anxiety and depression.

Score  $\geq 8$  is considered to be anxious and depression. Primary education was considered to be uneducated, and education of middle or higher was considered to be educated. All the collected data was entered into SPSS V 17 and analyzed. Calculated the mean and standard deviation for numeric variables, calculated the frequency and percentage of anxiety, depression, sex (male or female), educational status (educated or uneducated) and place of residence (rural or urban). Stratified chi-square tests were used to observe the association of anxiety and depression with gender, Patient living area and educational status, P value  $\leq 0.05$  was considered statistically significant.

## RESULTS

Total 250 patients with Mean age of  $45.5 \pm 7.5$  years were included. Total 190(76%) patients had anxiety and 160(64%) had depression. (Table 1) 140(74%) male patients and 50(81%) female patients had anxiety and 122 (65%) male patients and 38(59%) female patients had depression. Note that anxiety and depression were not significantly associated with sex (P = 0.3925 and 0.464) (Table 2).

**Table No.1: Frequencies for anxiety and depression**

Status	Anxiety	Depression
Yes	190(76%)	160(64%)
No	60(24%)	90(36%)

**Table No.2: Relation of anxiety and depression with gender**

Gender	Yes	No	Total
<b>Relation of anxiety with gender</b>			
Male	140(74%)	48(26%)	188(75%)
Female	50(81%)	12(19%)	62(25%)
Total	190	60	250
<b>P Value</b>	0.3925		
<b>Relation of depression with gender</b>			
Male	122(65%)	34(35%)	188(75%)
Female	38(59%)	26(41%)	62(25%)
Toatal	160	90	250
<b>P Value</b>	0.464		

Total 150(60%) people belonged to rural areas, 100(40%) patients belonged to urban areas. The anxiety

was observed in 134 (89%) and 56 (56%) patients belonged to rural and urban patients, respectively. The prevalence of depression in urban patients was 71 (71%), and the prevalence of depression in rural patients 89(89%) was observed in our study, the difference was not statistically significant (P = 0.0617). (Table 3)

In this study, 113(45%) patients were educated and 137(55%) were uneducated. The anxiety and depression were noted in 69(61%) and 51 (45%) among educated patents, respectively. Among the uneducated patients, the anxiety rate was 121(89%) and the depression rate was 109(79%). P value was highly significant (P = 0.001, 0.001) was observed in the association between anxiety and depression (Table 4).

**Table No.3: Relation of anxiety and depression with area of residence**

Area of Residence	Yes	No	Total
<b>Relation of anxiety with area of residence</b>			
Rural	134(89%)	16(11%)	150(60%)
Urban	56(56%)	44(44%)	100(40%)
Total	190	60	250
<b>P Value</b>	0.0001		
<b>Relation of depression with area of residence</b>			
Rural	89(59%)	61(41%)	150(60%)
Urban	71(71%)	29(29%)	100(40%)
Toatal	160	90	250
<b>P Value</b>	0.0617		

**Table No.4: Relation of anxiety and depression with educational status**

Educational Status	Yes	No	Total
<b>Relation of anxiety with educational status</b>			
Educated	69(61%)	44(39%)	113(45%)
Uneducated	121(89%)	16(11%)	137(55%)
Total	190	60	250
<b>P Value</b>	0.0001		
<b>Relation of depression with educational status</b>			
Educated	51(45%)	62(55%)	113(45%)
Uneducated	109(79%)	28(20%)	137(55%)
Total	160	90	250
<b>P Value</b>	0.0001		

## DISCUSSION

Anxiety and depression are more common in asthmatic patients, such as anxiety, anger, happiness, excitement, satisfaction and neutral emotions can affect the respiratory system parameters.<sup>9</sup> In the literature, many studies have confirmed the relationship between anxiety and asthma depression.<sup>10</sup> Compared with non-asthmatic patients, these diseases are more common in asthma patients, from 9% to 65%.<sup>11</sup>

The mean age of asthma patients in this study was  $45.5 \pm 7.5$  years. Tafti et al. Reported similar asthma ( $43.8 \pm 16.6$  years) in their studies.<sup>12</sup> In another study, Tafti et al.<sup>13</sup> reported that the mean age of asthma was  $48 \pm 17$  years. The rates of anxiety and depression were 77.5% and 63%, respectively. The high percentage of anxiety and depression is due to the lack of conventional psychological counseling among patients. Tafti et al reported depression in 65.4% of asthma patients, comparable to our study (64%).

Asnaashari et al<sup>14</sup> and Labor et al<sup>15</sup> reported that the prevalence of anxiety and depression in asthmatic patients rate was 44.5%, and 24.5% which was lower than we found in our study. Another study by Aspinosa Leal et al<sup>16</sup> showed that 30% of patients with asthma had anxiety and 8% had depressive symptoms.

The prevalence of anxiety and depression in asthmatic patients is controversial. Wang et al<sup>17</sup> reported that 70% of asthmatic patients had anxiety and depression in their study. Some other studies reported that anxiety and depression in asthmatic patients are six times greater than in normal patients compared with non-asthmatic patients.<sup>18</sup>

The gender of asthmatic patients is another risk factor for anxiety and depression. In the literature, different studies have reported anxiety and depression in asthmatic patients to varying degrees. Our study showed that anxiety and depression were not significantly associated with sex ( $P = 0.3925$  and  $0.464$ ). Similarly, in Wilson et al. Studies, asthmatic men and asthmatic women suffer from similar prevalence of anxiety and depression.<sup>19</sup> In contrast, Tafti et al reported a significant increase in depressive symptoms in women with asthma compared with asthmatic men ( $P = 0.005$ ), while Nowobilski et al<sup>20</sup> reported that asthmatic women had higher somatic symptoms and anxiety than non-asthmatic men.

In this study, the proportion of anxiety and depression in uneducated asthma patients was significantly higher ( $P = 0.001$ ) than in educated asthma patients ( $P = 0.001$ ), compared with Tafti et al the incidence of depression in asthmatic patients was significantly higher than in the control group ( $P = 0.009$ ) compared with uneducated patients.

## CONCLUSION

The results of this study show that the incidence of anxiety and depression in asthma patients is high. Male or female asthma patients equally suffer from anxiety and depression. Rural residents and uneducated people have higher rate of anxiety and depression as compared with urban and educated people.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Rates of Surgical Site Infections in Clean Surgery at Tertiary Care Teaching Hospital

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## ABSTRACT

**Objective:** To quantify the rates of Surgical Site Infections (SSI) in clean Surgery.

**Study Design:** Prospective / cross sectional study.

**Place and Duration of Study:** This study was conducted at the Tertiary People's Medical University Hospital, Nawabshah from 1<sup>st</sup> March 2015 to 31<sup>st</sup> March 2016.

**Materials and Methods:** This study was conducted on 218 cases who meet the inclusion criteria and consented in written for study. The demographic data of the patients with diagnosis, name of operation, category of operation and post-operative infections of subjected cases were recorded on pre-designed pro-forma by the treating surgeons. The percentages and means were used to describe the variables.

**Results:** A total of 218 cases were eligible for analysis. The SSI was found in 5 males and in 10 females respectively with total of 15 (6.88%) among all subjects. Rates of SSI were more common in subjects having ages > 40 years. Among these surgeries, the rates of SSI were higher (10%) in ventral hernia repairs and then were inguinal hernia surgery stood as second with rates of 6.52%. Among various types of SSI, superficial incisional infections were on top with rates of 5.04% in this study.

**Conclusion:** The study concluded, that the rates of surgical site infections as 6.88% in patients underwent for clean surgery.

**Key Words:** Surgical site infections, wounds, clean surgery.

**Citation of article:** Shah SKA, Memon GA, Toor HRK, Brohi QR, Leghari S, Baloch S. Rates of Surgical Site Infections in Clean Surgery at Tertiary Care Teaching Hospital. Med Forum 2017;28(6):129-131.

## INTRODUCTION

Postoperative surgical site infections remain a major source of illness and a less frequent cause of death in the surgery patients.<sup>1</sup>

Surgical site infection (SSI) is increasingly recognized as a measure of the quality of patient care by both healthcare providers and the public.<sup>2</sup> SSIs are the second most common cause of hospital acquired infections.<sup>3</sup>

The incidence of infections varies from surgeon to surgeon, from hospital to hospital, from one surgical procedure to other, and – most importantly- from one patient to other.<sup>4</sup>

The Centers for Disease Control and Prevention (CDC) changed the term wound infection resulting after surgical procedures to surgical site infection in 1992. These infections are classified into incisional and organs or space manipulated during an operation; incisional infections are further divided into superficial

(skin and subcutaneous tissue) and deep (deep soft tissue – muscle and fascia).<sup>5</sup>

The pathogens isolated from infections differ, primarily depending on the types of surgical procedure. In clean surgical procedures, the gastrointestinal, gynecologic, and respiratory tracts are not entered, while staphylococcus aureus comes either from the exogenous environment or the patient's skin flora and remains the usual cause of infection.<sup>6</sup>

The post – operative SSI infections depends upon the preoperative variables include scrubbing time, skin antiseptics, surgical aseptic technique, duration of procedure, presence of an implant or drain and duration of the preoperative hospitalization.<sup>7</sup>

Medical literature explicates that SSI increases the length of hospital stay, admission to the intensive care unit, incidence of readmission and risk of mortality.<sup>8</sup> Hence, this study was designed with an object to quantify the rates of SSI in clean Surgery.

## MATERIALS AND METHODS

This study was conducted in the Tertiary Care Surgical Unit one of 1500 bed tertiary care People's Medical University Hospital, Nawabshah from 1<sup>st</sup> March 2015 to 31<sup>st</sup> March 2016.

The study included 218 cases who meet the inclusion criteria and consented in written for study.

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**Inclusion Criteria:**

- All clean surgical cases as defined by ACS-NSQIP without infection or inflammation, and without entry into respiratory, gastro intestinal, genital or urinary tract during operation.
- Subjects ages with from 18 to 60 years.
- Operated electively.

**Exclusion criteria:**

- Patients with high risk for infections (Diabetics, malnourished, on Immune Suppressants)
- Surgical procedures in emergency.
- Procedure involving mesh repair.
- Patients having pre-operative infections disease.
- Patients (s) refused to participate in study.
- Patients (s) that did not complete the follow-up period.

**Data Collection:** The demographic data of the patients with diagnosis, name of operation, category of operation and post-operative infections of subjected cases were recorded on pre-designed proforma by the treating surgeons. Wound considered infected (SSI/ Surgical site infection) as per criteria of the centers for Disease control and Prevention-CDC Atlanta 1999 The operational definition of SSI according to ACS-NSQIP includes.

- Superficial incisional (limited to skin or sub-cutaneous tissue of surgical incision,
- Deep incisional (has spread to deep soft tissues, as in fascial and muscle layers) and
- Organ / space infections (deeper infection that involves any part of anatomy that was opened or manipulated during the operation).

An operation was defined as any procedure involving skin incision undertaken in an operating theatre under any type of anaesthesia. The skins of all the study subjects were scrubbed with Povidin-iodine before open surgery. Every study subject received prophylactic 3<sup>rd</sup> generation cephalosporin (1gm) intra venously ½ hour before surgery.

Surgical site infections were detected by two methods: Bedside and post-discharge surveillance. Bedside surveillance involved the patients during hospital admission and started from the day after surgery until the patient was discharged from the hospital. Post-discharge follow-up was conducted for a period of one month after discharge.

**Data Analysis:** The data was entered in the statistical package for the social sciences (SPSS) Soft word version 20 for analysis. The percentages and means were used to describe the variables.

**RESULTS**

A total of 218 cases were eligible for analysis. All analyzed patients in context to rates of SSI are displayed in different categorical variable in table No.1.

In this study, the male to female ratio was 2.5:1. Males were 156 and females were 62.

The SSI was found in 5 males and in 10 females respectively with total of 15 (6.88%) among all subjects. Rates of SSI were more common in subjects having ages > 40 years. Among these surgeries, the rates of SSI were higher (10%) in ventral hernia repairs and then were inguinal hernia surgery stood as second with rates of 6.52%. Among various types of SSI, superficial incisional infections were on top with rates of 5.04% in this study.

While, the median during of hospital stay was (mean 4 ± 0.08 days).

**Table No.1: Patients in context to rates of SSI in different categorical variable**

Characteristics		SSI Total	Rates
Gender	Males	10/156	6.41%
	Females	5/62	8.06%
Ages (years)	< 40	8/152	5.26%
	>40	7/66	10.60%
Nature of Surgery	Inguinal Hernia	6/92	6.52%
	Ventral Hernia	3/30	10%
	Benign soft tissue surgeries	2/35	5.71%
	Breast Benign / malignant surgeries	2/31	6.66%
	Lymphadec tomies	1/10	10%
	Thyroid Surgeries	1/20	5%
	SSI	15/218	6.88%
	Superficial Incisional	11/218	15.04%
	Deep Incisional	03/218	1.37%
	Organ Space SSI	01/218	0.45%
	Hospital stay (median)	4 ± 0.08 days	

**DISCUSSION**

Despite the guide lines form the Centre’s for Disease Control and Prevention (CDC) for preventions of SSIs, it still remains the significant burden on health care system.<sup>9</sup> A part from clean-contaminated surgery, the rates of SSIs generally remain to be more than 3% in clean surgical procedures.<sup>8</sup> But, the SSIs rates are more in hospitals of third world countries, as is seen about

6.8% in this study and this is in agreement with rates observed by Abu – Hanifa<sup>10</sup> and Leilani et al.<sup>11</sup> In the cases of this study, male subjects (71.55%) were operated in majority. This may be because of the patriarchal society. Out of total study subjected sample; 66(30.27%) were above 40 years with SSIs rates of 10.60%, this higher rate may be due to decreased immunity, as also has been described earlier in 1990 by Isadore C et al<sup>7</sup> and then by Kay KS et al<sup>12</sup> and Neumayer et al<sup>13</sup>. But this result is not statistically significant.

In this study, the second higher rates of SSIs (10%) were observed in open Meshless Ventral herma repairs. This may partially be explained by the fact that majority of the patients in these repairs were obese and this reflects in similarity to several studies, which showed increased risk of post-operative infections among obese patients.<sup>14</sup> Further studies showed that the rates of SSIs are even higher in emergency operations<sup>14,15</sup> but emergency cases were not included in this study. SSIs after clean operations may result by the micro-organism from skin flora or exogenous sources; like, infected or colorized health care workers, instruments or operating room environment as have been described in many studies.<sup>16</sup> This might need infection control team in every tertiary care hospital, which is very much lacking at our part of world. Hence the increased rates of SSIs among patients operated on for clean surgery may be because of sub-standard infection controlling measures for dis infecting the skin of patient and health care worker and sterilization of surgical instruments. However, improper handling of tissue may be another possible contributory reason with increasing risk of SSIs in patient underwent for clean procedures, and same is also observed by Petrosillo et al in his study.<sup>17</sup>

## CONCLUSION

The study concluded that the rates of surgical site infections as 6.88% in patients underwent for clean surgery; which are higher than many other countries. These rates can be decreased with simple awareness of infection control measures..

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Self Medication Practice among Non-Medical University Students of Bahawalpur

Owais Ahmad, Ali Hassan Rana and Muhammad Fahad Nazar

## ABSTRACT

**Objective:** The aim of this study was to find out the reasons for self-medication among the non medical students.

**Study Design:** Cross-sectional study.

**Place and Duration of Study:** This study was conducted at the Department of Medicine, Bahawal Victoria Hospital, QAMC, Bahawalpur from January 2015 to March 2015.

**Materials and Methods:** Total 500 students participated in this study of Islamia University of Bahawalpur. A self-administered semi-structured questionnaire was distributed after explaining the purpose of this study and taking informed consent from students. The data was analyzed by SPSS V 21 and results were presented in the form of frequency, percentage tables and charts.

**Results:** Total 500 students participated in the study, including 53% males and 47% females. The most common cause of self-medication practice was the urgency problem (41%), convenience (18%) was the second most common cause. Headaches (45%) and fever (40%) influenza (25%) and diarrhea (20%), respectively were the most frequently reported causes of self-medication. The source of self-medication advice from the family was the main cause of self-medication (52%), own decision (30%) and pharmacist (22%). Our study shows that 63% of the students said they would use the same medicine if they had relapse of same illness, and 35% of the students agreed that they were always used and 45% sometime used to read the prospectus before using non-prescribed medicine. 70% of the respondents said they would not be afraid of side effects of non prescribed medicine. About Drug Dose Information, 55% agreed that the family was the main source, followed by past experience 25%. Our study showed that in 54% cases pharmacies was the most common source of medicine supply without prescription, followed by available medicine at home that was in 28% cases.

It is clear from our study that 46% of pharmacists do not require prescriptions, while 54% of patients replied that they were asked for prescriptions. The most commonly used drugs were 51% of painkillers, followed by antibiotics 28%, anti-pyretic 14%.

**Conclusion:** This study shows that the practice of self-medication practice is very high among non-medical educated youth.

**Key Words:** Self-Medication; Non Medical; University Students; Adverse affects.

**Citation of article:** Ahmad O, Rana AH, Nazar MF. Self Medication Practice among Non-Medical University Students of Bahawalpur. Med Forum 2017;28(6):132-135.

## INTRODUCTION

Self-medication is selection and use of medicines by individual to treat a self-perceived or self-diagnosed diseases or symptoms.<sup>1</sup> Re-use of previous prescription to buy Medicines, use medicine without prescription and share drugs with relatives or use them at home is the main factor in the practice of self-medication without a doctor's supervision.<sup>2</sup>

Many previous studies have shown that the prevalence of self medication in many countries such as European countries is as high as 68%, in India 31%<sup>3</sup>, 59% in

Nepal;<sup>4</sup> this proportion in Kuwaiti adolescents is as high as 92%.<sup>5</sup> Adolescents are the most vulnerable groups that are highly influenced by the media and the Internet and that promote self-medication behavior.<sup>6</sup> However, the reliability of the information source is difficult to judge, so the lack of awareness of young adults face scientifically unproven information.<sup>7</sup>

Several studies have reported that Pakistan's self-drug rates are as high as 51%), out of which 76% of self-drugs are practicing in Karachi<sup>8</sup> and 41% are in Islamabad.<sup>9</sup> Self medicine can be good for personal health and be recognized by World Health Organization as part of self - care.<sup>10</sup> Self-medication can be helpful in prevention and treatment of common diseases, but unreasonable use of medicine causes drug-resistant that is the most common reason of adverse drug reactions.<sup>11</sup> The Non-prescription drugs are known as over the counter drugs and are available in commonly used as painkillers, NSAIDS, cough and cold medications, ant allergic drugs, vitamins And energy supplements .

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Received: April 12, 2017;

Accepted: May 10, 2017

Although their excessive use of these medicines can cause serious side effects.<sup>12</sup> The aim of this study was to find out the reasons for self-medication among the non medical students and to make them understand the proper use of drugs.

## MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Medicine, Bahawal Victoria Hospital, QAMC, Bahawalpur from January 2015 to March 2015 among the students of Islamia University Bahawalpur. Total 500 students participated in this study. A self-administered semi-structured questionnaire was distributed after explaining the purpose of this study and taking informed consent from students

The questionnaire was divided into three parts, one partially assessing the demographic profile of the participants and other assessing the prevalence and practice of self-medication. The last part involved students' attitudes towards self-medication, information about drug types, and the type of illness for which medicine being used and the reason of not consulting a doctor.

The completeness of the questionnaire was evaluated and only the completed questionnaire was considered for final analysis. The data was analyzed by SPSS V 21 and results were presented in the form of frequency, percentage tables and charts.

## RESULTS

Total 500 students participated in the study, including 53% males and 47% females (Table 1). The most common cause of self-medication practice was the urgency problem (41%), convenience (18%) was the second most common cause (Table 2). Headaches (45%) and fever (40%) influenza (25%) and diarrhea (20%), respectively were the most frequently reported causes of self-medication. The source of self-medication advice from the family was the main cause of self-medication (52%), own decision (30%) and pharmacist (22%) (Table 3). Our study shows that 63% of the students said they would use the same medicine if they had relapse of same illness, and 35% of the students agreed that they were always used and 45% sometime used to read the prospectus before using non-prescribed medicine. 70% of the respondents said they would not be afraid of side effects of non prescribed medicine.

**Table No. 1: Gender Distribution**

Gender	Frequency	Percentage
Male	265	53
Rfemale	235	47
Total	500	100

About Drug Dose Information, 55% agreed that the family was the main source, followed by past experience 25%. Our study showed that in 54% cases

pharmacies was the most common source of medicine supply without prescription, followed by available medicine at home that was in 28% cases. It is clear from our study that 46% of pharmacists do not require prescriptions, while 54% of patients replied that they were asked for prescriptions. (Table 4). The most commonly used drugs were 51% of painkillers, followed by antibiotics 28%, anti-pyretic 14%. (Table 5).

**Table No. 2: Reasons for Using Self Medication**

	Frequency	Percentage
Urgency of problem	205	41
Cost of consultation	50	10
Problem too insignificant	60	12
Convenience	90	18
Lack of trust in prescribing doctor	60	12
Others	15	3
Don't know	20	4

**Table No. 3: Source of medicine**

	Frequency	Percentage
Pharmacy	270	54
Homeopath	65	13
Already available at home	140	28
Leftover from previous prescription	20	4
Others	5	1

**Table No. 4: Pharmacist require prescription**

	Frequency	Percentage
YES	270	54
NO	230	46

**Table No. 5: Which medicines used commonly**

	Frequency	Percentage
Antibiotics	140	28
Painkillers	255	51
Fever relieving medicines	70	14
Antimalarial	5	1
Nausea and vomiting relieving	20	4
Others	10	2

## DISCUSSION

According to the International pharmaceutical Federation, Self-medication is selection and use of medicines by individual to treat a self-perceived or self-diagnosed diseases or symptoms.<sup>13</sup> Some studies have shown that many factors are increasing self-medication practices, including easy access to drugs, socioeconomic status and more availability of medicinal products.<sup>14</sup> According to our study, the most

common reason of self-medication was the urgency of solving medical problems, less severity of the disease, and the easy availability of medicine directly from medical store, without prescription. A similar study was reported in India<sup>15</sup>. However, a study in Tamil Nadu, reported most of the students use self-medication because of the time-saving<sup>3</sup>, while in a study conducted in Punjab, reported that the most common cause of self-medication was the quick relief.<sup>16</sup> Previous studies and surveys often reported a low severity of disease symptoms.<sup>9</sup> Our study shows that previous illnesses was also the common causes of self-medication, just as a study conducted in Malaysia<sup>17</sup> and Karachi<sup>18</sup> Our findings show that by reading the instructions in the drug package, knowledge about the dose and side effects by family members experience of previous disease, a high rate was observed to increase the trend of self-medication in non-medical students. The main problem associated with self medication was the waste of resources, increased resistance to pathogens, and severe health hazards such as adverse reactions, misdiagnosis, appropriate treatment delays and morbidity. The adverse affects of this approach should always be emphasized the steps to the community and control it.

Various studies showed that pharmacists play an important role in promoting self-medication behavior among the general population in developing countries.<sup>19</sup> In some developing countries, many drugs are distributed to the counter without medical supervision. Most of the drugs have been purchased directly from the pharmacy, while the domestic medicine stock ranked second.<sup>20</sup> The results of this study consistent with the previous studies, the highest ranking was the pharmacy, and the second was the medicine stock at home. However, our study also found that pharmacists require prescriptions, but the difference is not significant. The pharmacist should direct the customer to consult any physician before taking any medicine.<sup>4</sup> The disease that causes self-medication in our study were headache, cold, fever, stomach pain, diarrhea, and were almost similar to previous studies. The most commonly used drugs for self medication use are analgesics, antibiotics and anti-pyrite. Previous studies have shown that paracetamol NSAIDs were the most commonly used class of drugs. Antibiotics commonly used for self-medication and were obtained mainly through prescription, which was relatively low compared to the prevalence of antibiotics used in Nepal. A shocking percentage of students in our study taking antibiotics without proper clinical evaluation. These results were comparable to those of study in southern Spain 41% and in Croatia 38%, took antibiotics separately and did not consult a doctor. Antibiotic resistance is a worldwide problem, especially in developing countries where antibiotics are available without any prescription. There is a need to raise awareness and implement legislation to promote

sensible and safe practices. Improving the knowledge and understanding of self-medication may lead to the use of principles that limit emerging microbial resistance.

## CONCLUSION

This study shows that the practice of self-medication practice is very high among non-medical educated youth. It is necessary to take certain measures to overcome the problem of self-treatment, which may involve awareness of the effects of self-medication and education and preventive measures for drug abuse. Health care professionals need to educate consumers about the possible problems with the improper use of drugs by consumers.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Frequency of Maternal Risk Factors Leading to Antepartum Intrauterine Fetal Death in a Tertiary Care Hospital, Karachi, Pakistan

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## ABSTRACT

**Objective:** To determine maternal risk factors leading to antepartum intrauterine fetal death in a tertiary care hospital, Karachi

**Study Design:** Cross sectional study.

**Place and Duration of Study:** This study was conducted at the Department of Obstetrics and Gynaecology, Civil Hospital, DUHS, Karachi from April 2011 to April 2015.

**Materials and Methods:** All pregnant women over 24 weeks gestation and a diagnosis of singleton intrauterine fetal death confirmed by ultrasound scan were included in our study. The exclusion criteria were multiple pregnancy, intrapartum fetal death during labour, a malformed fetus diagnosed on ultrasound scan, a history of maternal trauma or fall, or any pre-existing maternal disease such as asthma, tuberculosis or thyroid disturbance. Informed consent was obtained from all participants and 116 female patients were enrolled in the study. Full ethical approval was obtained. Patient demographics such as age, weight and blood pressure were recorded. Blood samples were sent for laboratory assessment. The presence of maternal risk factors such as advanced maternal age, diabetes mellitus, hypertension and obesity was observed.

**Results:** Our study enrolled 116 females and mean age was 30.14 ± 4.98 years. The main maternal risk factors identified in our study were hypertension 44 (37.9%), diabetes 34 (29.3%), antepartum hemorrhage 17 (14.7%) and others 21 (18.1%).

**Conclusion:** Our results suggest that hypertension, diabetes and antepartum hemorrhage are the main risk factors for antepartum intrauterine fetal death. This is unsurprising given the low socioeconomic patient demographic. However, further multi-center observational studies should be conducted with a larger sample size.

**Key Words;** antepartum hemorrhage, epidemiology, fetal death, hypertension, diabetes, obesity

**Citation of article:** Saleem S, Kazi S, Parveen F, Khan M. Frequency of Maternal Risk Factors Leading to Antepartum Intrauterine Fetal Death in a Tertiary Care Hospital, Karachi, Pakistan. Med Forum 2017;28(6):136-139.

## INTRODUCTION

Antepartum intrauterine fetal death is defined as fetal death occurring after 24 weeks gestation and before the initiation of labour.<sup>1</sup> This may be caused by a number of risk factors including birth defects, chromosomal abnormalities, infection, injuries, hemorrhage, and uterine problems such as a congenitally malformed uterus.<sup>2</sup> Data on maternal factors in resource-constrained settings that could predict antepartum intrauterine fetal death in women is scarce. One study in Oladapo identified pregnancy-induced hypertension, pre-existing hypertension, reduced weight gain per

week, previous antepartum fetal death, antepartum haemorrhage, previous miscarriage, symphysiofundal height and the perception of reduced fetal movements as risk factors for antepartum intrauterine fetal death.<sup>3-4</sup> Fetal deaths are an important component of perinatal mortality occurring either before onset of labour or during labour and delivery (intrapartum).<sup>5-6</sup> Factors associated with antepartum fetal deaths, in particular, include socioeconomic and demographic conditions such as low maternal education, maternal age over 35, high parity, short inter-pregnancy interval and body mass index (BMI >29.0 kg/m<sup>2</sup>).<sup>7</sup> Previous unfavorable pregnancy outcomes, premature rupture of membranes, diabetes mellitus, hypertension, and preeclampsia are also thought to play a role. Further more, inadequate prenatal care and fetal characteristics such as intrauterine growth restriction and congenital malformations may contribute to antepartum fetal deaths. These factors have shown significant associations in the published literature. Clinical conditions of mother and fetus are the dominant risk

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Received: April 20, 2017; Accepted: May 10, 2017

factors. A consistent proportion of fetal deaths is considered unexpected and unexplained.<sup>8</sup>

The sustainable goal three focuses on global maternal health improvements and seeks to reduce antenatal fetal death by 2030. This study will determine maternal risk factors leading to antepartum intrauterine fetal death in a tertiary care setting in Karachi, Pakistan. We hope the results will help develop strategies to reduce the frequency of antenatal fetal death, in order to improve national indicators in the long term.

## MATERIALS AND METHODS

Across sectional study was conducted at the Department of Obstetrics and Gynecology at Civil Hospital, Karachi. A sample size calculation was performed at 26% and ultimately 116 participants were enrolled. Sampling criteria was non-probability consecutive. Inclusion criteria were: pregnant women over 24 weeks gestation and a diagnosis of singleton intrauterine fetal death confirmed by ultrasound scan. Women with multiple pregnancy, intrapartum fetal death during labour, a malformed fetus diagnosed on ultrasound scan, a history of maternal trauma or fall or pre-existing maternal diseases such as thyroid disturbance, tuberculosis or asthma were excluded from our study.

All female participants having antepartum intrauterine fetal death fulfilling the selection criteria were enrolled in the study after informed consent was obtained. Full ethical approval of the study was obtained from the ethical committee of The College of Physicians and Surgeons, Pakistan (CPSP). Patient demographics and basic observations were recorded. These included age, weight and blood pressure (checked four hours apart). Blood tests were also performed and sent for analysis. The obtained information was collected on a pre-designed proforma.

The collected data was analyzed through SPSS version 15.0. Mean and standard deviation (S.D) was calculated for quantitative data i.e. age, height, weight, gestational

age and family income. Qualitative data including the education of patient, hypertension and diabetes was presented as frequencies and percentages. The factors leading to intrauterine fetal death were observed for parity, age and BMI.

## RESULTS

A total of 116 women fulfilled the inclusion criteria and were included in the study. The mean age of patients was  $37.15 \pm 2.00$  years. The mean height was  $5.9 \pm 2.8$  feet and the mean weight was  $68.0 \pm 6.9$  kg. Mean gestational age was  $30.8 \pm 2.3$  weeks, mean BMI was  $27.5 \pm 0.35$ . As shown in Table 1, 31 (26.7%) patients had been educated to a level above metric.

Hypertension appeared to be the most common risk factor for antepartum intrauterine fetal death with 43 (37.1%) patients diagnosed as hypertensive. 34 (29.3%) women had diabetes and 17 (14.7%) suffered an antepartum haemorrhage as shown in Fig 1. Hypertensive patients were further analysed by age group. Out of 43 patients, 28 (65.1%) patients were between 35 to 36 years and 20 (48.8%) patients had a parity between 4 to 7 and 21 (48.4%) patients had a BMI more than  $28.3 \text{ kg/m}^2$ . Similarly, of 34 diabetic patients 20 (58.8%) were between 35 to 36 years, 22 (66.7%) women had a parity between 1 to 3 and 16 (47.1%) patients had a BMI more than  $28.3 \text{ kg/m}^2$ .

**Table No.1: Demographic characteristics of sample n=116**

Characteristics	Mean $\pm$ S.D
Age (years)	$37.15 \pm 2.00$
Height (feet & inches)	$5.9 \pm 2.8$
Weight (kg)	$68.0 \pm 6.9$
Gestational age (week)	$30.8 \pm 2.3$
Family Income (Rs.)	$9402.6 \pm 3517.0$
BMI	$27.5 \pm 0.35$
Education Status	No (%)
Less than Matric	20 (17.2)
Matric	31 (26.6)
More than Matric	54 (46.5)

**Table No.2: Comparison of age, parity and BMI according to risk factors (n=116)**

Age groups	Hypertension		Diabetes mellitus		Antepartum Haemorrhage	
	Yes N (%)	NO N (%)	Yes N (%)	No N (%)	Yes N (%)	No N (%)
35 – 36	28 (65.1)	43 (58.9)	20 (58.8)	51 (62.2)	11 (64.7)	60 (60.6)
37 – 39	9 (20.9)	17 (23.3)	9 (26.5)	17 (20.7)	3 (17.6)	23 (23.2)
>40	6 (14.0)	13 (17.8)	5 (14.7)	14 (17.1)	3 (17.6)	16 (16.2)
<b>Parity</b>						
1 – 3	16 (39.0)	53 (74.6)	22 (66.7)	47 (59.5)	6 (37.5)	63 (65.6)
4 -7	20 (48.8)	12 (16.9)	8 (24.2)	24 (30.4)	7 (43.8)	25 (26.0)
>8	5 (12.2)	6 (8.5)	3 (9.1)	8 (10.1)	3 (18.8)	8 (8.3)
<b>BMI</b>						
21.0 – 24.6	3 (7.0)	8 (11.0)	3 (8.8)	8 (9.8)	1 (5.9)	10 (10.1)
24.7 – 28.2	19 (44.2)	41 (56.2)	15 (44.1)	45 (54.9)	11 (64.7)	49 (49.5)
>28.3	21 (48.8)	24 (32.9)	16 (47.1)	29 (35.4)	5 (29.4)	40 (40.4)

In the antepartum haemorrhage category, 11(64 %) patients were between 35 to 36 years, 7 (43.8%) patients had a parity between 4 to 7 and 11 (64.7%) patients had a BMI between 21.0 to 24.6 kg/m<sup>2</sup> as shown in Table 2.

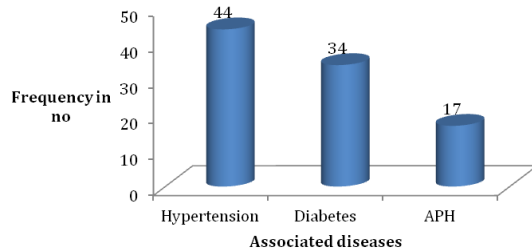


Figure No.1: Maternal Risk factors (n=116)

## DISCUSSION

Perinatal mortality is a significant public health problem throughout the world. In developing countries such as Pakistan, its prevalence is alarmingly high due to various modifiable factors. Most of the causes are treatable and fetal outcomes can be improved by provision of improved healthcare facilities during antepartum and intrapartum periods and through public education regarding reproductive health, diet and nutrition, exercise and better utilization of health services and involvement with preventative health measures.<sup>9-10</sup>

A study by Sutan in 2009 showed that maternal age of 35 years and above, maternal height of <160 cm and gestational age of above 39 weeks were significantly associated with unexplained antepartum stillbirth.<sup>11-13</sup> The stillbirth rate in Scotland is 5.7 per 1000 births for years 1996 to 2000 and 5.3 per 1000 births for the year 2005.<sup>14-15</sup> Despite the importance of stillbirths, their causes remain unknown in the majority of reported cases due to an incomplete understanding of the physiology of the fetal-placental unit, inadequate diagnostic evaluation, the absence of placental histology and fetal autopsy and poor reporting of associated risk factors as causes.<sup>16-17</sup>

Another study by Paupathy in 2010 studied the association between maternal age and delivery-related perinatal death at term in the UK. Among women in labour at term, age greater than 40 was independently associated with risk of anoxic death among primiparous and multiparous women. The study concluded that advanced maternal age is associated with an increased risk of death due to intrapartum anoxia at term.<sup>18</sup> The common medical disorders with IUFD were hypertension in twelve patients (66.66%), diabetes mellitus in 4 patients (22.22%) and mitral stenosis in two patients (11.11%).<sup>19-20</sup>

## CONCLUSION

The perinatal mortality rate, of which intrauterine fetal death rate is an integral part, is one of the best indicators of the quality of medical care offered by a society.

Our study showed that the main factors leading to antepartum intrauterine fetal death were hypertension 44 (37.9%), diabetes 34 (29.3%) and antepartum hemorrhage 17 (14.7%). Most similar studies conducted internationally or nationally have shown comparable results with these factors having more association or correlation in addition to other factors such as obesity and age. In view of the above results we suggest further epidemiological studies with larger sample size, strong study design and multiple factors that may help preventive antepartum fetal death.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Effects of Medroxy Progesterone Acetate (Injectable Contraceptive) on Endometrium (Uterus) of Adult Albino Rats

Soofia Nigar<sup>1</sup>, Izhar Fatima<sup>2</sup> and Aisha Abdul Haq<sup>1</sup>

## ABSTRACT

**Objective:** To evaluate the effects of Medroxy Progesterone Acetate (Injectable contraceptive) on endometrium (uterus) of adult female albino rats.

**Study Design:** Experimental study.

**Place and Duration of Study:** This study was conducted at animal house of Dow University of Health Sciences (DUHS), The Institute of Basic Medical Sciences (IBMS) and Dow Diagnostic Research and Reference laboratory (DDRRL) from March 2012 to August 2012.

**Materials and Methods:** Seventy two female albino rats were selected randomly which were later divided into three groups, named Group A, Group B and Group C. These groups were then subdivided into three subgroups depending on the duration of treatment. Treatment was given for one, two and three months. Group A (n=24) animals were served as controls. Group B as treated (n= 24) and were given MPA (3mg/ kg) according to body weight of rat. Group C, treated group (n= 24) was given double dose of MPA (6 mg/ kg.). Injections (MPA) were given only once at the commencement of experiment to both treated groups; B and C. After 1, 2 and 3 months, the female albino rats were dissected and the uterus was removed for observation of morphological and histological changes. Hematoxylin and Eosin were used to stain uterine tissues while collagen fibers were stained with Masson's trichrome. Ocular and stage micrometer were used to notice the histological changes in endometrium. Non-parametric test; Kruskal Wallis and Tukey's were applied for statistical analysis between the group variables.

**Results:** On comparison of control Group A with the treated group B and C, revealed significant changes. Endometrial thickness was reduced significantly in the treated Group B and Group C (p values <0.005). Histologically significant changes were observed in uterine tissue.

**Conclusion:** MPA was found out to produce marked fibrotic changes and causes decreased thickness of endometrium. The study was aimed to increase public awareness regarding possible adverse effects of contraceptive injections on women's health; therefore will be valuable for clinical practice

**Key Words:** Contraception, Medroxy Progesterone Acetate (MPA), Steroid hormone, Endometrium, Fibrosis

**Citation of article:** Nigar S, Fatima I, Haq AA. Effects of Medroxy Progesterone Acetate (Injectable Contraceptive) on Endometrium (Uterus) of Adult Albino Rats. Med Forum 2017;28(6):140-143.

## INTRODUCTION

Prevention of conception by using any contraceptive technique including oral drugs, injections and devices is considered as contraception.<sup>1</sup> Rapid rise in population is a problem faced by several countries and it gives motivation to investigate acceptable and effective methods of birth control that are less expensive, trustworthy and harmless for women. Moreover high maternal mortality rate is an issue in several developing counties which is again because of excessive child birth.

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Received: April 09, 2017;

Accepted: May 12, 2017

In spite of recent advances in contraceptive technology, the ideal contraceptive has not yet been founded.

MPA vial contains 150 mg Medroxy Progesterone Acetate (MPA). It is steroidal compound with biological activity similar to naturally occurring hormone progesterone.<sup>3</sup> MPA inhibits the production of gonadotropin hormone which in turn prevents ovulation. It decreases tubal muscular contractility which affects transmission of ovum to the uterus. MPA effects on thickness of endometrium<sup>4</sup> and acts on hypothalamic-pituitary-ovarian axis throughout menstrual cycle. These injections prevent the ovulation. This act of steroid is vital for the effectiveness of MPA. The frequency of Gonadotropin Releasing Hormone pulses are reduced by the Progesterone. As frequency of Luteinizing Hormone pulses plays major part in ovulation, the effect of progesterone effectively help for contraception purpose. When MPA is injected through intramuscular route, level of serum progesterone seems to increase, suppressing the secretion of anterior pituitary gland to release Follicle Stimulating Hormone and Luteinizing Hormone.<sup>5</sup>

Contraceptive injections (MPA) are available at low cost and can be easily used. Because of this ease, MPA injections are widely used without considering its side effects. This study

Pointed out towards the adverse consequences of drug.<sup>6</sup> There are studies evaluating the effects of MPA on endometrium. Numerous family planning centers are functioning in Karachi where the drug is readily available without informing any hazards of the injection. It is expected that lack of awareness of side effects will emerge as a major community health burden in coming years.

**MATERIALS AND METHODS**

Institutional Review Board (IRB) of Dow University of Health Sciences approved all the procedures that were conducted in this study.

**Inclusion criteria:**

1. Adult female albino rats of Wistar strain were selected for this experimental study.
2. Age range between 90 to 120 days
3. Weight about 190g-220g.

**Exclusion criteria:** Pregnant Female Rats.

**Sample Selection;** Animal House of Dow University of Health Sciences (DUHS) provided Seventy two albino rats. Then selected rats were divided into three groups; Group A, Group B and group C. All three groups were further subdivided into three subgroups (each sub –

group comprising 8 animals). Sample size was determined by applying statistical consideration which concluded that each sub- group should comprise at least 8 rats to obtain statistically significant results using statistical test. Control group A had 24 animals. First treated group B having 24 rats, was given MPA (3mg/kg) according to body weight of rats. Group C , second treated group (n= 24) was given double dose of MPA (6 mg/ kg.).

At the commencement of experiment, Injections (MPA) were given only once to both treated groups, B and C. After 1, 2 and 3 months, the female rats were sacrificed under deep Ether anesthesia. A midline abdominal incision was given, uterus was dissected and preserved in 10% formalin for 24-48 hours for fixation and tissues were stained with Hematoxylin and Eosin. Later micrometry was performed to observe morphometric changes in uterus.

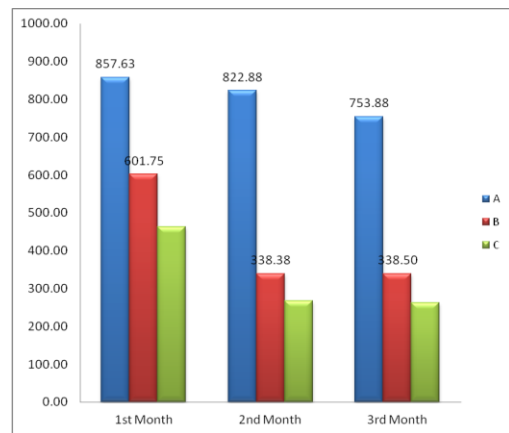
After gross and histological observation, the data was recorded. Kruskal Wallis and Tukey’s test from SPSS Version 16 were used to evaluate non-parametric variable between control and treated groups..

**RESULTS**

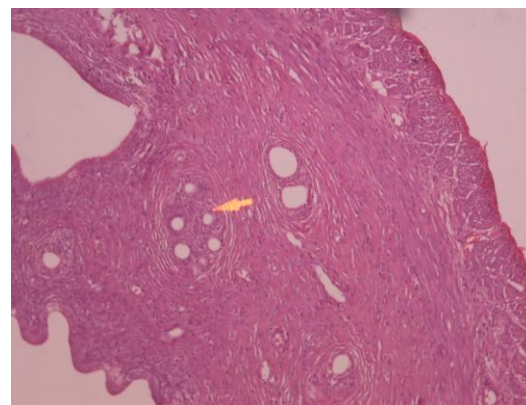
The study plan was to observe differences in endometrium of MPA injected groups and control group.

**Table No.1: Statistical Analysis and Comparison of Mean thickness of Endometrium of Albino Rats in Control and Treated Group after (1, 2 and 3 Months Treatment)**

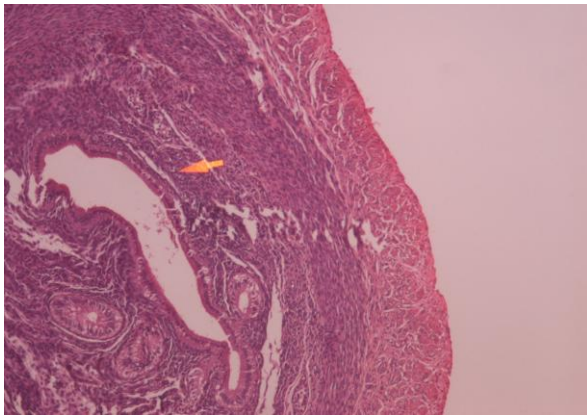
Group		Thickness of Endometrium(µm) after 1 <sup>st</sup> month	Thickness of Endometrium(µm) after 2 <sup>nd</sup> month	Thickness of Endometrium(µm) after 3 <sup>rd</sup> month
A	Mean±SD	857.625a ±63.500	753.875a±53.467	564a±34.147
B	Mean±SD	601.75b±59.668	338.5b±34.025	415.125b±33.194
C	Mean±SD	462.75c±79.260	262.5c±30.076	260.125c±28.732
A V/S B	P value	<0.005	<0.005	<0.005
A V/S C	P value	<0.005	<0.005	<0.005
B V/S C	P value	0.001	0.003	<0.005



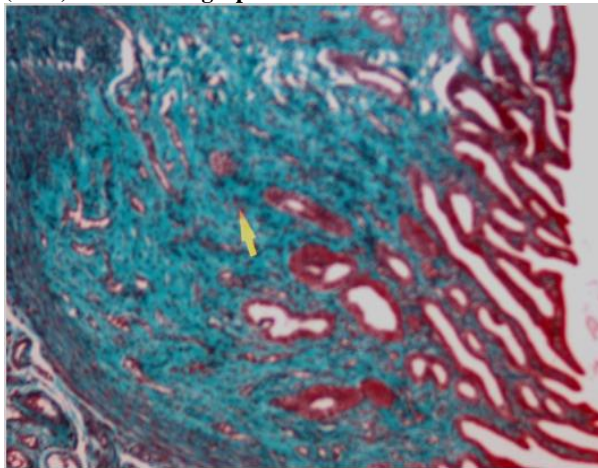
**Graph 1: Mean Thickness of endometrium (µm) of Uterus of Female Albino Rats in Different Groups at Variable Time Interval**



**Figure No.1: Hematoxylin and Eosin stained, 5 micrometer thick, transverse section of uterus from control group –A (3-months treated) rat showing (arrow) presence of epithelium, several dilated gland and endometrium and myometrium. Photomicrograph x10**



**Figure No.2: Hematoxylin and Eosin stained, 5 micrometer thick, transverse section of uterus from group-B (2-months treated) rat indicated reduced height of epithelium (Epi), reduced thickness of endometrium (endo). Photomicrograph x10**



**Figure 3: Masson's Trichrome stained 5 micrometer thick section of uterus shows (arrow) marked fibrosis (collagen fiber) in endometrium from group- B (2 months of treatment). Photomicrograph x10**

The mean thickness of endometrium was recorded in different groups at different time interval as shown in Table -1 and graph-1. The thickness of endometrium in group B and group C were decreased significantly ( $P < 0.005$ ) as compared to group A. Stained sections of control group by Hematoxylin and Eosin revealed endometrial thickness. However in Group B and C, the thickness was decreased.

## DISCUSSION

Globally around 16 million women use injection for contraceptive purpose according to W.H.O research.<sup>7</sup> Experimental findings of the research provided evidence of progressive reduction (proportional to duration of treatment) in thickness of endometrium after injectable contraceptive.<sup>8,9</sup> Progesterone decrease proliferation of endometrium through binding to specific hormone binding proteins known as progesterone receptors (PRs). PRs are nuclear proteins

found in epithelial, stromal and smooth muscle cells of the uterus.<sup>10,11</sup> these receptors have high affinity to progesterone. In agreement to studies previously performed, our study also showed that MPA decreased the endometrial thickness and increased the fibrosis.<sup>12,13</sup> This was considered to be antiproliferative effect of progesterone on endometrium and chemical ablation of endometrium.<sup>14,15</sup> Significant increase in elastic, collagen and reticular fibers observed in endometrium are likely to indicate degenerative changes and cell damage. The study provide supporting evidence for the process of fibrosis, previously mentioned by other investigators.<sup>16,17,18</sup> and similarly reduction in height of epithelium was observed in treated rats. Epithelial discontinuity through either blood or mucus with leukocytes migration in the lamina propria is known as epithelial damage.<sup>19,20, and 21</sup> Vacuolation and reduce height of epithelium indicate cell damage. Such results may be attributed to suppression of ovarian cycle causing endometrial atrophy.<sup>22,23</sup> Glands in stroma of endometrium was significantly decreased in injected groups. Results are reinforced by previous researches. Augmented fibrosis and degeneration may have caused the reduction in endometrium.<sup>24,25</sup>

## CONCLUSION

On the basis of present study, it is concluded that MPA produces marked gross and histological changes in uterus. It decreases thickness and fibrosis of endometrium in female albino rats and increased the risk of cervical carcinoma. The study is aimed to increase awareness of possible adverse outcome by these injections and this will ultimately play a vital role in counseling of female patients in clinical practice. Role of media is crucial in this regard.

**Acknowledgements:** I acknowledge Dr Aisha Abdul Haq for assistance with particular technique, methodology and Dr Izhar Fatima who provided insight and expertise that greatly assisted the research and references writing..

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Serum Biochemical Markers of Renal Functions May Not Be Impaired in Newly Diagnosed Non-Pregnant Hypothyroid Women

Jasmin Shah, M. Rasul Jan and M. Yousaf

## ABSTRACT

**Objective:** Thyroid hypo function is known to cause renal impairment. The present Cross-Sectional study was conducted to investigate the effects of thyroid hypo function on the Serum Biochemical Markers (SBM) of Renal Function (RF) in Non-pregnant hypothyroid women.

**Study Design:** Cross sectional study.

**Place and Duration of Study:** This study was conducted at the Khyber Teaching Hospital (KTH) a tertiary care hospital in KhyberPakhtun Khwa province of Northern Pakistan from 01 March 2014 to 31 March 2015

**Materials and Methods:** Thyroid profile status ( $T_3$ ,  $T_4$  and TSH levels) was determined for the selected 150 patients. On the basis of Thyroid profile, patients were divided into three groups as Normal (N) (n=54), Sub-clinically hypothyroid (Sh) (n=48) and overtly hypothyroid (Oh) (n=48). Biochemical analysis for Serum Creatinine (S.C) and Serum Urea (S.U) were conducted in all the patients and the data was analyzed statistically, using SPSS version 21.

**Results:** A minor decrease in the serum creatinin level in the Oh (1.10mg/dl) and Sh group (1.18 mg/dl) was found as compared to N group (1.47mg/ dl). Serum urea was found to be slightly decreased in the Sh group (23.22 mg/dl) as compared to N group (32.60mg/dl) and Oh group (30.11mg/dl). A very significant positive correlation was found between Serum creatinine and  $T_3$  in the Sh group ( $p= 0.005$ ) and significant negative correlation with  $T_3$  in the N group ( $p= 0.05$ ). Urea was significantly negatively correlated with TSH in Sh group ( $p= 0.05$ ).

**Conclusion:** Hypothyroidism may not affect renal functions in non-pregnant women in Northern areas of Pakistan.

**Key Words:** Renal Markers; Thyroidal dysfunctions, Creatinine, Urea, Non-Pregnant Women.

**Citation of article:** Shah J, Jan MR, Yousaf M. Serum Biochemical markers of renal functions may not be impaired in newly diagnosed Non-Pregnant hypothyroid Women. Med Forum 2017;28(6):144-148.

## INTRODUCTION

Iodine is one of the important trace elements and is necessary for the biosynthesis of thyroid hormones and normal activity of the body<sup>1</sup>. Iodine deficiency disorder (IDD) causes hypothyroidism which impairs reproduction, causes goiter in all age groups, abortions, cretinism and neurological complications<sup>2,3</sup>. Disorders of the Thyroid glands are the most prevalent disorders of the endocrine glands in the world, especially in Asia<sup>4</sup>. In thyroidal dysfunction, the sensitive biochemical marker is Thyroid Stimulating Hormone (TSH) which is highly decreased in hyperthyroidism ( $<0.05$  mIU/l)<sup>2</sup> and is elevated in hypothyroidism<sup>3</sup>. These thyroidal dysfunctions have serious ill effects on renal functions. It has been found that Thyroidal dysfunctions disturb the kidney to body weight ratio<sup>5</sup>.

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Received: April 12, 2017; Accepted: May 10, 2017

It has been reported that children with Congenital Hypothyroidism (CH) have a high prevalence of congenital kidney abnormalities<sup>6</sup>. The kidney is also believed to play a significant role in the metabolism and removal of thyroid hormones from the body<sup>7</sup>.

Thyroidal dysfunctions are more prevalent in females and its adverse effects in pregnant females are well established. Hypothyroidism is 10 time more prevalent in women as compared to men<sup>8</sup>. Its prevalence rate is around 2.5% in normal pregnant women<sup>9</sup>.

According to a WHO report on the nutritional value of vitamins and minerals, the prevalence of goiter in Pregnant Women (PW) is 22.2% while in Non-pregnant Women (NPW) is 20.9 % respectively. 2.5 billion Populations are suffering globally from iodine deficiency, out of which 313 million live in the South-Eastern Asian countries including Pakistan<sup>10</sup>.

The northern areas of Pakistan are well known to be endemic iodine deficient. The goiter prevalence is found to be 55% in plains to 80-90% in the northern mountainous region<sup>11,12</sup>.

The data about ill effects of hypothyroidism in Non-Pregnant Women (NPW) is limited especially in South Asia in general and Pakistan in particular.

The objectives of the present Cross-Sectional study is to generate a data about the thyroidal hypo function and its ill effects on the biochemical markers of renal function in Non-Pregnant Women (NPW) of Khyber Pakhtunkhawa in northern Pakistan

## MATERIALS AND METHODS

**Study populations:** This hospital based cross sectional study was conducted from 01 March 2014 to 31 March 2015 in Khyber Teaching Hospital (KTH), a tertiary care hospital in Khyber Pakhtun Khwa province of Northern Pakistan. The study was conducted on 150 Non- pregnant Women of age group 18 to 75. Informed consent was sought from the patient/attendant. All ethical principles were observed in accordance with resolution 196/96 on research involving human subjects. The study was approved by the Ethical Committee of the Khyber Teaching Hospital (KTH), a tertiary care hospital in Khyber Pakhtunkhawa province of Northern Pakistan through its letter no 21876/KTH/P.S. KTH is a tertiary care hospital in Peshawar city of Northern Pakistan having about 600 active beds in 18 specialties like Cardiology, ENT, Nephrology, medicine, Gynae, Dental, Orthopedic, Plastic surgery, Oncology etc. 5 ml of fresh venous blood was taken from each patient. It was divided into two portions- one portion was used for the determination of thyroid profile markers by Elisa methods and the other portion was used for the determination of Serum creatinine and Urea using Standard protocols.

**Thyroid profile markers determination:** Thyroid profile markers (Serum TSH,  $T_4$  and  $T_3$ ) were determined using ELISA kits obtained from Biocheck, Inc. catalog Number: BC-1001, BC-1007 and BC-1005 respectively on Dia 710 micro plate reader (Made in Australia). Serum Triiodothyronine( $T_3$ ) and Tetraiodothyronine(  $T_4$ ) were determined using Competitive ELISA methods<sup>13, 14</sup> and TSH was analyzed by Sandwich ELISA method<sup>15</sup>. The normal values for TSH,  $T_4$  and  $T_3$  were 0.4- 6.0  $\mu$  IU/ml, 4.8-12.0  $\mu$ g/dl, and 0.6-1.85 ng /ml respectively.

**Renal markers determination:** Serum Urea and Creatinine levels were determined on autoanalyser (Erbamannhein chemistry autoanalyser, Germany) by using standard Erba kits. Serum Urea was determined by Kinetic Method<sup>16</sup> and Serum creatinine by modified Jaffe method<sup>17</sup>. The normal ranges were 05-45 mg/dl for Urea and 0.5-1.5 mg/dl for creatinine.

After the determination of thyroid profile status, patients having normal thyroid profile (n=54, TSH $\leq$ 6.0, normal  $T_3$  and  $T_4$  levels) were taken as controls. While the hypothyroid patients (n=96) constituted the Study group. These patients were further sub divided into Sub clinically hypothyroid(Sh) (n=48; TSH above 6.1  $\mu$ IU/ml with normal  $T_4$  and  $T_3$  levels) and Overtly hypothyroid(Oh) (n=48) with TSH  $\geq$  6.0  $\mu$ IU/ml

and/ or abnormally low  $T_4$ ( below 4.8  $\mu$ g/dl) and  $T_3$ ( below 0.6ng/ml) levels.

**Descriptive Statistics and analysis of the data:** Purposive sampling method was employed for the collection of the relevant data. The total no of patients who met the purpose of the study were 150.

The data about age, BMI and all the required biochemical parameters for each patient was collected on a well-designed data entry form.

The data so obtained was statistically analyzed using SPSS for windows 21.0 software and Microsoft Excel. Values were reported as mean  $\pm$  standard error of mean. Pearson's correlation of the data was also carried out to look for association between variables. A, p value of  $<$  0.05 was considered to be significant.

## RESULTS

The total no of patients visiting various outpatient departments during the study period were 539968. Out of which 281,311 were female and 258,657 male. The total referral cases from these departments for thyroid screenings were 15667. The newly diagnosed cases of thyroidal dysfunctions were 3010. The female were 2303 and male were 707. The ratio of female and male was 3.26:1. Out of total females patients 553 were below 18 years, 340 were pregnant, 952 female were sufferings from various other diseases like kidney, liver, bone, heart ailment, diabetes and hence were excluded from the study. Two hundred and eight were found non pregnant women having abnormal thyroid profile .One hundred and twelve were hyper thyroids patients and hence not included in the study. The 96 patients were hypothyroid and were selected for this study. The control group consisting of 54 non pregnant women was selected from the patient having normal thyroid profile. The characteristics of the patients and control groups are presented below.

**Base line characteristic of the study group:** The Study and Control groups were age matched 150 Non-Pregnant Women (NPW). The mean age of patients in the control group (N) was  $42.15 \pm 1.86$  years,  $46 \pm 18$  years for Overtly hypothyroid (Oh) and  $45.97 \pm 1.93$  years for Sub clinically hypothyroid (Sh). The control group were 54 of which 61.11%(33) were Menopausal (M, age below 45 years), 18.52%(10) were Early Post-Menopausal (EPM, age 45-50 years) and 20.37%(11) were Late Post-Menopausal (LPM, age above 50 years). The %age of M, EPM and LPM in the Oh(48) and Sh(48) group were, 54.16%(26), 12.5%(06), 33.83%(16) and 45.83%(22), 22.92%(11), 31.25%(15) respectively.

**Comparison of the thyroid profile and renal markers of the study group:** The serum values of thyroid profile and renal markers are given in table no1. The mean serum level of TSH was found to be lowest in N group ( $2.38 \pm 0.49 \mu$ IU/ ml) and highest in the Oh group ( $25.89 \pm 2.86 \mu$ IU/ ml). Serum  $T_3$  level was highest

in N group ( $1.68 \pm 0.005$  ng/ml) and lowest in Oh group ( $0.94 \pm 0.09$  ng/ml). Highest serum  $T_4$  level was found for N group ( $8.50 \pm 1.59$   $\mu$ g/ dl) and lowest in Oh group ( $4.30 \pm 0.28$   $\mu$ g/ dl).

Mean serum creatinine was highest in N group ( $1.47 \pm 1.25$  mg/dl) and lowest in Oh group ( $1.10 \pm 0.01$  mg/dl). Mean serum urea level was highest for N group ( $32.60 \pm 1.22$  mg/ dl) and lowest for Sh group ( $23.22 \pm 0.88$  mg/dl).

**Table No.1: Thyroid profile and renal function biochemical markers in non-pregnant women**

S no	Group ID	Frequency(n)	Thyroid profile markers			Renal Markers	
			TSH	$T_3$	$T_4$	S.Creatinine	S.Urea
1	N	54	$2.38 \pm 0.49$	$1.68 \pm 0.05$	$8.50 \pm 1.59$	$1.47 \pm 1.25$	$32.60 \pm 1.22$
2	Oh	48	$25.89 \pm 2.86$	$0.94 \pm 0.09$	$4.30 \pm 0.28$	$1.10 \pm 0.01$	$30.11 \pm 1.25$
3	Sh	48	$19.04 \pm 2.22$	$1.47 \pm 0.08$	$7.07 \pm 0.38$	$1.18 \pm 0.04$	$23.22 \pm 0.88$

N: Normal, Oh: Overtly hypothyroid, Sh: Sub clinically hypothyroid

TSH: Thyroid Stimulating Hormone,  $T_3$ : Triiodothyronine,  $T_4$ : Tetraiodothyronine

**Table No. 2: Multiple linear regression analysis of thyroid profile with BMI and renal markers in the N, Oh and Sh group**

Group ID		N			Oh			Sh		
Dependent variables		BMI	Cret	Urea	BMI	Cret	Urea	BMI	Cret	Urea
Constant		30.48	0.58	38.92	23.4	0.83	24.7	23.3	0.58	29.99
Independent variables	TSH	0.35	0.12	0.03	0.05	0.01	0.02	0.01	0.002	-0.04
	$T_3$	-0.12	-0.90	0.86	-0.40	0.03	-3.27	0.73	0.19	2.50
	$T_4$	-0.80	0.15	-0.92	-0.08	0.09	0.66	-0.18	0.01	-0.64

**Regression analysis of the study group:** Multiple linear regression analysis using thyroid profile markers (TSH,  $T_3$  and  $T_4$ ) as independent variables while BMI, Serum Creatinine and urea as dependent variable was carried out for all the three study groups and the results are presented in table -2.

**Table No.3: Correlation analysis of renal markers with TSH,  $T_3$  and  $T_4$  in the various groups.**

Parameter	Group ID	Renal biochemical markers	
		S.Cret	S. Urea
TSH		r (p)	r (p)
	N	0.19 (0.17)	0.01 (0.98)
	Oh	0.06 (0.67)	0.02 (0.90)
	Sh	-0.13 (0.40)	-0.01** (0.05)
$T_3$	N	-0.27* (0.05)	0.004 (0.98)
	Oh	0.07 (0.65)	-0.21 (0.15)
	Sh	0.40** (0.01)	0.16 (0.22)
$T_4$	N	0.13 (0.33)	-0.16 (0.26)
	Oh	0.19 (0.19)	0.07 (0.63)
	Sh	0.18 (0.21)	-0.12 (0.40)

\*.  $p < 0.05$  (significant)

BMI was found to be positively related with TSH and negatively related with  $T_4$  in all the study groups. BMI showed positive relation with  $T_3$  only in Sh group and negative in N and Oh group. Serum creatinine showed positive relation with TSH,  $T_3$  and  $T_4$  in all the study groups. It showed only negative relation with  $T_3$  in the N group. Serum urea showed positive relation with

TSH in N and Oh group, with  $T_3$  in N and Sh group and with  $T_4$  in the Oh group. Serum urea showed negative relation with TSH in Sh group, with  $T_3$  in Oh group and with  $T_4$  in N and Sh group respectively.

**Correlation analysis:** The Pearson's correlations of renal markers and thyroid profile markers function were analyzed as shown table-3. Serum Creatinine showed a very significant positive correlation with  $T_3$  in the Sh group ( $p = 0.005$ ) and negatively correlated with  $T_3$  in the N group ( $p = 0.05$ ). Urea was significantly negatively correlated with TSH in Sh group ( $p = 0.05$ ).

## DISCUSSION

In the present Cross Sectional Hospital based study, we examined the serum Biochemical Markers (BM) of Renal Function (RF) in Normal (N) non-pregnant women and compared it with hypothyroid (Oh & Sh group) non-pregnant women.

In our study we found a minor decrease in the serum creatinin level in the Oh (1.10 mg/dl) and Sh group (1.18 mg/dl) as compare to N group (1.47 mg/ dl). The findings of this study are in good agreement with the notion that Serum Creatinine virtually remain unchanged due a balance created between the decrease in Renal Clearance (RC) and decrease generation<sup>18</sup>.

Some studies have reported the elevation of serum creatinine in the hypothyroid subjects but it includes all the sexes as against this study groups which includes only non-pregnant women<sup>7</sup>. More over the contradictions between the findings of various studies may be due to other factors like life style, food habits, medical history, geographical locations and genetical differences which were not taken into considerations.

Serum urea was found slightly decreased in the Sh group (23.22 mg/dl) as compared to N group (32.60mg/dl) and Oh group (30.11mg/dl). This minor decrease was insignificant and was in consistent with the other studies in which no significant effects were observed on serum urea levels in hypothyroid subject<sup>19</sup>. Hyperuricemia in hypothyroid subjects has been reported in a few studies done around the world<sup>20, 21</sup>. A few studies report the effects of hypothyroidism on Serum Creatinine and Serum Urea levels, literature survey did not show any significant study showing such correlations. Some studies have reported negative correlation of creatinine with T<sub>3</sub> and T<sub>4</sub> and positive correlation with TSH<sup>22</sup>. In our study Serum creatinine was found to be significantly positively correlated with T<sub>3</sub> in the Sh group (p= 0.005) and showed a significant negative correlation with T<sub>3</sub> in the N group (p= 0.05). Urea was significantly negatively correlated with TSH in Sh group (p= 0.05).

According to our view it is the first kind of study reporting the association of thyroid dysfunctions and its effects on renal markers from this part of northern Pakistan. Despite our best efforts we could not found any such study reporting the association between thyroid gland and kidney axis. These findings of our study will encourage researchers from this area to focus on this area of interest for better results.

The study has got a number of limitations which could not be minimized despite our best efforts. The most important limitation was the sociocultural barriers, hindering the collection of data from the patients regarding family medical history, medications and economic conditions. Other renal markers like Cystatin C,  $\beta$ - trace protein and urinary albumin which are considered better renal markers were not measured due to lack of laboratory facilities and financial constraints. Lastly the study was carried out in one center, involving only 150 non- pregnant women and hence its findings cannot be generalized. Further studies are required involving larger populations for better results..

## CONCLUSION

Hypothyroidism is a common problem in northern Pakistan affecting women folks more as compared to other gender due to lack of education and health facilities in rural areas. The other important conclusion which we assume to be most important is the lack of adequate amount of iodine in drinking water and iodized salt due to lack of strict quality control. We also conclude from our study that Hypothyroidism may not affect renal functions in non-pregnant women from this part of northern Pakistan.

**Acknowledgment:** The authors highly appreciate the support of the administration of Khyber Teaching hospital for providing access to patients and laboratories facilities in the collection of relevant data.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Effect of Parental Physical and Psychological Aggression on Neuroticism, Extraversion, and Agreeableness Factors of Personality of Secondary School Students

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Parental Aggression on Neuroticism, Extraversion & Agreeableness Factors of Students

## ABSTRACT

**Objective:** To explore the effect of physical and psychological aggression on neuroticism, extraversion, and agreeableness factors of personality of secondary school students.

**Study Design:** Observational / descriptive study.

**Place and Duration of Study:** This study was conducted at the Hazara Division, Khyber Pakhtunkhwa from October, 2013 to March, 2014

**Materials and Methods:** This study included 1438 of Grade 10 students. The data was collected through a pre-formed questionnaire to find aggressive behavior of parents while information about Neuroticism, Extraversion, and Agreeableness, was collected through three subscales of Big Five Factors personality inventory. Data was analyzed through multiple regression model using SPSS 20 version.

**Results:** Results of the study indicated high mean scores of physical aggression ( $3.96 \pm 1.23$ ) and psychological aggression ( $3.79 \pm 1.08$ ). Male students were significantly higher extraverts ( $t=3.759$ ,  $\alpha=0.000$ ) as compared to female students. Moreover, parental Psychological Aggression proved as significant negative predictor of Extraversion ( $\beta= -0.067$ ,  $\alpha = 0.021$ ) whereas parental psychological aggression demonstrated significant positive predictor of Neuroticism ( $\beta= 0.106$ ,  $\alpha = 0.001$ ).

**Conclusion:** Parental aggression in physical and psychological forms, make their children shy (Low Extraversion), increases Neurotic problems like anxiety and depression (High Neuroticism) and makes their children less cooperative, submissive, and obliging.

**Key Words:** Agreeableness, Extraversion, Neuroticism, Physical Aggression, Psychological Aggression, Secondary School Students

**Citation of article:** Shah SA, Majoka MI: Effect of Parental Physical and Psychological Aggression on Neuroticism, Extraversion, and Agreeableness Factors of Personality of Secondary School Students. *Med Forum* 2017;28(6):149-152.

## INTRODUCTION

Change in behavior results from many environmental influences<sup>1</sup>. One core aspect of environment influence on the children is the effect of parental hostility<sup>2</sup>. Hostility or coercion in the form aggression shown by parents causes many behavioral problems like problem of self regulatory in their children<sup>3</sup>. Such problems may be caused by non- physical form of parental aggression like emotional or psychological violence<sup>4</sup> along with parental physical aggression. Thus Parental responses to children's behavior fall into three broad categories: (a) nonviolent (e.g., offering explanations, removing privileges), (b) psychologically aggressive (e.g. yelling,

name calling, threatening), and (c) physically violent (e.g., slapping, beating with an object)<sup>5</sup>. A large body of research has shown that such aggressive behaviors have bad consequences in the psychological perspectives<sup>6</sup>. Thus, psychological aggression damages social relationship of children, feelings of acceptance by others or inclusion in a social group<sup>7</sup>. Parental aggression such as yelling towards their children<sup>8</sup> or combination with physical aggression<sup>9</sup> may cause many Neurotic problems such as depression, dependency, low self esteem, and anxiety<sup>10</sup>. All such behaviors become an established part of their Personality with the passage of time. That is why personality is described as a set of established characteristics and tendencies which determine commonalities and differences in behavior, thoughts, feelings and actions of people<sup>11</sup> or it is referred to distinctive thoughts, emotions, and behaviors that characterize the way an individual adapts to the world<sup>12</sup>. The development of such behaviors is discussed in different theories of personality. One of the widely recognized theories of personality is the Big Five Factors of personality.

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Received: April 03, 2017; Accepted: May 14, 2017

The Big Five Factors (Openness of Experience, Extraversion, Neuroticism, Agreeableness, and Conscientiousness) approach has emerged as a result of the effort of social scientists to explore a practical set of variables which could predict the behaviour of humans<sup>13</sup>. In the current study, only three factors viz. Neuroticism, Extraversion, and Agreeableness are used. They are elaborated in the followed paragraphs.

Neuroticism is often associated with anxiety, anger and hostility besides impulsiveness and pessimism<sup>14</sup>, negative self-esteem and lack of confidence to take initiatives<sup>15</sup>. High level may lead to psychiatric problems<sup>16</sup> while low score on neuroticism is indication of emotional stability<sup>17</sup>. Such parental practices like humiliation, guilt induction, and love withdrawal for the purpose of obeying the desires, have predicted the internalizing problems in both childhood and adolescence<sup>18</sup>.

Agreeableness often refers to cooperation, good nature, compliance, self sacrifice, truthfulness, and kindheartedness<sup>15</sup>. This factor of personality characterizes the way in which the person who makes relationship with others and have intentions to help in solution of problems of others<sup>19</sup>. People lacking agreeableness often lack trust regarding others and believe in competition rather than cooperation<sup>20</sup>. Children, who are exposed to parental aggression score low on cognitive ability tests<sup>21</sup>.

Extraversion refers to a person's confidence, vitality and energy<sup>14</sup>. Such individual have positive outlook on life and are outgoing<sup>21</sup>. Parental harsh and inconsistent behavior causes antisocial behavior in their children<sup>22</sup>. To our knowledge, no study was conducted on the issue, therefore, this study focused on the effect of parental physical aggression and psychological aggression on Neuroticism, Extraversion, and Agreeableness factors of personality of secondary school students.

## MATERIALS AND METHODS

**Participants:** The present study selected 1438 students who were appeared in class 9<sup>th</sup> annual examination under the BISE (Board of Intermediate & Secondary Education), Abbotabad, and were promoted to 10<sup>th</sup> class. Out of 1438 students surveyed, 50.4 % were from public sector and 49.6 % were from private sector. Similarly, 50.4 % of the students were females while 49.6 % were male students. 50.1 % of the data was collected from rural areas while the remaining 49.9 % was collected from urban area.

**Research instruments:** This research was conducted to explore the influence of different forms of parental aggression on Extraversion, Neuroticism and Agreeableness factors of personality of students. A questionnaire for measuring parental aggressive attitude towards their children was developed and validated through expert opinion.

A pilot study was conducted on 100 students of same grade (Grade10) in order to check whether the students understood the questionnaires and know how to answer the questions. The Cronbatch Alpha reliability coefficient of parental physical Aggression was ( $\alpha = 0.71$ ) whereas the reliability of parental psychological aggression was ( $\alpha = 0.722$ ) respectively. The overall Cronbatch Alpha reliability of instrument as a whole was reported to be high ( $\alpha = 0.93$ ). Respondents rated how often their family members repeated specific behaviors from 1 (never) to 5 (always). Lowest score represented highest aggressive behavior of family members.

Information regarding the Neuroticism, Extraversion, and Agreeableness traits of students was collected by using Big five Factors of personality Inventory developed by Tom Bechanon.

**Procedure:** Schools were randomly selected from Abbotabad, Haripur, and Mansehra Districts of Hazara Division, Khyber Pakhtunkhwa and data was collected through personal visits to the selected schools. After permission of school principals, the students were randomly selected for the collection of required data. It was ensured to the respondents that their names will be kept confidential and anonymous. The questionnaires were distributed among the participants of the study after detailed verbal instructions. The researcher was available during the whole data collection time for the purpose of clarification and answering the possible question of the participants. The completion of self administered questionnaires took about 20 minutes.

## RESULTS

To meet the objectives of the study, Mean, Standard Deviation, and Multiple Regression Model was used.

**Description of data:** The data was described by using Mean and Standard Deviation of the collected data about different forms of Aggressive behaviors performed by the parents.

**Table No.1: Description of variables**

	N	Mean	S. D
Physical aggression	1438	3.96	$\pm 1.23$
Psychological aggression	1438	3.79	$\pm 1.08$
Neuroticism	1438	3.07	$\pm 0.71$
Extraversion	1438	3.19	$\pm 0.58$
Agreeableness	1438	3.07	$\pm 0.64$

Table 1 highlights that the mean scores indicate that secondary school students perceive their parents to be more aggressive and that their parents show greater aggression in both physical and psychological form. Table 1 further highlights the Mean and Standard Deviation scores of personality traits for Neuroticism are (3.072 & 0.64), for Extraversion are (3.19 & 0.58), and of Agreeableness are (3.89 & 0.71). The mean

scores of Factors are greater than 3.00 which indicate a higher flow.

**Table No.2: Comparison of neuroticism, extraversion, and agreeableness traits among male and female students**

	Gender	N	Mean	S. D	t- value	P- value
Neuroticism	Male	713	3.08	0.63	0.357	0.721
	Female	725	3.07	0.64		
Extraversion	Male	713	3.24	0.58	3.759	0.000
	Female	725	3.13	0.57		
Agreeableness	Male	713	3.05	0.65	-1.385	0.166
	Female	725	3.10	0.63		

Table 2 highlights the significant difference between male and female students regarding neuroticism, extraversion, and agreeableness traits of personality. The value of (t=0.357) for neuroticism indicates no significant difference between male and female students. On the other hand there is significant difference between male and female students as indicated by t value (t=3.759,  $\alpha=0.000$ ) where male students are found to have significantly higher extraversion trait as compared to female students. Furthermore, there is no significant difference between male and female students regarding the agreeableness trait as indicated by the t- value (t=-1.385,  $\alpha=0.166$ ).

**Table No.3: Effect of Parental physical and psychological Aggression on Extraversion in their children**

	$\beta$	Adj. R <sup>2</sup>	F value	$\alpha$
Physical Aggression	-0.068	0.034	26.66 ( $\alpha=0.000$ )	0.003
Psychological Aggression	-0.067			0.021

Dependent variable: Extraversion

Table 3 indicates that one unit increase in parental physical and psychological aggression brings 3.4 percent decrease in Extraversion (Adj. R<sup>2</sup>= 0.034) trait of personality of students. Furthermore, physical Aggression has significant negative effect on extraversion factor of personality ( $\beta= -0.068$ ,  $\alpha = 0.003$ ) whereas psychological aggression has significant negative effect on Extraversion ( $\beta= -0.067$ ,  $\alpha = 0.021$ ) factor leading the adolescents to become more shy with the increase in parental aggression.

**Table No.4: Effect of parental physical and psychological Aggression on Neuroticism in their children**

	$\beta$	Adj. R <sup>2</sup>	F value	$\alpha$
Physical aggression	0.035	0.015	7.226 (0.000)	0.271
Psychological aggression	0.106			0.001

Dependent variable: Neuroticism

Table 4 indicates that one unit increase in parental physical and psychological aggression brings 1.5 percent change in Neuroticism (R<sup>2</sup>= 0.015). Furthermore, Physical Aggression has positive but insignificant effect on Neuroticism factor of personality ( $\beta= 0.035$ ,  $\alpha = 0.271$ ) whereas psychological aggression has significant positive effect ( $\beta= 0.106$ ,  $\alpha = 0.001$ ), on Neuroticism factor of personality.

**Table No.5: Effect of Parental physical and psychological Aggression on Agreeableness in their children**

	$\beta$	Adj. R <sup>2</sup>	F value	t value	$\alpha$
Physical aggression	-0.014	0.007	5.96 (0.003)	-0.550	0.583
Psychological aggression	-0.039			-1.359	0.174

Dependent variable: Agreeableness

Table 5 indicates that one unit increase in parental Aggression brings 0.7 percent change in Agreeableness (Adj. R<sup>2</sup>= 0.007). Furthermore, physical Aggression has negative but insignificant effect on Agreeableness factor of personality ( $\beta= -0.014$ ,  $\alpha = 0.583$ ) whereas psychological aggression has negative but insignificant effect on Agreeableness factor of personality ( $\beta= -0.039$ ,  $\alpha = 0.174$ ) of secondary school students.

## DISCUSSION

Results indicate that physical aggression has the highest mean. It implies that physical aggression of parents is highest and that parents physically punishing their children. This research study has found profound difference in extraversion trait between male and female students.

Our research has found that parental psychological aggression demonstrates an increase in neurotic characteristics in secondary school students. Our findings are support by the findings of Pease, & Lewis (2015)<sup>23</sup>.

Parental physical and psychological aggression of parents has significant negative effect on extraversion factor of personality. These results are consistent with the study of (McGinley & Carlo, 2007)<sup>24</sup>. Parental aggression negatively affects perseverance, enthusiasm, and concentration of their children<sup>25</sup>. Additionally, parents who express related negative emotions, predict the behavioral problems of children (Belsky et al., 1995)<sup>26</sup>.

Our study also found that secondary school students' agreeableness is although not significantly but negatively affected by both parental physical and psychological Aggression. Prinzie et al. (2004)<sup>27</sup> also found that parental aggression will lead to irritable children behavior. Similarly, results of the study conducted by Jones et al (2011)<sup>14</sup> also found that aggression has negative correlation with agreeableness. On the other hand, Pease and Lewis (2015)<sup>23</sup> found agreeableness the most positively associated one with aggression. In spite of these contradictory results, the

literature about personality discuss that the scoring levels of personality traits including agreeableness may change their trends during the life span of individuals.

## CONCLUSION

Parental aggression in physical and psychological forms, make their children shy (Low Extraversion), increases Neurotic problems like anxiety and depression (High Neuroticism) and makes their children less cooperative, submissive, and obliging.

Acknowledgment: The Authors are thankful to the adolescents of Grade 10 class for their participation in the study, parents, and the school authorities for their cooperation to make this research possible.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Diagnosing Pediatric Intussusception: Reliability of Sonographic Findings in Comparison to Operative Findings - A Short Term Analysis in Two Tertiary Care Hospitals

Shahid Manzur<sup>1</sup> and Ahsen Farooq<sup>2</sup>

## ABSTRACT

**Objective:** To review the reliability of ultrasonography for the screening and diagnosis of intussusception in clinically suspected children examined in radiology departments of two tertiary care hospitals in comparison to operative findings.

**Study Design:** Cross-sectional study.

**Place and Duration of Study:** The study was conducted collaboratively in the Departments of Radiology, Pakistan Railway General Hospital, Rawalpindi and Bahawal Victoria Hospital, Bahawalpur from January 2013 to December 2014.

**Materials and Methods:** A total of 113 children with age ranging from 0-5 years of both gender having clinical features of suspected intussusception were included in the study. Patients with stomas, history of previous surgery, patients with known congenital intestinal anomalies and haemodynamically unstable patients were excluded. All these patients had undergone ultrasound of abdomen and pelvis. The sonographic findings were recorded as positive and negative for intussusception. The criteria for positivity included the “target or doughnut sign” on transverse view and the “pseudo kidney sign” in longitudinal view respectively. Subsequently all these patients underwent exploratory laparotomy and intra-operative findings were recorded and correlated with sonographic findings to determine diagnostic reliability of ultrasonography.

**Results:** Ultrasonography supported the diagnosis of intussusception in 76 (67.26%) patients. Operative findings confirmed intussusception in 79 (69.91%) cases whereas 34 (30.01%) patients revealed no intussusception. There was one false positive and four false negative results on ultrasonography. The sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of grey scale ultrasonography in intussusception in children were 94.94%, 97.06%, 98.68%, 89.19% and 95.57% respectively.

**Conclusion:** The sensitivity and specificity of sonographic findings for screening and diagnosing the intussusception as reported by the Radiology Departments of the two hospitals and confirmed with operative findings, were consistent with previous studies published locally and internationally.

**Key Words:** Intussusception, Children, Ultra-sonography, Screening, Diagnosis, Railway Hospital

**Citation of article:** Manzur S, Farooq A. Diagnosing Pediatric Intussusception: Reliability of Sonographic Findings in Comparison to Operative Findings - A Short Term Analysis in Two Tertiary Care Hospitals. Med Forum 2017;28(6):153-157.

## INTRODUCTION

Intussusception (IS) is one of the most common acute abdominal emergencies among infants and small children, particularly in children younger than 2 years of age, and the second most common cause of intestinal obstruction after pyloric stenosis.<sup>1</sup>

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Received: April 13, 2017;

Accepted: May 15, 2017

Historically, after more than three hundred years its first description of the disease, the sonographic features of intussusception were explained in 1977 by Burke and Clark.<sup>2</sup> In 1982 by Kim first described the ultrasound-guided hydrostatic reduction of ileocolic intussusception using normal saline.<sup>3</sup>

Intussusception can be diagnosed by history, clinical findings and imaging studies. An early diagnosis and treatment of this disease are very important.<sup>4,5</sup> The frequently described clinical triad of intussusception consists of (a) acute colicky abdominal pain, (b) “currant jelly” or frankly bloody stools, and (c) either a palpable abdominal mass or vomiting, however, many children do not present with the complete triad of symptoms and in some cases the condition may be transient with spontaneous reduction.<sup>5,6,7</sup> Many children instead present with non-specific symptoms like vomiting, excessive crying or lethargy, etc. and the diagnosis initially may be missed.<sup>8,9</sup> Up to 20% of

children having the condition may be pain free at the time of diagnosis.<sup>10</sup> Intussusception is actually found in 30%–68% of children with suspicious clinical findings.<sup>11</sup> Therefore, imaging studies are required to establish the a prompt and accurate diagnosis.<sup>1,4,7,12</sup>

The imaging studies including contrast studies (barium enema, air enema), computed tomography, gray scale ultrasound and Colour Doppler, etc. are available<sup>3</sup>. However, with improved scanning technology, high resolution ultrasonography is now the initial imaging investigation of choice for diagnosing the intussusception in children, being cost effective, portable, rapid, flexible, user- patient- and parent-friendly, free from hazards of ionizing radiations, and the ability to arrive at alternative diagnoses and also to predict the possibility and to provide guidance for non-operative enema reduction.<sup>1,4,11,12,14,15,16</sup>

Published data suggest that in the experienced hands ultrasonography is considered the criterion standard for the diagnosis of intussusception, with both high sensitivity (98% to 100%) and specificity (88% to 100%).<sup>4,17,18</sup>

With this background we found only a few Pakistani studies on the subject.<sup>19,20,21</sup>. This study reports our hospital based experience at ultrasound diagnosis of intussusception in small children. The rationale of our study is to review the reliability of ultrasonography for the screening and diagnosis of intussusception in clinically suspected children as practiced in our part of the world by analyzing the diagnostic yield in radiology departments of two tertiary care hospitals and comparing it with operative findings.

## MATERIALS AND METHODS

This is a hospital based cross-sectional study carried out collaboratively at two centers, Departments of Radiology, Pakistan Railway General Hospital, Rawalpindi and Bahawal Victoria Hospital, Bahawalpur from January 2013 to December 2014. Children with age ranging from 0-5 years of both gender having clinical features of suspected intussusception as per operative definition for 0 to 5 days duration were included in the study. The exclusion criteria comprised patients with history of previous surgery; with stomas; who were managed non-operatively, haemodynamically unstable patients, and patients with known congenital intestinal anomalies. We examined 113 patients in the study presented in the Department of Radiology for USG abdomen. Our hospitals followed the World Medical Association Declaration from Helsinki in all the procedures. All the patients' parents were informed about the USG examination and surgery. Verbal consent was obtained for US examinations and written informed consent was obtained before surgery. After taking proper history and duration of presenting complaints, general data including age and sex was collected. Then trans-

abdominal ultrasound examination of the patients with clinical suspicion of intussusception was carried out.

The ultrasound examination was performed using Siemens Sonoline G50 colour Doppler and GE Logic P-5 colour Doppler ultrasound machines with probes frequencies ranging from 2 to 11 MHz. Grey scale USG of entire abdomen including the pelvis was performed in all patients. The sonographic findings were recorded as positive and negative for diagnosis of intussusception. The criteria for positivity included visualization of “doughnut or target sign” in transverse section, “bowel-within-bowel” or “sandwich” or “pseudo-kidney sign” in longitudinal section, of three overlapping layers of distal segment intussuscepti and proximal segment intussusceptum), “crescent-sign”, the trapped free fluid (indication for surgery). The presumptive ultrasound diagnosis of intussusception was made when the above described sonographic signs were recorded.<sup>1,5,14,22</sup> The criteria for negativity were non-visualization of sonographic signs or visualization of normal gut. All these patients underwent exploratory laparotomy after ultrasound examination. All the patients included in our study we investigated in collaboration with the department of surgery. Intra-operative findings were recorded. The definitive diagnosis of intussusceptions was confirmed in all those patients who had shown a mass of gut having invagination of the proximal segment of intestine into the adjacent distal segment on naked eye examination during the surgery.

The collected data were compiled and analyzed using SPSS version 19.00 for Windows. Descriptive statistics were calculated. The qualitative data, i.e., age and gender, presenting complaints, sonographic findings and operative findings for intussusception were presented as frequency distribution and percentage. Quantitative data, i.e., age (in years) and duration of symptoms (in days) were presented as mean and  $\pm$  standard deviations. The results were presented as tables, pie chart and bar diagram.

## RESULTS

Present study included 113 children that fulfilled the inclusion and exclusion criteria in the study period of 2 years. Age range in this study was from 0 to 5 years with mean age of  $01 \pm 1.15$  years. Majority of the patients 71.68% were between 0 to 2 years of age and 39.82% were younger than 1 year, as shown in Table-1. Out of the total, 78 (69.02%) were male and 35 (30.98%) were females with male to female ratio of 2.2:1.

Majority of patients 51.33% and 46.02% presented with bilious vomiting and intermittent screaming (abdominal pain) respectively followed by stool mixed with mucous and blood, palpable abdominal mass, abdominal distention and constipation as shown in Table-2.

All the patients ultrasonography of the abdomen was done. Ultrasound supported the diagnosis of intussusception in 76 (67.26%) patients and operative

findings confirmed intussusception in 79 (69.91%) as shown in Table-3.

**Table No.1: Age wise distribution of patients**

(n = 113)	Male		Female		Total.	
*Age (Yrs)	Number	Percentage	Number	Percentage	Number	Percentage
0-1	29	25.66	16	14.16	45	39.82
>1- 2	26	23.01	10	08.85	36	31.86
>2- 3	12	10.62	05	04.42	17	15.04
>3- 4	05	04.42	03	02.66	08	07.08
>4- 5	06	05.31	01	00.88	07	06.19
Total	78	69.02	35	30.98	113	100.0

\*Age as at last birthday

**Table No.2: Percentage distribution based on presenting complaints (n = 113)**

Presenting Complaints*	No. of Patients	Percentage (%)
Bilious Vomiting	58	51.33
Intermittent Screaming (Abdominal Pain)	52	46.02
Stool mixed with mucous & blood	39	34.51
Palpable Abdominal Mass	37	32.74
Abdominal Distention	31	27.43
Constipation	27	23.89

\*Patients presented with two or more presenting complaints

**Table No.3 Diagnostic accuracy of Ultrasound findings in comparison to operative findings for diagnosing clinically suspected intussusception**

(n=113)	Frequency	Operative Findings		Total
		Present	Absent	
Ultrasound Findings	Positive	75 (66.37%)*	01 (0.88%)**	76 (67.26%)
	Negative	04 (3.54%)*	33 (29.20%)*	37 (32.74 5)
Total		79 (69.91%)	34 (30.09%)	

\* True positive \*\* False positive \*\*\*False negative \*\*\*\*True negative

**Table No.4: Percentage of patients with Intussusception based on Age groups and Gender**

(n = 79)	Male		Female		Total.	
*Age (Yrs)	Number	Percentage	Number	Percentage	Number	Percentage
0-1	26	32.91	14	17.72	40	50.63
>1- 2	20	25.32	06	7.59	26	32.91
>2- 3	05	6.33	02	2.53	07	8.86
>3- 4	04	5.06	01	1.27	05	6.33
>4- 5	01	1.27	00	0.0	01	1.27
Total	56	70.89	23	29.11	79	100.0

**Table No.5: Overall reliability ultrasonography for diagnosing in intussusception**

Evaluation of Ultrasonography	Values(%)
Sensitivity	94.94
Specificity	97.06
Positive Predictive Value (PPV)	98.68
Negative Predictive Value (NPV)	89.19
Diagnostic Accuracy	95.57
Likelihood ratio for Positive test result	32.28
Likelihood ratio for Negative test result	0.52

Sensitivity: TP / TP + FN Specificity: TN / TN + FP

Positive Predictive Value (PPV): TP / TP + FP

Negative Predictive Value (NPV): TN / TN + FN

In ultrasound positive patients, 75 (66.37%) (True Positive) had intussusception and 01 (0.88%) (False Positive) had no intussusception on operation. Among, 37 ultrasound negative patients, 04 (3.54%) (False Negative) had intussusception on operation whereas 33 (29.20%) (True Negative) had no intussusception (p<0.0001) as shown in Table-3. The age and gender distribution of confirmed intussusceptions is presented in Table-4.

The overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of ultrasonography in the diagnosis of intussusception in children were calculated to be

94.94%, 97.06%, 98.68%, 89.19% and 95.57% respectively as shown in Table-5.

## DISCUSSION

Intussusception is one of the most common acute abdominal emergencies among infants and small children and the second most common cause of intestinal obstruction after pyloric stenosis.<sup>1</sup> One large Swiss study found an overall incidence of 38, 31 and 26 cases per 100,000 live births in the first, second and third year of life respectively.<sup>23</sup> The subject has not been well studied in Pakistan.<sup>19,24,25,26</sup> This was not included in the objectives of our study.

The frequently reported male: female ratio is 3:1.<sup>12,27</sup> Muhammad JK et al<sup>24</sup> have reported a male to female ratio of 3.4:1 out of 71 patients. Mansur SH et al<sup>25</sup> have observed a male to female ratio of 2:1 in total of 38 cases. Munir A et al<sup>26</sup> have reported a male to female ratio of 1.6:1 out of 50 patients. In our study it was 2.2:1.

In children the cause of intussusception is said to be idiopathic in 90% of the cases.<sup>8,27</sup> In the remaining 10%, it is secondary to a pathological lead point such as Meckel's diverticulum, polyp, enteric duplication cyst and small bowel lymphoma, etc.<sup>7,8</sup> Such lead points are more commonly seen in children older than 3 years.<sup>21</sup> Ileocolic intussusception is considered to be the commonest type. Colo-colic and ileo-ileal intussusception are the other types.<sup>7</sup>

The clinical triad of intussusception consists of (a) acute colicky abdominal pain, (b) "currant jelly" or frankly bloody stools, and (c) either a palpable abdominal mass or vomiting, however, it is present only in approximately 50 % of patients and 20 % of patients are symptoms-free at clinical presentation or may present with non-specific symptoms and the diagnosis initially may be missed.<sup>5,6,7,8,9</sup> Gandapur ASG et al<sup>19</sup> in their study of 130 patients have observed the colicky abdominal pain and distension (88% each) followed by vomiting (82%) and bleeding per rectum (54%) as common presenting complaints. Pari et al<sup>21</sup> have reported colicky abdominal pain (44.3%), vomiting (15.6%), abdominal mass (18.2%) and Currant jelly stool in (8.3%) patients. Muhammad JK et al<sup>24</sup> have reported colicky abdominal pain (98.59%) as the commonest complaint followed by vomiting and abdominal distension (94.36% each), bleeding per rectum (85.91%) and palpable mass per abdomen (78.87%). In our study the common presenting symptoms were bilious vomiting (51.33%), screaming / abdominal pain (46.02%), stool mixed with mucous and blood (34.51%) and palpable abdominal mass (32.74%).

In 1977, Burke and Clark reported the sonographic features of intussusception for the first time in literature.<sup>16</sup> Ultrasonography is currently a well-established method for the evaluation of the small and

large bowel.<sup>2,18,27</sup> The routine use of USG for the small and large bowel in children has significant geographic variations, particularly when looking beyond the evaluation of the appendix. It appears to be more commonly integrated as part of the pediatric bowel imaging work-up in Europe and Canada than in the USA.<sup>3</sup>

In the world literature, accuracy of ultrasonography in the diagnosis of intussusception has been reported with an overall sensitivity of 85% to 100% and a specificity of 88% to 100% and in children was 94.94%, 97.06% and 95.57% respectively.<sup>5,6,7,8,9,16,22</sup> Intussusception is actually found in 30%–68% of children with suspicious clinical findings.<sup>11</sup> Naseem et al<sup>20</sup> have reported sensitivity of 100% and specificity of 95.2% in their study of 45 patients. In our study ultrasound supported the diagnosis of intussusception in 76 and operative findings confirmed intussusception in 79 out of total 113 patients. We found sensitivity of 94.94%, specificity of 97.06%, PPV of 98.68%, NPV of 89.19% and diagnostic accuracy of 95.57%. This substantiates the literature data and consolidate the primary role of ultrasound not only in diagnosis but in management of a pediatric patient with a strong clinical suspicion of intussusception.

## CONCLUSION

Despite the fact that the advantages of ultrasonography have been documented for the evaluation of patients with clinical diagnosis or suspicion of intussusception, its use has been somewhat slowly accepted throughout the world. One of the reasons for this slow development may be that the radiologist's interest, training and experience are very important factors in performing and interpreting the gastrointestinal ultrasonography. We conclude that being non-invasive, free from hazards of ionizing radiation and due to its high sensitivity and specificity, ultrasonography is a safe, valuable and accurate tool of investigation in the diagnosis of intussusception in children. The study makes us confident that ultrasonography protocols for the screening and diagnosis of intussusception in clinically suspected children examined in radiology departments of our two tertiary -hospitals are reliable and consistent with the reports in world literature.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Metabolic Syndrome in Type 2 Diabetes Mellitus

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## ABSTRACT

**Objective:** The aim of the present study was to examine metabolic syndrome in type 2 diabetes mellitus.

**Study Design:** Descriptive / quantitative / cross sectional study.

**Place and Duration of Study:** This study was carried out at Medical outdoor, Pakistan Medical Research Center (PMRC) Sir Ganga Ram Hospital, Lahore from 1<sup>st</sup> January 2014 to 1<sup>st</sup> July 2014.

**Materials and Methods:** The study was included three steps of data collection such as questionnaire, measurement of blood pressure, height and weight, Collection of blood samples for the estimation of triglycerides and high density lipoprotein. Twenty five male patients and 25 female with T2DM of age 35 to 70 years were taken. Non probable sampling technique was used for collection of sample. The criteria for diagnostic patient was taken as fasting glucose level range greater than 110mg/dl

**Results:** The mean systolic and diastolic blood pressure of diabetic patients was 140mm/Hg and 90mm/Hg. The mean and standard deviation of triglyceride and high density lipoprotein were 186.1600+<sub>95.6</sub> and 48.32 +<sub>8.33</sub> respectively.

**Conclusion:** It is concluded that there are multiple risk factors involved in type 2 diabetes mellitus which are obesity, hypertension and dyslipidemia among these dyslipidemia proves to be the highest risk factor than hypertension and obesity. Physical activity, weight loss and diet favorably affect components of metabolic syndrome at least in the relatively short term. However randomized control trials shows that lifestyle intervention can prevent metabolic syndrome.

**Key Words:** Metabolic syndrome, Hypertension, obesity, Diabetics II.

**Citation of article:** Bokhari H, Hamid N, Naveed A, Jan MM. Altaf Z, Adnan M. Metabolic Syndrome in Type 2 Diabetes Mellitus. Med Forum 2017;28(6):158-161.

## INTRODUCTION

Most of the people suffering from obesity are at high risk of hypertension. But unfortunately the nature of relationship between obesity and hypertension is not clearly understood by the people. Triglyceride and high density lipoprotein are considered to be the risk factors for cardiovascular disease, heart attack and stroke. The treatment includes in diet, oral medications, and in some cases, daily injections of insulin<sup>1</sup>

Type 1 diabetes results from the autoimmune destruction of insulin producing beta cells in the pancreas if the amount of glucose in blood is too high it can seriously damage the body organ. The patient shows retinopathy, nephropathy and basement membrane of the arterioles throughout the body<sup>2</sup>. Type 2 diabetes is the most common form of diabetes affecting 85-90% of all people with diabetes while it

usually affects adults, younger people, even children are getting type 2 diabetes<sup>3</sup>. It is characterized by hyperglycemia in the context of insulin resistance relative lack of insulin<sup>4</sup>. This is in contrast to diabetes mellitus type 1, in which there is an absolute lack of insulin due to breakdown of islet cells in the pancreas<sup>5</sup>. Over the time the high glucose levels in the blood can damage the nerves and small blood vessels of eyes, kidneys, and heart and lead to atherosclerosis or hardening of the arteries that can cause heart attack and stroke<sup>6</sup>. However, in rare cases diabetic keto-acidosis can also occur in patients with type 2 diabetes, usually due to a serious infection or another severe illness<sup>7</sup>. Hyperglycaemic hyperosmolar non ketonic syndrome it is a serious complication of diabetes that include high blood sugar levels, dry mouth, extreme thirst, high fever, loss of consciousness, coma and death<sup>8,9</sup>. Type 2 diabetes is typically a chronic disease associated with ten years shorter life expectancy. In the developed world it is the largest cause of non traumatic blindness and kidney failure<sup>11</sup>. It has been associated with an increased risk of cognitive dysfunction and vascular dementia<sup>12</sup>. The development of type 2 diabetes is caused by a combination of life style and genetic factors<sup>13</sup>. A lack of sleep has been linked to type 2 diabetes. This is believed to act through its effect on metabolism<sup>14</sup>. The nutritional status of a mother during fetal development may also play a role with one propose mechanism being that of altered DNA

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methylation<sup>15,16</sup>. A number of life style factors are known to be important to the development of type 2 diabetes dietary factors, consumption of sugar sweetened drinks in excess is associated with increased risk<sup>17,18</sup>. A lack of exercise is believed to cause 7% of cases, presence of metabolic syndrome doubles the risk of developing type 2 diabetes<sup>19,20</sup>.

## MATERIALS AND METHODS

Fifty patients were included in the present study twenty five were male of 35 to 70 of age the remaining twenty five were female of same age group having 1 to 20 years of duration of diabetes. The demographic variables included in the questionnaire were name, age, gender, socioeconomic status, dietary intake, family history of disease, duration of diabetes medication smoking. Patient who were newly diagnosed with type 2, with cancer, hepatitis were excluded from the study. The experimental procedures are outlined below.

**Collection of blood samples and preservation.** Blood samples of 3cc were collected from patients. A code was used to identify each sample at the time of collection and for preservation of samples. The blood was transferred to a clean labeled vial, then kept into water bath, after it was drawn using a disposable syringe in order to avoid hemolysis of red blood cells and sample was allowed to clot so that the serum was separated. The serum was transferred to the falcon tubes, centrifuged at 4000 revolution /min at 37°C for 5 min in order to separate serum. The serum was transferred to eppendorf tubes in freezer at -20°C for laboratory investigations. Triglyceride, fasting blood sugar and high density lipoprotein were measured.

**Estimation of Triglyceride:** Triglyceride was detected by using kit by Randox and estimation was done by liquid reagent GPO-PAP method after enzymatic hydrolysis with lipases. For estimation of triglyceride 1000 ul of reagent was taken with the help of micropipette in three small test tubes labeled test, standard and blank respectively. 10ul serum was added in test labeled, 10ul standard triglyceride solution in standard labeled tube and nothing in blank labeled, mixed and incubated in water bath for 5 min at 37°C. The absorbance of colour was developed against the reagent blank at 500nm on spectrophotometer (Humalyzer 3000). The absorbance of sample and standard was determined. The reference value was 50-150mg/dl

**Estimation of high density lipoprotein cholesterol:** It was calculated using their serum by using kit by human. For estimation of high density lipoprotein –cholesterol (1000ul) of reagent 1 was taken with the help of micropipette in three small test tubes labeled test, standard and blank respectively. 10ul serum was added in test labeled, 10ul cholesterol standard solution reagent 2 in labeled tube. The contents were, mixed and allowed to settle down for 20 min in water bath at 37°C. It was centrifuged test labeled at 3000rpm and separated supernatant. In separate test tube 1000ul of

cholesterol reagent and 10ul of supernatant. The absorbance of colour was developed against the reagent blank at 500nm on spectrophotometer (Humalyzer 3000). The absorbance of sample and standard was determined. The reference value was 40-70mg/dl. Statistical tests were performed on the data collected for metabolic syndrome in type 2 diabetes mellitus.

## RESULTS

The mean systolic and diastolic blood pressure of diabetic patients was 140mm/Hg and 90mm/Hg. The mean and standard deviation of triglyceride and high density lipoprotein were 186.160+ 95.6 and 48.32 +\_8.33 respectively. The results are displayed in Table 1 to Table 4

**Table No.1: Demographic profile percent**

Gender	Male 50%	Female 50%
Socio-economic status		
Poor class	80%	80%
Middle class	14%	14%
Upper class	6%	6%
Education level		
Literate	24%	18%
Illiterate	26%	32%
History of smoking	100%	0%
Carbohydrates		
High	2%	4%
Low	4%	14%
Protein		
High	6%	0%
Low	2%	2%
Fat		
High	32%	30%
Low	4%	6%
Medication	33%	39%
Family history disease	55%	45%

**Table No.2: Mean of Triglyceride and High density lipoprotein**

SR. No	No of sample	Triglyceride	High density lipoprotein
1	Fifty	183	50
2	Mean	186.160	48.320
3	Standard deviation	95.96	8.33

**Table No.3: Prevalence of metabolic syndrome and its different components in type 2 diabetes**

Sr. No.	No of samples N=50	Male N=25 (50%)	Female N=25 (50%)	Total
1	Metabolic syndrome	15(52%)	14(48%)	29 (58%)
2	Obesity	5(20%)	9(36%)	14(28%)
3	Hypertension	13(52%)	11(44%)	24(48%)
4	Dyslipidemia	17(60%)	15(60%)	32(64%)

**Table No.4: Statistical data of different factors of metabolic syndrome**

Sr.No.	Metabolic syndrome	
1	Age (mean)	50 years
2	Systolic blood pressure	140
3	Diastolic blood pressure	90
4	Hypertension (mean)	140/90
5	HDL(mean)	48.320
6	Serum triglyceride (mean)	186.160

## DISCUSSION

Demographic information in table 1 indicates socioeconomic status belongs to poor class is higher (80%) than middle class (14%) and less in upper class (6%). Education level of literate male (24%) is higher than literate female (18%) it may be due to the reason that poor community have less resources than upper class. Smoking history indicates 0% in female and 100% in male. It may be that males continue smoking as enjoyment and to reduce social stress. Amount of carbohydrates (4%) in female is high than male (2%) even low carbohydrate level in female (14%) than low carbohydrates (4%) in male, due to diet, way of living style.

Females have (0%) high protein and (30%) high fat than males which have (6%) high protein and (32%) high fats. While in case of oral medication (39%) in females and (33%) in males, it may be due to less capability of tolerance in females. Study of family history of disease indicates (45%) in females and (55%) in males. The mean and standard deviation from table 2 indicates triglyceride and high density lipoprotein are 186.160+95.96 and 48.32+8.33 respectively. Prevalence of metabolic syndrome and its different components from table 3 indicates that metabolic syndrome (52%) in males and (48%) in females prove that disease is more dominant in male when this result was compared with Yoshionri<sup>21</sup> who has shown high prevalence of metabolic syndrome among males (49%) and (28%) females. Our results are in agreement with his results. Obesity high in female (36%) as compared to male (20%). When this result is compared with Alebiosu<sup>22</sup> result, the close agreement is found between them, it may be due to physical inactivity, repeated pregnancies depression and joblessness. Hypertension is found high in male (52%) than female (44%). It shows that greater risk of developing hypertension is associated with increasing body mass. Dyslipidemia is less (60%) in female and high (68%) in male. This may be due to presence of triglycerides and increase deposition of fats in the body which increases the weight and results in the development of cardiovascular diseases.

The results indicate that metabolic syndrome is more dominant in male.

## CONCLUSION

It is concluded from present study that serum triglyceride is positively correlated with the development of type 2 diabetes mellitus. It also depicts the significance of hypertension as risk factor of diabetes. It shows an alarming situation regarding metabolic syndrome and its mortality. It should be controlled epidemically with respect to control hypertension, maintain normal weight, regular physical exercise, normal blood sugar control. There should be health promotion programs towards risk groups and encouraging awareness in people about their weight and physical fitness to reduce obesity and hypertension.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

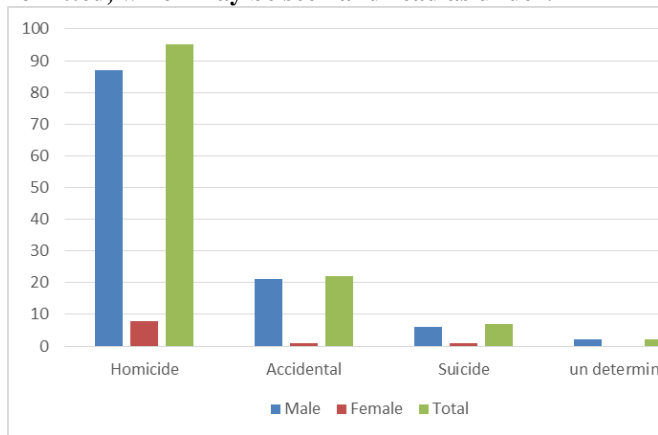
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**Corrigendum 1:**

Due to typographic mistake, Figure No.1 in the article titled “Array of Unnatural Deaths: A Study of Medico Legal Autopsies at District Head Quarter Hospital Lakki Marwat” with authors Khalil ur Rehman<sup>1</sup>, Abdul Haq Wazir<sup>3</sup>, Amir Hamza<sup>4</sup>, Mian Mujahid Shah<sup>1</sup> and Sher Bahadur<sup>2</sup> published in *Med. Forum Journal Vol.28 No.3* at pages 30-32 was omitted, which may be seen and read as under:-



**Figure No. 1: Gender wise distribution of manner of death**

Editor

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**Corrigendum 2:**

Due to typographic mistake, Study Design in the Abstract of article titled “Efficacy of Cranberry Extract Bacillus Coagulans & Turmeric Extract in Patients With Bacterial Vaginosis” with authors Syeda Batool Mazhar,<sup>1</sup> Tazeen Fatima Munim,<sup>2</sup> Haleema Yasmin<sup>3</sup>, Jehan Ara<sup>4</sup>, Shamsa Humayun,<sup>5</sup> Rakhshan Najmi,<sup>6</sup> Yasmin Noman,<sup>7</sup> Muhammad Ikram,<sup>8</sup> Khadija Khatoun,<sup>9</sup> Neeta Maheshwary<sup>10</sup> published in *Med. Forum Journal Vol.28 No.5* at pages 59-63 which may be read as under:-

**Study Design:** Phase IV Interventional, Prospective study

Editor

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# Metformin- A Non-Conventional Drug for the Local Treatment of Periodontal Diseases: A Randomized Clinical Control Study

Faiza Hasan<sup>1</sup>, Rahila Najam<sup>2</sup> and Shabana Usman Simjee<sup>2</sup>

## ABSTRACT

**Objective:** The purpose of this study was to develop 1% gel and mouthwash of metformin in order to treat the periodontal diseases locally to avoid the systemic adverse effects associated with its oral use. Although metformin is not used in the treatment of periodontal disease but due to its unique anti-inflammatory effects an attempt was made to prepare the gel and mouthwash and applied it locally to treat gingivitis and periodontitis.

**Study Design:** Randomized control trial study

**Place and Duration of Study:** This study was conducted at Crown Dental Clinic, Karachi and HEJ Research Institute of Chemistry, University of Karachi conducted from March 2016 to September 2016.

**Material and Methods:** The local formulation of 1% metformin gel and mouthwash was developed. Patients were divided into four groups 1) Control group 2) Standard treatment group 3) Gel treated group 4) Mouthwash treated group. The clinical and biochemical variables were measured at day 0 and after 30 days of treatment in the all groups.

**Results:** after 30 days highly significant reduction was observed in all clinical variables ( $p \leq 0.001$ ) as compared to standard and control group by 1% metformin gel and mouthwash. After 30 days bleeding was also reduced ( $p \leq 0.001$ ) by the standard treatment. Similar efficacy was observed in reducing the clinical variables by both preparations after 30 days of treatment ( $p \leq 0.001$ ). the reduction in TNF- $\alpha$ , PGE<sub>2</sub> and nitric oxide level after 30 days ( $p \leq 0.001$ ) by 1% metformin gel and mouthwash when compared to standard and control group. Significant decrease in TNF- $\alpha$  level after 30 days ( $p \leq 0.001$ ) was also observed by the standard treatment group. 1% metformin gel found to be more effective in reducing the TNF- $\alpha$  and PGE<sub>2</sub> level ( $p \leq 0.001$ ) when compared to 1% mouthwash whereas metformin mouthwash found to be more effective in reducing the nitric oxide level ( $p \leq 0.001$ ) as compared to gel.

**Conclusion:** This research recommends that metformin due to its unique anti-inflammatory effects can be used in treating gingivitis and periodontitis.

**Key Words:** gingivitis, periodontitis, periodontal pocket depth, attachment loss, scaling and root planning, metformin

**Citation of article:** Hasan F, Najam R, Simjee SU. Metformin- A Non-Conventional Drug for the Local Treatment of Periodontal Diseases: A Randomized Clinical Control Study. Med Forum 2017;28(6):162-166.

## INTRODUCTION

In Asian population particularly in Pakistan, India and Bangladesh the two main inflammatory diseases of the periodontium are gingivitis and periodontitis. These periodontal diseases occurs because of their traditional eating habits of pan, tobacco, and beetle nut<sup>1</sup>. Another reason of increasing prevalence of these diseases is the lack of awareness of maintaining oral hygiene and the lack of approach to the dentist because of poverty. In Pakistan the disease affects the people of low socioeconomic status more than people of high socioeconomic status<sup>2</sup>.

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Received: April 11, 2017;

Accepted: May 24, 2017

In gingivitis the disease is limited to the mucosal epithelial tissue without clinical attachment loss whereas in periodontitis clinical attachment loss is present resulting in "periodontal pocketing" and alveolar bone loss<sup>3</sup>.

Pro-inflammatory cytokines has a very important role in periodontal diseases. Increase level of TNF- $\alpha$ , PGE<sub>2</sub>, and nitric oxide was found in the saliva of the patients with periodontitis which suggests their role in diagnosing and treatment of periodontal diseases. Increased level of PGE<sub>2</sub> is responsible for the bone resorption and clinical attachment loss. The release of cyclooxygenase and metalloproteinases are activated by nitric oxide which also damage the periodontal tissue<sup>4,5,6</sup>.

Certain drugs are commonly prescribed by the dentist in the treatment of periodontal disease but nowadays researchers are investigating on new pharmacological agents to treat the periodontal disease by modifying the host response and reducing inflammatory biomarkers produced by bacteria<sup>7</sup>.

Metformin is most commonly used drug to treat diabetes mellitus.

Lookwood (2010) recommended the use of metformin as an anti-inflammatory agent as he found out that the normal inhibitory action of  $Zn^{+2}$  against cysteinyl proteases is raised by metformin<sup>8</sup>. Bak et al. (2010) also found that when metformin was given in rats with ligature induced periodontitis there was a decrease in bone loss and an increase in alveolar bone formation as a result of increase osteoblastic differentiation<sup>9</sup>.

In periodontology, use of local drug delivery is getting very popular nowadays. The sub-gingival bacteria are not entirely removed even after scaling and root planning and they again form a biofilm. The reason behind this local drug delivery system is the removal of this biofilm which provides the complete eradication of the disease<sup>10</sup>. This method of treatment is much easier to execute, requires less instrumentation and provide good bioavailability of the drug. The drug adhered in the base of the periodontal pocket for a longer span with least adverse effects<sup>11</sup>.

The objective of this research was to assess and compare the effectiveness of 1% metformin gel with mouthwash, to treat the periodontal diseases with minimum side effects which are frequently observed with the systemic use of the drugs used in treating periodontal diseases.

## MATERIALS AND METHODS

This study was conducted at Crown Dental Clinic, Karachi and HEJ Research Institute of Chemistry, University of Karachi conducted from March 2016 to September 2016.

Metformin HCl tablets 500 mg (Merck), purchased from the market and the other chemicals were received from Nighebaan Pharmacy, Karachi.

**Formulation of 1% metformin gel:** Distilled water was used to dissolve 500 mg of 10 metformin tablets and mixed with 2% hydroxyethyl cellulose gel containing methyl paraben sodium, propyl paraben sodium and EDTA (preservatives). The pH of the preparation was adjusted by adding triethanolamine<sup>12</sup>. Before application into the periodontal pocket the gel was then finally evaluated for its physicochemical properties.

**Formulation of 1% metformin mouthwash:** Distilled water was used to dissolve 500 mg of 10 metformin tablets. Triethanolamine was added to adjust the solution pH, glycerin and food dye was used for color and flavoring. To prevent the growth of the fungusodium benzoate was added as preservative. The mouthwash was then finally evaluated for its physicochemical properties.

Procedure involving pharmacological treatment:

**Ethical approval, consent and permission:** The study has been reviewed and was approved by the ethics review committee of University of Karachi, Pakistan.

**Participants:** 40 participants were included in this randomized clinical control study.

### Inclusion criteria

- Patients above 20 years
- Patients without systemic disease

### Exclusion criteria

- Patient received any medication from the past 6 months
- Patients having systemic disease
- Patient received periodontal treatment from the past 24 months
- Pregnant and lactating women

The participants were divided in to four categories

- Control group: no treatment
- Standard treated group: scaling and root planning only; each mouth quadrant per week for four consecutive weeks
- Gel treated group: scaling and root planning per quadrant per week for four weeks along with the intra-crevicular gel application by disposable syringe of 5 ml having 25 gauge blunted needle after 48 hours of every session
- Mouthwash treated group: mouthwash was used after the end of each treatment session for four consecutive weeks.

The clinical and biochemical variables were measured in each group at day 0 and after 30 days.

**Sample collection and determination of biochemical variables:** Saliva samples were obtained from each participant at day 0 and at 30 day. The samples were collected in a 5 ml sterilized coded vials, centrifuged at 12,000 g for ten minutes. The centrifuged fluids were shifted to -20°C refrigerator.

Analysis of TNF- $\alpha$  (Invitrogen, California), nitric oxide and PGE<sub>2</sub> (Glory science co., Ltd, USA) in salivary samples were done by using enzyme-linked immunosorbent assay (ELISA) kits<sup>6, 13, 14</sup>.

**Determination of clinical variables:** The clinical variables were measured by using CPITN probe.

**Probing depth:** Probing depth is measured from the gingival margin to the base of the sulcus or periodontal pocket. Six teeth were examined and in each tooth six sites were probed<sup>15</sup>.

**Attachment level:** Teeth and sites used for probing were similar to the probing depth<sup>15</sup>.

**Tooth mobility:** Horizontal and vertical tooth mobility was calculated by applying the moderate pressure in the in the facial-lingual direction and on incisal or occlusal surface of the tooth respectively<sup>15, 16</sup>.

**Bleeding on probing:** To evaluate bleeding, the probe was gently inserted along the gingival tissue wall of the sulcus<sup>15, 16</sup>.

**Plaque index:** In each arch 3 teeth were examined followed by examining four surfaces of each tooth<sup>15, 16</sup>.

**Gingival index:** In each arch 3 teeth were examined followed by examining four surfaces of each tooth<sup>15, 16</sup>.

**Statistical analysis:** Statistical analysis was done by one way ANOVA and post hoc analysis by Bonferroni test.

## RESULTS

Table 1a and 1b shows that after 30 days highly significant reduction was observed in all clinical variables ( $p \leq 0.001$ ) as compared to standard and control group by 1% metformin gel and mouthwash.

**Table No.1a: Measurement of clinical parameters**

Groups	Periodontal Pocket Depth		Attachment Level		Bleeding on Probing	
	Day 0	Day 30	Day 0	Day 30	Day 0	Day 30
Control Group	3.69 ± 1.08	3.91 ± 0.83	3.96 ± 0.81	3.97 ± 0.81	1.00 ± 0.25	0.90 ± 0.32
Standard Group	3.90 ± 0.83	3.77 ± 0.95	3.79 ± 0.55	3.57 ± 1.00	0.90 ± 0.32	0.54 ± 0.25 <sup>***</sup>
1% Metformin Gel	4.28 ± 1.04	2.57 ± 1.07 <sup>*****</sup>	4.43 ± 1.00	2.74 ± 1.01 <sup>*****</sup>	0.95 ± 0.11	0.00 ± 0.00 <sup>*****</sup>
1% Metformin Mouthwash	4.01 ± 1.00	1.99 ± 0.84 <sup>*****</sup>	4.20 ± 0.99	2.13 ± 0.86 <sup>*****</sup>	0.95 ± 0.11	0.00 ± 0.00 <sup>*****</sup>

n=10, mean ± SD. <sup>\*\*\*</sup>p ≤ 0.001= highly significant with control group.

<sup>###</sup>p ≤ 0.001= highly significant with standard group.

**Table No.1b: Measurement of clinical parameters**

Groups	Tooth Mobility		Plaque Index		Gingival Index	
	Day 0	Day 30	Day 0	Day 30	Day 0	Day 30
Control Group	0.60 ± 0.70	0.80 ± 0.53	2.66 ± 0.21	2.67 ± 0.76	2.45 ± 0.36	2.47 ± 0.35
Standard Group	0.70 ± 0.67	0.70 ± 0.67	2.64 ± 0.18	2.31 ± 0.15	2.63 ± 0.37	1.89 ± 0.77
1% Metformin Gel	1.20 ± 0.79	0.40 ± 0.52 <sup>*****</sup>	2.47 ± 0.48	0.47 ± 0.50 <sup>*****</sup>	2.43 ± 0.38	0.40 ± 0.41 <sup>*****</sup>
1% Metformin Mouthwash	1.20 ± 0.63	0.50 ± 0.53 <sup>*****</sup>	2.28 ± 0.55	0.52 ± 0.45 <sup>*****</sup>	2.37 ± 0.40	0.46 ± 0.42 <sup>*****</sup>

n=10, mean ± SD. <sup>\*\*\*</sup>p ≤ 0.001= highly significant with control group.

<sup>###</sup>p ≤ 0.001= highly significant with standard group.

**Table No. 2: Measurement of biochemical variables**

Groups	TNF-α		PGE <sub>2</sub>		Nitric Oxide	
	Day 0	Day 30	Day 0	Day 30	Day 0	Day 30
Control Group	75.88 ± 2.51	75.96 ± 2.57	90.83 ± 1.93	91.54 ± 1.76	60.76 ± 1.62	61.26 ± 1.75
Standard Group	74.26 ± 1.78	41.85 ± 1.58 <sup>***</sup>	94.90 ± 2.26	92.9 ± 2.47	62.47 ± 0.75	61.72 ± 0.67
1% Metformin Gel	78.03 ± 1.23	3.15 ± 1.37 <sup>*****+++</sup>	85.90 ± 1.55	29.72 ± 1.85 <sup>*****+++</sup>	69.35 ± 2.29	37.6 ± 2.59 <sup>*****</sup>
1% Metformin Mouthwash	73.66 ± 1.75	21.83 ± 1.62 <sup>*****</sup>	80.53 ± 1.63	40.31 ± 1.28 <sup>*****</sup>	62.41 ± 2.38	24.94 ± 2.46 <sup>*****+++</sup>

n=10, mean ± SD. <sup>\*\*\*</sup>p ≤ 0.001= highly significant with control group. <sup>###</sup>p ≤ 0.001= highly significant with standard group. <sup>+++</sup>p ≤ 0.001= highly significant in comparison of metformin gel v/s metformin mouthwash.

After 30 days bleeding was also reduced ( $p \leq 0.001$ ) by the standard treatment. Similar efficacy was observed in reducing the clinical variables by both preparations after 30 days of treatment ( $p \leq 0.001$ ).

Table 2 indicates the reduction in TNF-α, PGE<sub>2</sub> and nitric oxide level after 30 days ( $p \leq 0.001$ ) by 1% metformin gel and mouthwash when compared to standard and control group. Significant decrease in

TNF-α level after 30 days ( $p \leq 0.001$ ) was also observed by the standard treatment group. 1% metformin gel found to be more effective in reducing the TNF-α and PGE<sub>2</sub> level ( $p \leq 0.001$ ) when compared to 1% mouthwash whereas metformin mouthwash found to be more effective in reducing the nitric oxide level ( $p \leq 0.001$ ) as compared to the gel.

## DISCUSSION

Periodontal problems are very common worldwide nowadays. To maintain the periodontal health adequate oral hygiene is required because if the oral hygiene is not maintained there is a building of oral plaque which is responsible for the growth of anaerobic bacteria. There is a destruction of collagen supporting the periodontium and alveolar bone resorption in the late stage of periodontitis. The increased production of pro-inflammatory cytokines, neutrophilic enzymes and reactive oxygen species as a result of activation of neutrophils is due to proliferation and entrance of anaerobic pathogens in the periodontium<sup>17,18</sup>.

Periodontal diseases are treated mainly by scaling and root planning as well as by oral drugs such as non-steroidal anti-inflammatory agents and different types of antibiotics<sup>19,20</sup>. Nowadays, researchers are interested in different drugs that are not used in treating periodontal diseases but have significant effects on inflammation. These drugs also act as anti-oxidants, work as an anti-septic and also have anti-collagenase activity<sup>7</sup>.

Treatment of periodontal diseases by the local drug delivery system is provided by the dentist but regular visits are required to treat the diseases which not only reduce systemic administration of drugs but also minimize the adverse effects associated with its use.

In this study we observed the anti-inflammatory effect of metformin in patients with periodontal disease by developing 1% metformin gel and 1% metformin mouthwash. These oral preparations not only reduced the clinical parameters but also have a beneficial effect on biochemical variables. The anti-inflammatory effects of both the preparations was probably due to the mechanism depends on AMP activated protein kinase. This anti-inflammatory effects of the drug is non-hepatic and independent from the other metabolic effects of metformin<sup>21</sup>. Thus, it produces a completely different anti-inflammatory mechanism in treating periodontal disease as compared to commonly used NSAIDs. Both the preparations reduced the tooth mobility by increasing the osteoblastic activity results in alveolar bone formation<sup>9</sup>. The reduction in tooth mobility may also be due to the reduced formation of reactive oxygen species and through apoptosis within the cell<sup>22</sup>.

Both the gel and mouthwash preparation highly reduced the level of TNF- $\alpha$ , PGE<sub>2</sub> and nitric oxide. The mRNA expression of SREBP-1c, PPAR $\gamma$  and FASN genes and the other pro-inflammatory cytokines are under control by metformin in the hepatocytes<sup>21</sup>. Metformin decreases the level of these genes and the pro-inflammatory cytokines. Reduction in the inflammatory biomarkers decreased bleeding and also decrease the attachment level and pocket depth.

## CONCLUSION

We concluded from our study that the both preparations are highly effective in reducing the periodontal disease in its local form without producing any adverse effects. Although both the gel and mouthwash is highly effective in reducing the clinical and biochemical variables but the gel produced better results when compared to mouthwash possibly because of its muco-adhesive property as the drug is available for extended period of time in the periodontal pocket. Thus, the gel form is effective in chronic forms of periodontal diseases and the mouthwash plays a role in those conditions where there is an acute form of the disease.

**Recommendations:** This research recommends that metformin due to its unique anti-inflammatory effects can be used in treating gingivitis and periodontitis. Further researches are also required on anti-inflammatory effects of new pharmacological agents in treating periodontal diseases.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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**ACKNOWLEDGMENTS**

List of all contributors who do not meet the criteria for Authorship, such as a person who provided purely technical help, writing assistance or department chair who provided only general support. Financial & Material support should be acknowledged.

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