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**Editorial****Let's Talk About Fitness – Part 2****Mohsin Masud Jan**

Editor

In our last issue I talked about fitness, gave a brief introduction to the topic itself. Now, let's divide it up, into its two main constituents: diet & exercise. For now, let's just focus on diet alone. Baby steps. One thing at a time.

First let me introduce all of you to one basic rule of fitness, and by fitness, keeping the general populace in mind, I mean weight loss over here. The rule goes extremely simply as such: Calories In VS Calories Out. Now what that means is, that the basic essence of inducing weight loss in your body is by increasing the number of calories expended and decreasing the number of calories consumed. Now What are Calories? Simply put calories are a measure of energy stored in the food we eat. Scientifically, a calorie is the amount of heat required to raise the temperature of one kilogram of water one degree Celsius. To elaborate it a bit, our body tends to store excess food, food which we do not utilize or burn off, which we measure as calories, gets stored in the form of fat. Now when we deprive our body of the excess calories, it adapts rapidly, and to keep itself functioning at its peak it turns towards the fat we have stored already, burning it down to provide itself the energy it needs. And a continued drop in the calories consumed leads to a drop in body weight.

Now what exactly is our traditional Pakistani diet, what does it by and large consist of? Oil, Sugar, Ghee, Salt, Gurr, to name a few, are the main ingredients our population is largely addicted to. And all of these, contribute to obesity! As these ingredients make the baseline for nearly everything found in our kitchens and refrigerators, it gets hard to stay away from them. So for now, we won't go into excessive detail about diet plans. For now, let's stick to the basics.

Calories in VS Calories out. That is what is to be kept in mind, and what that basically entails is, consuming less than what you spend. I'll keep it simple, I'll sign off today with just a few tips on how to reduce the amount of calories you consume in a day.

1. Avoid carbonated drinks
2. Decrease portion size, if you eat a single chapatti at lunch, reduce it to 3/4<sup>th</sup> of a chapatti, if you go for 2, decrease it to 1.5
3. If you're a tea or coffee drinker, stop or reduce the amount of sugar you add to your drink.
4. If you're used to eating dessert after every meal, depending on your choice of dessert, reduce the portion size by half.
5. Knowing us Pakistanis, if you take some biscuits or other add-ons with your noon and evening tea, drop them altogether for healthier alternatives such as fruits or nuts. But, if you must, then go for the sugar free, high fiber biscuits.
6. When you eat out, save half of your food and eat it at your next meal. And remember to skip the drinks and extra sauces.
7. Try to find low fat versions of cheese, milk and mayonnaise, if you're a regular consumer.
8. Whenever you hit up a fast food chain, avoid getting any add-ons or upsizing your meals, and get the diet version of your drink.

Now, couple these with the piece of advice I gave in the previous issue, i.e. exercising, which we will constitute as any form of physical activity other than the norm, be it 15 minutes of walking, and voila! There you are, starting your journey towards a healthier, lighter & happier you!

# Ashphyxial Deaths: A Retrospective Study Conducted at Tertiary Care Hospital of Sindh

1. Waheed Ali 2. Pardeep Kumar 3. Abrar-ul-Hasnain 4. Zafar Ali Seenhro

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## ABSTRACT

**Objective:** To study frequency of patterns and manners of asphyxial deaths autopsied at Liaquat University Hospital.

**Study Design:** Retrospective study

**Place and Duration of Study:** This study was conducted at the Department of Forensic Medicine and Office of Police Surgeon- Medico legal section, Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad from January 2010 to December 2014.

**Materials and Methods:** Medicolegal files of autopsy were studied retrospectively. 135 files were finalized after scrutiny of 2033 autopsies. Causes, types and patterns of asphyxia were noted. Essential data was noted in a pre-designed proforma for study purpose. Data variables were analyzed on Microsoft excel and Statistix 8.1 using appropriate statistical tests. P value of  $\leq 0.05$  was taken of statistical significance.

**Results:** One hundred and thirty five cases of asphyxial deaths (out of 2033 autopsies) were studied. Age (mean  $\pm$ SD) was noted as  $49.7 \pm 8.9$  years. Of 135 cases, 65.9% (n=89) were male and 34.0% (n=46) were female ( $X^2 = 112.5$  p=0.0001). 28.1% and 8.14% of cases showed ligature and manual strangulation respectively. Hanging, drowning, traumatic asphyxia and throttling were noted in 42.21%, 2.59%, 5.18% and 3.7% respectively. Suicidal deaths in 29.6%, homicidal in 57.03% and accidental asphyxial deaths were observed in 13.33%.

**Conclusion:** Homicidal and suicidal deaths of hanging and strangulation seemed to be the major contributing causes of asphyxial deaths.

**Key Words:** Asphyxial Deaths, Autopsy, Homicide, Suicide, Sindh

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## INTRODUCTION

Asphyxia literally means oxygen deprivation. Asphyxia is defined as an entity caused by interference of exchange of air between lungs and atmosphere due to mechanical/manual obstruction. The hanging, strangulation and the drowning are common causes of asphyxial deaths. The organs and tissues of various body systems are adversely affected by oxygen lacking and this causes death.<sup>1,2</sup> The term asphyxia points to the cessation of breathing of obstructive nature caused by a physical barrier. The obstruction site may extend right from nose, mouth, throat, larynx, bronchi and the alveolar lining mucosa, and this causes severe hypoxia. Surprisingly, the various clinical and pathological feature of different type of asphyxia vary a lot.<sup>3</sup> Most vulnerable organ to hypoxia is the brain. Its hypoxia causes unconsciousness, while heart may be pumping for several minutes even after cessation of breathing.<sup>4</sup> Classical features of asphyxia are caused by various

environmental factors, mechanical and traumatic factors, pathological conditions and iatrogenic causes. Exchange of gases is blocked mechanically in all types of asphyxias. Respiratory tract disease causes pathological asphyxia. While in toxic asphyxia, some poisonous substances impair the utilization of oxygen by tissues which may be due to poisoning of cell enzyme systems. Lack of oxygen in surrounding air is termed as environmental asphyxia.<sup>5,2</sup> Conventionally, asphyxia applies to all those conditions which interfere with oxygen supply of tissues critically below normal of working levels. Once oxygen supply is below critical levels necessary for cells and tissue survival, results in irreversible organ damage. Oxygen deprivation for duration of 5-10 minutes is sufficient to damage the brain and cardiovascular systems permanently resulting in death. Hanging, ligature strangulation, throttling, suffocation and drowning are the causes of violent deaths of asphyxial origin. Above conditions interfere with pulmonary ventilation resulting in oxygen lack termed as anoxic anoxia. Anoxia produces specific and non-specific pathological changes. Degeneration of parenchyma of body viscera is labeled as non-specific change. The increased vascular permeability, petechiae,

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tardeus sports and tissue cyanosis are a few of specific pathological changes.<sup>2,6,7</sup>

Currently, asphyxias deaths have been on incline in the country because of social issues, economic constraints and various other causes. Less privileged and financial crises are serious problems, sometime quite intolerable, making them depressed and a tendency to live no more. The present study highlights the frequency of asphyxial deaths and their types and socio economical status of the victims at our tertiary care hospital.

## MATERIALS AND METHODS

The present study was conducted at the Department of Forensic Medicine and Office of Police Surgeon-Medico legal section, Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad. Patient files of autopsy were studied retrospectively to find out the asphyxial deaths; attended from January 2010 to December 2014. Of 2033 deaths, finally 135 cases of asphyxial deaths were selected for study purpose. Forensic department of Liaquat University hospital keeps the detailed reports of cases as they are part of medical jurisprudence to be presented at the courts of Law.

Autopsy reports were separated to find the demographic information of the victims. Asphyxia in terms of causes, types and patterns was recorded as in forensic reporting. Necessary records of medicolegal importance were noted in a pre-designed proforma. Medicolegal data was collected for analysis. Data was typed in Microsoft excel, copied and pasted to data sheet on Statistix 8.1. Student t test (one sample t-test) and Chi square test were operated for the analysis of numerical and categorical variables. Graphing was performed on Microsoft excel sheet. A  $p \leq 0.05$  was defined as significant.

## RESULTS

135 cases of asphyxial deaths, out of 2033 autopsies, were studied in a retrospectively (table 2). Demographic characteristics of study population are summarized as in table I. Age (mean  $\pm$ SD) was noted as  $49.7 \pm 8.9$  years. Of 135 cases, 89 (65.9%) were male and 46 (34.07%) were female ( $X^2 = 112.5$   $p=0.0001$ ). Majority of study subjects belonged to rural areas - 67.4%. Majority were non- educated i.e. 68.1%. Muslims and non-muslims were noted as victims (table I). 62% of cases belonged to lower social class, 27.4% to upper social class and 9.62% belonged to middle social class. Unemployment was noted in 76.2% of cases. Different patterns of asphyxial deaths are tabulated in table 3.

Strangulation with ligature and manual were found in 28.1% and 8.14% respectively. While hanging, drowning, traumatic asphyxia and throttling were noted in 42.21%, 12.59%, 5.18% and 3.7% respectively (Graph 2). Suicidal, homicidal and accidental patterns

of asphyxial deaths were noted in 29.6%, 57.03% and 13.33% respectively ( $X^2 = 107.53$   $p=0.002$ ).

Graph 1 shows the age categories distribution of study subjects. It was evident that majority of cases belonged to 4<sup>th</sup> decade; however 3 cases of childhood/adolescent age were noted as shown in table I.

**Table No.I. Demographic characteristics of study population (n=135)**

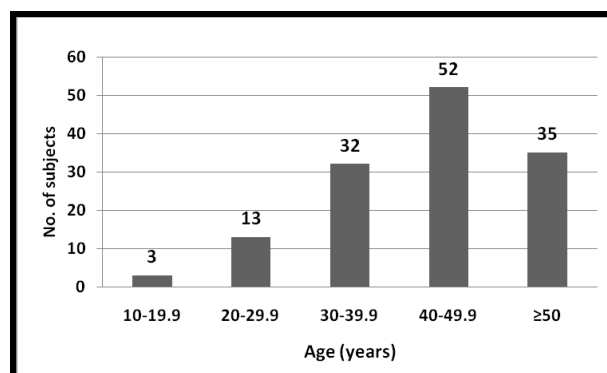
	No.	%
Age (mean $\pm$ SD)	49.7 $\pm$ 8.9 years	
Male	89	65.92
Female	46	34.07
Children	3	2.2
Rural	91	67.40
Urban	44	32.59
Educated	43	31.85
Non educated	92	68.14
Social class		
• Lower	85	62.96
• Middle	13	9.62
• Upper	37	27.40
Muslims	106	78.51
Non muslims	29	21.48
Employed	32	23.71
Unemployed	103	76.29
Farmers	27	20.0

**Table No.2: Frequency of asphyxial deaths (n=135)**

Total cases	Violent asphyxial deaths	
	No.	%
2033	135	6.64

**Table No.3: Frequency of different patterns of asphyxial deaths in study population (n=135)**

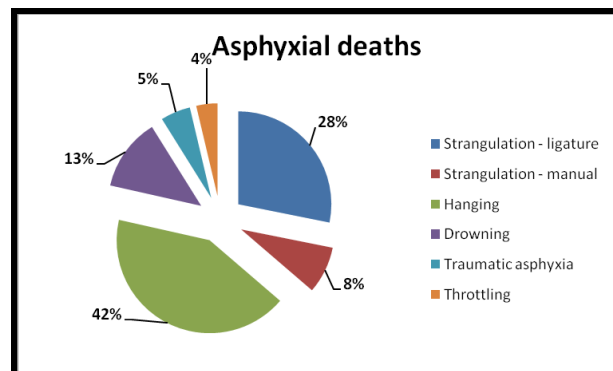
	No.	%
Strangulation - ligature	38	28.14
Strangulation - manual	11	8.14
Hanging	57	42.21
Drowning	17	12.59
Traumatic asphyxia	7	5.18
Throttling	5	3.7
Total	135	100



**Graph No. 1: Bar graph showing age categories distribution of study subjects**

**Table No.4: Medicolegal aspects of asphyxial deaths in study population (n=135)**

	No.	%
Suicidal	40	29.62
Accidental	18	13.33
Homicidal	77	57.03
Total	135	100

**Graph- No.2. Asphyxial death distribution of study population**

## DISCUSSION

The Liaquat University Hospital, Hyderabad/Jamshoro caters a large number of medicolegal cases from wide areas of Sindh. Out of 2033 autopsies, 135 cases of asphyxial deaths were recorded in present study which showed a frequency of 6.64%. Our findings are consistent with the study of Tirmizi et al<sup>8</sup> which reported frequency of 7.08% due to violent asphyxia. Another cited study<sup>9</sup> had reported a 5.26% frequency of asphyxial deaths out of more than two thousand autopsies.<sup>9</sup> The findings of above studies are in keeping with the present study. A frequency of 15.7% of asphyxial deaths has been reported<sup>10</sup> which is very high and is in contrast to present and previous studies.<sup>8,9</sup> Such controversies might have been introduced due to longer duration of study was conducted for.

Of 135 cases, 89 (65.9%) were male and 46 (34.07%) were female ( $X^2 = 112.5$ ,  $p=0.0001$ ) in present study (table I), our these findings are consistent studies cited.<sup>8,10</sup> A Turkish study reported frequency of 79.8% for male; while another study showed frequency of 70.56% for male and 29.44% female committing suicide by hanging.<sup>11</sup> Another 10 years audit from India has reported male to female ratio of 3:2 which is highly comparable to the present study.<sup>12</sup> The male to female ratio (1.9:1) of present study is similar to a study cited.<sup>8</sup> Frequency of strangulation, hanging, drowning, traumatic asphyxia and throttling are in comparison to previous reports.<sup>13-15</sup>

Asphyxial deaths of drowning was remarkably noticed in male counterparts which is in consistent to previous studies which had reported frequency of 81.9% and 80.1% respectively.<sup>16,17</sup> Male dominance in drowning asphyxial deaths is due to their life style due to

swimming and consequently the drowning. Our findings are similar to study cited.<sup>18</sup> In present study, seven deaths were caused by traumatic asphyxia which is in keeping with previous study.<sup>9</sup> Majority of cases in traumatic asphyxia were male which is also consistent to above mentioned study.

In present study, ligature and manual strangulation was observed in 28.14% and 8.14% of cases which is consistent to a previous study reported from USA.<sup>19</sup> It was reported that the manual strangulation is always homicidal and most of the victims are the female and young children. Manual strangulation of present study findings are in keeping to above study.

As regards age of the asphyxial deaths cases, majority of cases were in their 4<sup>th</sup> decade (40 years) which is highly consistent with previous study from New Zealand conducted.<sup>20</sup> A previous study from Faisalabad had reported younger age in suicidal asphyxial deaths which is in contrast to the present study.<sup>21</sup>

The present study reports strangulation and hanging as common causes of asphyxial deaths. The present study has explored the frequencies of various modes, methods and patterns of violent asphyxial deaths as regards gender and age vulnerability.

## CONCLUSION

Homicidal and suicidal deaths of hanging and strangulation seemed to be the major contributing causes of asphyxial deaths in present study. Both manners of asphyxial deaths, in one way or other, indicate a social and economic frustration and carelessness, which are preventable if solved with honesty. Homicidal and suicidal deaths are a good eye opener for the government and for organizations claiming of bringing an uplift of socio economic justice in the country.

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

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# Cycloplegic Refraction in Children with Cyclopentolate versus Atropine

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## ABSTRACT

**Objective:** The aim of this study is to evaluate the effectiveness of two cycloplegic drugs used in cycloplegic refraction in hyperopic children.

**Study Design:** Hospital based cross sectional study

**Place and Duration of Study:** This study was carried out at the Out-patient department of Ophthalmology Dow University of Health Science (Ohja campus), Karachi Pakistan from January 2011 to June 2011.

**Materials and Methods:** We instilled cyclopentolate 1% drops and refracted the patient followed after a few days with atropine eye drops 1% instillation and the results of both drugs were compared. The data are presented as mean and standard deviation (SD). Statistical analysis was performed using the SPSS software 19. A P-value of less than 0.05 was considered statistically significant.

**Results:** The total refractions were recorded after cycloplegia with atropine 1% and cyclopentolate 1% eye drops. Atropine refraction (mean 4.05 D) was statically insignificantly comparing with cyclopentolate refraction (mean 3.315 D;  $P > 0.05$ )

**Conclusion:** There is no significant difference in the cycloplegic refraction values between the two drugs hence cyclopentolate is a safe and effective drug to be used in cycloplegic refraction.

**Key Words :** Atropine, Cyclopentolate, cycloplegic refraction

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## INTRODUCTION

Accommodation, quantified in diopters (D), is the process by which the eye changes refractive power to maintain a clear image (focus) on an object as its distance varies. This is achieved by changing the form of the crystalline lens using the ciliary body. The ciliary muscle contracts causing a reduction in the zonular tension which eventually changes refractive power of the eye.<sup>1</sup>

The amplitude of accommodation, declines with age, is the dioptric distance between the far point and the near point of accommodation. At the age of 3, the power of accommodation is 17 diopters which decreases at the age of 10 years to 14 diopters, at 25 years to 10 diopters, at 40 years to 6 diopters and by the age of 50 or less to 2 diopters.<sup>2</sup>

Cycloplegia is paralysis of the ciliary muscle, resulting in a reduction or loss of accommodation. There are many drugs which can cause cycloplegia. These are anticholinergic drugs that act by blocking the action of acetylcholine at the postsynaptic receptor site on the smooth muscle fiber of the ciliary body and iris sphincter muscle which are innervated by postganglionic parasympathetic nerve fibers. Mydriasis

(dilation of the pupil) and loss of pupil reflex occurs along with cycloplegia.<sup>1,3</sup>

The best cycloplegics used should have the following properties: rapid onset, complete paralysis of accommodation, adequate duration of maximum cycloplegia, rapid recovery of accommodation, no or minimum local or systemic side effects. The two most commonly used cycloplegic agents are atropine and cyclopentolate. Although various studies have been done in order to compare the efficacy of these two agents, but until now none of them can be labeled as an ideal drug.<sup>4</sup>

The most powerful long-acting cycloplegic and mydriatic used in ophthalmology is atropine. It is an alkaloid (Belladonna) and is used in its water soluble form (atropine sulphate), and it is available as both drops and ointment at 0.5% or 1% strength. It inhibits action of acetylcholine or other cholinergic stimuli at postganglionic cholinergic receptors, including smooth muscles, secretory glands, and CNS sites. One drop of atropine 1% gives maximal mydriasis in about 40 minutes and partial cycloplegia in about 3 hours. The effects may last between 8-15 days. Atropine is useful for assessing cycloplegic refraction, especially in children with esotropia since under-corrected hyperopia is suspected. It is also sometimes used to help children adjust to a recently prescribed high hyperopic correction.<sup>5</sup>

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Atropine is contraindicated in glaucoma and if there is a risk of precipitating glaucoma especially angle closure glaucoma. In some books it has been reported that atropine is particularly dangerous in patients with Down Syndrome and albinism.<sup>6</sup> Local side effects include allergy to alkaloids or atropine itself. Patient usually complains of excessive stinging on instilling the drops and the development of red and itchy rash on the eye lid skin. Ocular side effects include follicular conjunctivitis and contact dermatitis.<sup>7</sup> Systemic effects of atropine, which can be very dangerous, are tachycardia, tremors, delirium, convulsions, hot dry skin and even death. Therefore it should be used carefully in young children and elderly.<sup>5</sup>

The second widely used cycloplegic drug nowadays is cyclopentolate. Cyclopentolate, like atropine, is an anticholinergic agent and has same mechanism of action. Mydriatic effect of cyclopentolate starts in about 15 minutes but its maximum effect is achieved in about 30 minutes. It usually takes about 40 minutes for its cycloplegic effect. Recovery period of this drug is about 4-12 hours.<sup>5</sup>

Side effects of cyclopentolate are mostly dose dependent especially systemic effects. Commonly seen local sides include blurred vision, irritation, burning sensation and redness in eye. However, local allergic reactions are rare. Systemic effects of this drug are generally CNS related, which include visual hallucinations, slurred speech, ataxia, and seizures. Due to its CNS involvement, it is contraindicated in infants and young children with spastic paralysis or any brain damage. Being a cycloplegic drug, it should be strictly avoided in narrow angle glaucoma.<sup>4,5,8</sup>

Cycloplegia is necessarily used during ophthalmic examination for refractive errors in young children (particularly those who are high hyperopic), patients with strabismus (especially esotropia) and accommodative spasm. It is also indicated for the diagnosis of latent hyperopia in young adults (aged between 18-40 years). Cycloplegic refraction is rarely of use in older adults (above 40 years).<sup>1,3</sup>

Although the cycloplegic effect with atropine is superior to cyclopentolate (uncovers 0.4D more hyperopia), but it is less extensively used nowadays as compared to cyclopentolate. Because of its long

duration of blurred vision as well as greater risk of toxicity, it has been now replaced by cyclopentolate.<sup>1</sup>

## MATERIALS AND METHODS

This study was Conducted in an eye department of a tertiary care Center. A written consent was obtained from all the parents/guardians accompanying the children before they were enrolled in this study.

All children that were included in the study had a refractive power of more than 1.00DS and underwent a detailed ophthalmic examination along with a dilated fundus examination. Exclusion criteria included any known allergies or serious adverse reactions to the cycloplegic drugs, ophthalmic disease other than refractive error and/or strabismus and poor compliance.

All the study patients initially underwent cycloplegic refraction under cyclopentolate followed by atropine. A standard dose of cyclopentolate was used comprising of one drop of 1 % cyclopentolate instilled three times in each eye every five minutes after which the child was instructed to close his eyes gently to decrease the systemic absorption. Refraction was then performed by a skilled refractionist using WelchAllyn retinoscope NY USA. After an interval period of three days atropine sulphate 1% ointment was instilled three times a day for three consecutive days by the parents.

The patients were asked to come to the out patient department after three days and a detailed history was taken from the parents regarding side effects of these two drugs. This was followed with Retinoscopy which was performed on the fourth day by the same refractionist. The refractive data of the two drugs were compared using the power vector analysis.

## RESULTS

A total of 50 children (100 eyes) with a mean  $\pm$  SD age of (6 years  $\pm$  2.739) range (2 years to 14 years) were included in this study. This is displayed in table 1 below. The total refractions were recorded after cycloplegia with cyclopentolate 1% and with Atropine 1%. Atropine (mean 4.05D) was statically insignificant in comparison with cyclopentolate (mean 3.315D) as the difference between the two was 0.735 D.

Table No.1: Intraclass Correlation Coefficient

	Intraclass Correlation <sup>b</sup>	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.986 <sup>a</sup>	.978	.990	145.267	99	99	.000
Average Measures	.993 <sup>c</sup>	.989	.995	145.267	99	99	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type A intraclass correlation coefficients using an absolute agreement definition.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

ICC = 0.986 (P-value <0.001)

## DISCUSSION

In order to diagnose and treat important ophthalmic disorders, especially in young children at the age of visual development or those with higher amplitudes of accommodation which cause refractive errors, full cycloplegia is required.<sup>9</sup>

The best cycloplegics used should have the following properties: rapid onset, complete paralysis of accommodation, adequate duration of maximum cycloplegia, rapid recovery of accommodation, no or minimum local or systemic side effects. The two most commonly used cycloplegic agents are atropine and cyclopentolate. Although various studies have been done in order to compare the efficacy of these two agents, but until now none of them can be labeled as an ideal drug.<sup>4,10,11,12</sup>

Although the cycloplegic effect with atropine is superior to cyclopentolate (uncovers 0.4D more hyperopia), but it is less extensively used nowadays as compared to cyclopentolate. Because of its long duration of blurred vision as well as greater risk of toxicity, it has been now replaced by cyclopentolate.<sup>1</sup>

However, some authors believe that atropine is the gold standard cycloplegic and should not be replaced. Ingram and Barr mentioned cyclopentolate as being less effective when compared with atropine at producing cycloplegia in 1 year old children. Rosenbaum et al concluded in their study that since 1.0 diopters or more hyperopia was uncovered by atropine in children retinoscopy using atropine cycloplegia should be preferred. Goldstein and Schneekloth believe that refraction with 1% atropine ointment produces a significantly larger amount of hypermetropia than does refraction with a combination of cyclopentolate and tropicamide regardless of age, amount of hypermetropia, or size of the esotropia.<sup>2,13,14</sup>

Other studies done, comparing the cycloplegic effects of cyclopentolate with atropine, prove that cyclopentolate should be the drug of choice due to its shorter duration of action, less local and systemic complications and it is easier to administer. Khurana et al recommends cyclopentolate to be used as a routine cycloplegic in children subsequently comparing the mean residual accommodation measured after the use of cyclopentolate, homatropine and atropine. Celebi and Aykan suggested that the cyclopentolate cycloplegia applied to the patients with refractive accommodative esotropia (aged from 5 to 10 ) is sufficient to produce good cycloplegia.<sup>15,16,17</sup>

Many authors also say that cyclopentolate used alone in children 2 to 5 years old, is not effective particularly in those with esotropia with hyperopia more than 2D who must be repeatedly examined with atropine to detect latent hyperopia.<sup>14,15,16,17,18</sup>

Various other studies show that the mean difference between the amplitudes of accommodation with

cyclopentolate and atropine is not very significant therefore cyclopentolate is favored. Salvesen and K hler reported that the mean difference between atropine and cyclopentolate was only 0.23D. Nishizawa et al mentioned the difference in refraction between the combination drop (which included 0.5% cyclopentolate hydrochloride and 0.5% tropicamide) and 1% atropine was +1.00 dioptre or less. Similarly, Goldstein and Schneekloth's study revealed 1.25 D or more refractive power of hypermetropia with atropine. Rosenbaum et al stated that Atropine 1.0% revealed +0.34 diopters more hyperopia when compared with cyclopentolate 1.0%. Khurana et al observed that the mean difference between the two drugs was 0.26 +/- 0.14 with atropine. Other authors who favored this theory include Celebi and Aykan.<sup>11,12,14,15,16,19</sup>

This study included children between the ages 2 years and 14 years. No local or systemic side effects were seen with either atropine or cyclopentolate probably due to the limited sample size. Therefore according to this study, atropine 1% in this population is safe and efficient.

Many earlier studies presented the importance of cycloplegia by atropine in children with strabismus. However this study showed the difference in cycloplegic refraction with atropine and cyclopentolate was not very significant, regardless patients had strabismus or not. Hence cyclopentolate should be considered as the drug of choice for cycloplegic refraction for children with or without strabismus as it is associated with less side effects.

## CONCLUSION

There is no significant difference in the cycloplegic refraction values between the two drugs hence cyclopentolate is a safe and effective drug to be used in cycloplegic refraction.

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

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# Diagnostic Yield of Ultrasonography in the Evaluation of Abdominal Tuberculosis

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## ABSTRACT

**Objective:** To determine the diagnostic value of ultrasonography in detection of abdominal tuberculosis.

**Study Design:** Descriptive study.

**Place and duration of study:** This study was conducted in the department of diagnostic radiology, Bolan Medical Complex Hospital, Quetta during the year march 2014 to Feb 2015.

**Materials and Methods:** 206 patients were selected from Bolan medical complex hospital both from outdoor and indoor departments. Patients presented with clinical signs and symptoms and ultrasonography findings suggestive of abdominal tuberculosis excluding genitourinary TB. Doppler ultrasonography was used to conduct the study for the evaluation of abdominal tuberculosis. These findings were confirmed by ascitic fluid cytology, fine needle aspiration and response to response to anti TB drugs. Ultrasound was repeated in 1 month and second month.

**Results:** The 206 patients were included in this study which comprises 103(50 %) male and 103(50 %) female with male to female ratio was (1:1) the mean age of patient was 35year. Low grade fever was present in 115(80%), weight loss 120 (58.53%), diarrhea 58 (31.70%) altered bowel habit 25 (12.19%) and abdominal pain and distension 176 (85.85%). Ultrasound findings include ascites 120 (58.53%), lymphadenopathy 72 (38.04%) bowel wall thickening 43 (20.97%), omental/peritoneal thickening 28 (13.65%), hepatomegaly 5 (2.43%) and splenomegaly 3 (1.46%)

**Conclusion:** ultrasonography is non-invasive diagnostic tool, easily available and cost effective. Ultrasound would be effective tool in the diagnosis of abdominal tuberculosis. Where the other imaging modalities are expensive and not easily available

**Key Words:** Ultrasonography, Evaluation, Abdominal Tuberculosis

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## INTRODUCTION

Tuberculosis bacteria reach the gastrointestinal tract via hematogeneous spread, ingestion of infected sputum or direct spread from infected contiguous lymph nodes.<sup>1</sup> Tuberculosis can involve any part of gastrointestinal tract. Tuberculosis is one of the common diseases in the developing countries. It primarily involves the lungs followed by abdomen. It involves the peritoneum, gastrointestinal tract, lymph nodes, mesentery and omentum. It may also involve the solid organs like liver, pancreas and spleen.

Abdomen is the fourth commonest site of involvement of extra pulmonary tuberculosis after the lymph nodes, skeletal system and genitourinary tract.<sup>2</sup>

Tuberculosis is more common in immuno compromised patients. HIV infection not only increases the risk of progression of latent infection of active tuberculosis, it also increases chances of new TB infections.<sup>3</sup>

Tuberculosis is not uncommon in the western world due to immuno deficiency states like HIV/AIDS and immigrants population. Abdominal

tuberculosis is a common disease in Pakistan and other tropical countries. Tuberculosis is a universal public health concern resulting in an estimated 8-10 million new cases and 2-3 million deaths yearly.<sup>4</sup>

Abdominal tuberculosis may occur due to swallowing of infected sputum, hematogeneous spread or dissemination of primary pulmonary tuberculosis.

Clinical manifestation of abdominal disease are nonspecific and depend on organ involved. it often course with abdominal pain and distension, low grade fever, anorexia and weight loss. Diarrhea is usually present when gastrointestinal tract is affected.<sup>5</sup>

Presence of more than one finding was considered as extensive abdominal involvement.<sup>6</sup>

Patients presented to us with clinical signs and symptoms suggestive of abdominal tuberculosis were examined by ultrasonography. Patients were having abdominal pain, low grade fever, diarrhea, altered bowel habits. Ultrasonography main findings were ascites, lymphadenopathy, bowel wall thickening/mass especially along the ileocecal region. Intra-abdominal fluid, which may be free or loculated and clear or complex (with debris and septa) is commonly seen.<sup>7</sup> The nodes are seen as conglomerate mass and or as scattered enlarged nodes with hypoechoic center because of necrosis.<sup>8</sup> The mesenteric thickness in healthy individuals ranged from 5 to 14mm.

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sonographic findings in all patients with abdominal tuberculosis included an echogenic thickened mesentery (more than or equal to 15mm) with mesenteric lymphadenopathy.

Ultrasonography was selected as a imaging tool because it is cost effective, easily available and noninvasive in the evaluation of disease. This study was conducted in the province of Balochistan, where the socio economic condition of the people is poor and more people are prone to tuberculosis.

## MATERIALS AND METHODS

This is a descriptive study which included 206 patients. The study was conducted in the department of radiology Bolan medical complex hospital Quetta during the year march 2014 to February 2015. The patients were selected from out patients and in patients departments. The patients were sent to us by referring physicians with clinical signs and symptoms suggestive of abdominal tuberculosis.

The study was conducted by ultrasonography with 3.5MHZ curvilinear transducer and 5-10 MHZ linear transducer supplemented by doppler imaging where needed.

Patient was asked to come with nothing per orally for at least six hours and with full bladder to overcome the abdominal gases and to rule out pelvic lymphadenopathy.

The abdominal tuberculosis is difficult to diagnose because of its clinical presentation and laboratory finding are nonspecific. Peritoneal tuberculosis like ascites is the most common presentation of abdominal tuberculosis. The ileo cecal region is the most commonly involved site in the gastrointestinal tract tuberculosis due to presence of numerous lymphoid tissues. The nodal involvement is mainly mesenteric or retroperitoneal, which may shows caseation or calcification

## RESULTS

Out of 206 patients 103 (50%) were male and 102 (50%) were female. Male to female ratio was (1.1). The mean age was 35 years.

**Table No. 1: Distribution of patients according to Age**

Age	No of patients	%
0 -10	7	3.41
10-20	50	24.39
20-30	65	31.70
30-40	43	27.97
40-50	25	12.19
50+	5	2.43

**Table No. 2: Distribution of patients according to gender**

Gender	No of patients	%
Male	103	50%
female	103	50%

**Table No.3: Distribution according to signs and symptoms**

Signs and symptoms	Number of patients	%
Abdominal pain/distension	176	85.85
fever	115	56
Weight loss	120	58.53
Altered bowel habit	25	12.19
Abdominal tenderness	62	30.24

**Table No.4 Distribution of ultrasonography findings**

Ultrasound findings	Number of patients	%
Ascites	164	80
Lymphadenopathy	78	38.04
Bowel wall thickening/mass	58	28.29
Omental/peritoneal thickening	28	13.65
Hepatomegaly	5	2.43
splenomegaly	3	1.46

## DISCUSSION

Ultrasound is safe and non-invasive diagnostic tool in the evaluation of early detection of abdominal tuberculosis. Abdominal tuberculosis mainly involve the peritoneum, omentum, lymph nodes and peyer's patches of the terminal ileum. The clinical presentation tends to be non-specific with abdominal pain and general complaints and the differential diagnosis will often include inflammatory bowel disease, malignancy and other infections.<sup>9</sup>

Associated pulmonary disease in abdominal tuberculosis has been observed in literature.<sup>10</sup> It has been declared a global emergency by the world health organization (WHO) and is the most important communicable disease worldwide.

In our study it showed abdominal tuberculosis affects young population, which corresponds to study conducted by Dipti Agarwal et al. other study conducted by Aruhima Mukhopadhyay showed increased incidence of female patients with female to male ratio (5 : 3)<sup>10</sup> It has been declared a global emergency by the world health organization (WHO) and is the most important communicable disease worldwide.<sup>3</sup> The surgical treatment of abdominal tuberculosis is reserved for complications such as obstruction, perforation, fistula or a mass which does not resolve with medical therapy.<sup>11</sup>

In a study conducted by M P Sharma et. Al showed equal incidence of gender, however in our study male to female has been declared a global emergency by the world health organization (WHO) and is the most important communicable disease worldwide.<sup>12</sup> 50% and female were 50%. Ascites was the most common presentation in our study 80%, which corresponds to

study conducted by Ming- Luen Hu et al from Taiwan showed peritoneal tuberculosis was the most common presentation.<sup>13</sup> In our study ileocecal involvement was most common site of involvement, which corresponds to study conducted by Muhammad Saaq et al.<sup>14</sup> study conducted by Atta ullah Arif et al. abdominal mass by 30.76% however in our study abdominal wall thickening/mass was 28.28% In a study conducted in Uganda by Harriet Nalubega et al. showing hepatomegaly in 2.9% and splenomegaly in 17.7%, However in our study both hepatomegaly and splenomegaly were in lower percentage i.e. 2.43% and 1.46%. Abdominal pain and distension was seen in 85.85%, although study in Bangladesh showing higher incidence 80-95%

## CONCLUSION

Ultrasonography is a safe and effective diagnostic tool in the evaluation of abdominal tuberculosis.

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

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# Frequency of HBV, HCV and Malaria Infections in Cytopenic Patients Coming for Bone Marrow Aspiration to Bacha Khan Medical College Mardan

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## ABSTRACT

**Objective:** To know the frequency of HCV, HBV, and Malaria infections in cytopenic patients coming for Bone Marrow Aspiration.

**Study Duration:** Observational study

**Place and Duration of Study:** This study was conducted in Pathology and Medicine Departments of Bacha Khan Medical College Mardan from January 2012 to December 2014.

**Materials and Methods:** 100 patients with cytopenia were referred for Bone Marrow Aspiration and were screened for HBV, HCV and malaria infections. Complete blood counts were performed on 50 healthy individual as a control group.

Both Thick and Thin Blood smears were examined for Malaria, while Anti HCV and HBs Ag Screening was done by kit method (Immunochromatographic Method SD company). Complete blood count was performed by Hematology analyser. ( Sysmex Hematology Analyzer ).

**Results:** 4 out of 100 cytopenic patients were Anti HCV positive, who were referred for Bone Marrow Aspiration. These patients had a Hemoglobin level  $10.5 \pm 0.978$  G/dl, Platelets counts  $120 \pm 24.768 \times 103/uL$ . 2 out of 100 Cytopenic patients were HBs Ag Positive. They had anemia and thrombocytopenia, Hb level was  $10.4 \pm 0.879$  g/dl and platelets count was  $119 \pm 24.965 \times 103/uL$  respectively, while 3 (7%) out of 100 cytopenic patients had malaria microscopy. They presented with Hb of  $9.5 \pm 0.978$  g/dl, platelet count  $120 \pm 24.768 \times 103/uL$  and TLC  $3.8 \pm 1.365 \times 103/uL$  respectively. Counts in HCV, HBV and malaria are significantly lower than the control groups value  $< 0.0024$ .

**Conclusion:** Cytopenia is a significant finding in HCV, HBV and Malaria infections and patients presenting with any cytopenia patients referred for Bone marrow Aspiration presenting with cytopenia should be properly screened for HCV, HBV, and Malaria as these can be the cause of cytopenia thus unnecessary use of Bone Marrow Aspiration can be presented.

**Key Words:** HBV, HCV and Malaria Infection Anemia, Thrombocytopenia, Cytopenia.

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## INTRODUCTION

According to world Health organization about 3% of the world population has been infected with HCV, there are about 170 million patients with HCV infection in the world and about 3 to 4 millions are diagnosed annually. In Pakistan about 10 Millions patients are infected with HCV.<sup>1</sup> Patients with hepatitis C virus (HCV) infection develop a number of Hematological disorder, with benign and malignant B-Cell-proliferations being the most common HCV infected patients develop peripheral cytopnias, the etiology of which is multifactorial and include hypersplenism and

autoimmune process, Bone Marrow suppression and dysfunction also occur in HCV patients.<sup>2</sup> Extra hepatic Hematological manifestations are also commonly observed in cases of Hepatitis B infection, with portal Hypertension and splenomegally. Which can cause Thrombocytopenia, leucopenia, and anemia due to peripheral destruction of blood cells. Viral hepatitis B and C may be associated with bone marrow suppression and can cause pancytopenia.<sup>3</sup> Malaria is a major public health problem in developing world owing to its high rates of morbidity and mortality.<sup>4</sup> malaria is an important cause of death and illness specially in tropical in developing countries, the most severe form from which death results is plasmodium falciparum<sup>5</sup> More than 40% of the world population reside in Malaria endemic area and it is predicted that 300 to 500 Millions cases and 1.5 to 2.7 million deaths

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occur each year.<sup>6</sup> Hematological changes are some of most common complication in Malaria, these changes involve major cell lines such as red blood cells, leucocytes and thrombocytes, children infected with plasmodium falciparum malaria causes important changes in hematological parameters with low platelet counts and haemoglobin level.<sup>7</sup> plasmodium malaria is one of the most common cause of anemia due to haemolysis of infected and non infected red blood cells.<sup>8</sup>

The aim of these studies is to properly screen the patients who present with Anemia, Thrombocytopenia, Bicytopenia or pancytopenia for HBV, HCV, and Malaria infection to avoid accessory use of Bone Marrow procedure and treat their root causes initially.

## MATERIALS AND METHODS

This study was conducted in the Pathology Department of Bacha Khan Medical College Mardan and Medical Department of MMC Teaching Hospital from January 2012 –December 2014.

All patients who had anemia, leucopenia, Thrombocytopenia alone or Bicytopenia or pancytopenia were included in the study that had been referred from MMC Teaching Hospital Mardan for Bone Marrow Aspiration.

Before Bone Marrow Aspiration to perform all these patient had been advised peripheral smear Examination, Blood complete and screening test for Hepatitis B and Hepatitis C virus, Peripheral blood smear properly examined to detect Malaria Parasite. Hematological investigation for completed blood count were performed by Hematology analyzer. Blood sample 5ml was collected in EDTA tube containing 8ml EDTA. Complete blood counts were done by Hematology analyzer for determination of HB level, TLC and platelets counts.

Peripheral smears were properly examined under microscope for determination of Malaria parasite a gold standard method for detection of Malaria Parasite.

Serological tests were also performed for these patients for the detection of Hepatitis B and Hepatitis C Virus. All the serological tests for the detection of Hepatitis B and hepatitis C were done by ICT Strip Method (Immuno Chromatographic Technique ) SD Company. Statistical analysis of data done by using T Test. All these investigation done properly before Bone marrow aspiration to perform for detection of Malaria Parasite, Hepatitis B virus, and Hepatitis C virus.

## RESULTS

There were total of 100 cytopenic patients referred for Bone marrow aspiration including both adults and children. They were all subjected to prescreening test for hepatitis C virus, Hepatitis B and Malaria complete blood count were performed on total 50 patients as a control. During smear examination 7 patients out of 100

cytopenic patients, Malaria Parasite were detected, who had cytopenia that had been referred from MMC Teaching hospital Mardan. These patients had anaemia, thrombocytopenia and leucopenia with Hb level  $9.5 \pm 0.978$  g/dl, platelet count  $120 \pm 24.768 \times 10^3/\text{ul}$  and TLC  $3.8 \pm 1.365 \times 10^3/\text{ul}$ . 4 out of 100 cytopenic patients, Hepatitis C Virus were detected before Bone Marrow aspiration to perform, these patients presented with cytopenias with Hb level  $10.5 \pm 0.978$  g/dl and platelet counts  $120 \pm 24.768 \times 10^3/\text{ul}$ . 2 out of 100 cytopenic patients, Hepatitis B virus were detected who had been advised bone marrow aspiration these patients had Hb level  $10.4 \pm 0.879$  g/dl and platelet counts  $119 \pm 24.965 \times 10^3/\text{ul}$ . The above results show that before performing Bone Marrow aspiration 7% of Malaria, 4% of HCV and 2% of HBV were detected during screening examination of Patients

**Table No.1: Frequency of Malaria, HBV and HCV during screening Examination.**

Total patients for Bone Marrow aspiration	100	Percentage %
Malaria	7	7 %
Hep. C Virus	04	04 %
Hep. B Virus	02	02 %

**Table No.2: Hb Level, TLC and Platelet Counts in Malaria, HBV, and HCV Patients:**

Disease Name	Hb Level g/dl	TLC Level $10^3/\text{ul}$	Platelet Count $10^3/\text{ul}$
Malaria	$9.5 \pm 0.978$ g/dl	$3.8 \pm 1.365 \times 10^3/\text{ul}$	$120 \pm 24.768 \times 10^3/\text{ul}$
Hep. C Virus	$10.5 \pm 0.978$ g/dl	$5.6 \pm 1.567 \times 10^3/\text{ul}$	$120 \pm 24.768 \times 10^3/\text{ul}$
Hep. B Virus	$10.4 \pm 0.879$ g/dl	$5.8 \pm 1.567 \times 10^3/\text{ul}$	$119 \pm 24.965 \times 10^3/\text{ul}$

## DISCUSSION

Alteration in Hematological profile is a common finding in systemic and infectious disease HBV and HCV infected individuals can be asymptomatic for many years or many have mild symptoms which makes these infections difficult to recognize. But in addition to hepatic pathology these infections cause hematological abnormalities.

Malaria is also the most prevalent infectious disease and hematological changes are some of most common complication in these patients.

In the present study 4 patients of Hepatitis C, and 2 patients of Hepatitis B, viruses were detected during screening examination of the patients. All these 4 patients have cytopenia either Bicytopenia or Pancytopenia which had been referred for Bone Marrow Aspiration. A similar study was conducted by

CIFU et al that patients with Hepatitis B and Hepatitis C are associated with haematological disorder including Leucopenia, Thrombocytopenia and Anemia. The Mechanisms are thought to involve hypersplenism and autoimmune process.<sup>9</sup>

Another study conducted by Douglas T.C et al showed that Hepatitis C virus infected patients were more likely to have low neutrophils and platelet counts and autoimmune hemolytic anemia is the most common extrahepatic complications in HCV infected Patients.<sup>10</sup> In another study showed that marked anemia is a frequent finding in patients with Hepatitis B and C virus and this is attributed to bone marrow suppression and autoimmune hemolytic Process.<sup>11</sup> Immune thrombocytopenia and leucopenia are commonly associated with Hepatitis C infection however infection with Hepatitis B virus should be kept in mind in a patient presenting with leucopenia and thrombocytopenia stated by Sanjy and Kumar. Patients with HCV infection develop abnormalities in peripheral cells counts like neutropenia, thrombocytopenia and anemia. Hypersplenism autoimmune process folate deficiency, Antiviral therapy, decreased thrombopoietin level and many unknown factors are involved in their pathogenesis.<sup>3</sup> Hepatitis associated aplastic anaemia also occur with several Hepatitis viruses, most common are HBV, HCV, HDV, HEV and HGV.<sup>12</sup> Several abnormalities have been accountable for development of aplastic anaemia. There is decreased ratio of CD4/CD8 cells and high percentage of CD8 can be myelotoxic responsible for aplastic anaemia.<sup>13</sup> In the present study 7 patients out of 100 cytopenic patients referred for Bone Marrow aspiration, Malaria was detected. Their smears were strongly positive for Malaria Parasite both *Plasmodium Vivax* and *Plasmodium Falciparum*. A study has been conducted by Lyila AM, et al that Malaria is typically a Blood disease and the haematological abnormalities associated with Malaria include anemia, thrombocytopenia, splenomegaly, atypical Lymphocytosis, Leucopenia and monocytosis.<sup>14</sup> Other studies have been performed on Malaria Patients and concluded that haematological abnormalities in these patients include Anemia, thrombocytopenia, Leucopenia and Leucocytosis.<sup>15-16</sup> Malaria is commonly associated with various degree of haematological complications.<sup>17</sup> In another study conducted by Abro et al *Plasmodium falciparum* and *Plasmodium Vivax* cause significant haematological changes with high frequency of thrombocytopenia and anemia<sup>18</sup> but the pathogenesis of Anemia in Malaria is multifactorial and incompletely understood it is thought to result from hemolysis of parasitized red blood cells, depressed and ineffective erythropoiesis, dyserythropoiesis and anemia of chronic diseases.<sup>19</sup> A number of studies have confirmed the association of thrombocytopenia and anemia in malaria, but the

speculated mechanism coagulation disturbances, splenomegaly, bone marrow suppression, anti body mediated platelet destruction and oxidative stress<sup>20</sup>

## CONCLUSION

Cytopenia is a significant finding in HCV, HBV and Malaria infections and patients presenting with any cytopenia patients referred for Bone marrow Aspiration presenting with cytopenia should be properly screened for HCV, HBV, and Malaria as these can be the cause of cytopenia thus unnecessary use of Bone Marrow Aspiration can be prevented.

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

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# Learning Style Preferences of Dental Students, Karachi

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## ABSTRACT

**Objective:** The prime objective of the study is to determine the learning style preference of dental students in Jinnah Medical and Dental College, Karachi.

**Study Design:** Cross-sectional Descriptive Study

**Place and Duration of Study:** The study was conducted in Jinnah Medical and Dental College on students of Dentistry, first year through final year. VARK™ questionnaire version 7.8© was distributed and data was collected between 01 November to 30 November, 2014.

**Materials and Methods:** Total 200 questionnaires were sent out. 160 students who consented to participate in the study were included and those who refused were excluded. Descriptive statistics was used to identify the learning style preferences of the students. The VARK scores were recorded on Excel sheet. Scoring algorithms especially designed for VARK research, available on its website were used for data management and description.

**Results:** 51% of the students (n=82) preferred a uni-modal learning style, of which Aural was the most common. 47% of the dental students (n=75) used all four modes for learning while 2% preferred bi-modal (n=3). None of the students were tri-modal.

**Conclusion:** In conclusion, majority of students preferred uni-modal followed by the group which preferred all modes of presentation.

**Key Words:** VARK, uni-modal bi-modal, tri-modal, learning style, preference

**Citation of article:** Iqbal M, Zaman L. Learning Style Preferences of Dental Students, Karachi. Med Forum 2015;26(9):17-20.

## INTRODUCTION

Learning is an adaptive function of our nervous system that allows an experience or an influence to be followed by modification in behavioral responses or understanding. Learning can be reinforced or modified by selectively activating the neural pathways with a resultant change in behavioral responses. Learning processes vary for each individual based on their cognitive functioning.<sup>2</sup> Educational researchers agree that it is possible for a student to change his/ her learning style to suit their new learning environment<sup>3</sup> which they experience when enter the professional education system particularly that related to health care.

Learning styles can be expressed/ defined in many ways<sup>4</sup>. One method is to define the sensory modality for communication that a student prefers to use for acquiring knowledge and making a meaning out of it through VARK™ questionnaire. The reason for using this method of expression of learning style was that most students related their learning difficulties to the mode of information presentation.<sup>5</sup> It should however

be reminded that a preference may not necessarily be taken as an ability to perform a task.

VARK questionnaire was designed by an educator from New Zealand, Fleming and his colleague Mills to assess the learning or cognition style preference of a student using a 16 question format with four options each.

Students are requested to select one or more answer options based on their preferences; and are then scored accordingly. VARK is an acronym, where V stands for a preference for a Visual mode of learning and communication (using maps, pictures, graphs, diagrams etc.), A implies Aural (listening to the instructions or learning material), R is for Read/write (learning through reading and writing) and K denotes Kinesthetic (learning by using the tactile sensations and smell).<sup>6</sup> This questionnaire has been validated and its reliability estimates for its subscales are reasonably high.<sup>7</sup>

Several studies<sup>8,9</sup> favor modifying instructional strategies based on students' learning preferences to improve students' understanding and thereby acquiring better grades. In contrast to this, Fleming and Mills are of the opinion that it may not be feasible for the instructors to modify their strategies to adapt to each students' learning preference. Instead, they recommend that the student should be made aware of his/ her learning style and the adaptation they can make to suit the new learning environment. This however, does not imply that instructors should not keep in mind the preferences of their students when designing the

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instructional strategies.<sup>5</sup> Little is known about the learning style preferences of Dental students in Karachi so the objective of the current study was to identify the learning style preferences among dental students in Karachi.

## MATERIALS AND METHODS

This is a descriptive cross-sectional study. Data was collected between 01 November to 30 November, 2014 using a VARK™ questionnaire<sup>10</sup>, version 7.8. Students were explained about the nature of the survey and were requested to respond the questionnaire at the end of the lecture on a voluntary basis. No attempt was made to follow up with the students who were absent on the days of data collection. The questionnaire comprises 16 questions with 4 answer options each. Students were allowed to choose one or more options based on their preferences and were then scored accordingly. Each student's score was recorded in an Excel sheet. The options helped to categorize students' learning preferences. Scoring algorithms especially designed for VARK research, available on its website were used for data management and description.

200 questionnaires were distributed and 160 students agreed to participate in the study. Dental students of Jinnah Medical and Dental College who consented to

be part of the study were included in the study. Those who did not consent or belonged to any other discipline were excluded.

## RESULTS

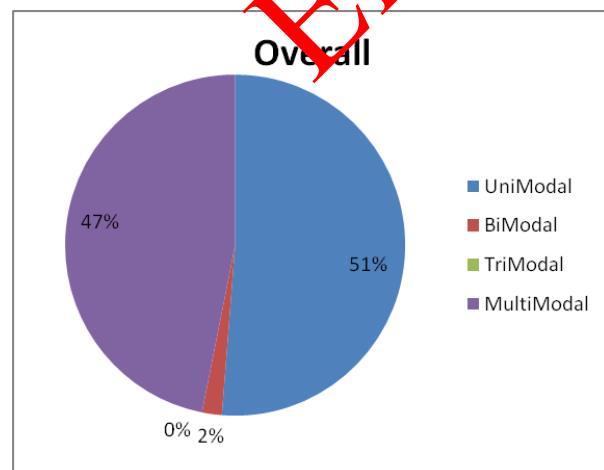
Of the total 160 BDS students who participated in the study 46 belonged to year 1, 30 to year 2, 39 to year 3 and 45 to year 4. Table 01 shows the preferences of learning style year wise with their frequency. Of the uni-modal (51% of the total; n=82), most students preferred Aural mode (n=33; 40.2%) followed by Visual (n=25; 30.4%), Kinesthetic (n=20; 24.3%) and Read/ write (n=4; 4.9%).

The data in Graphs 2, 3 and 4 shows the contribution of each year towards the chosen modalities. Uni-modality is distributed quite closely as 29%, 24%, 20% and 27% while multi-modality is distributed from as low as 12% to as high as 31%. It is surprising to note that none of the students were tri-modal.

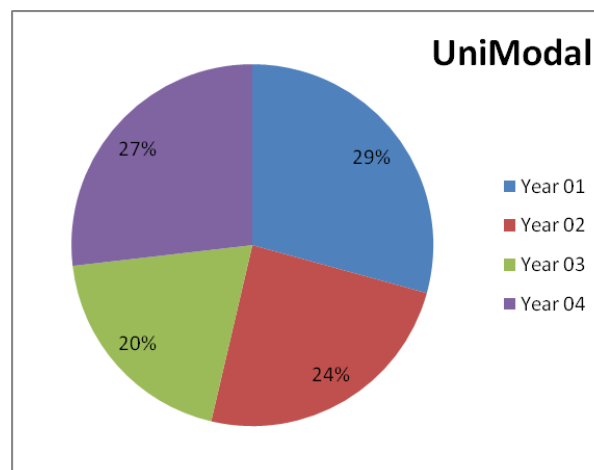
Table 1 shows the year by year observation of modalities for the BDS students with the proportion of each modality for each year shown as percentage for the total of values for that year. 'Overall' is the sum of all the values for each year and thereby displays the percentage of each modality for the aggregate of four years.

**Table No.1: VARK Distribution**

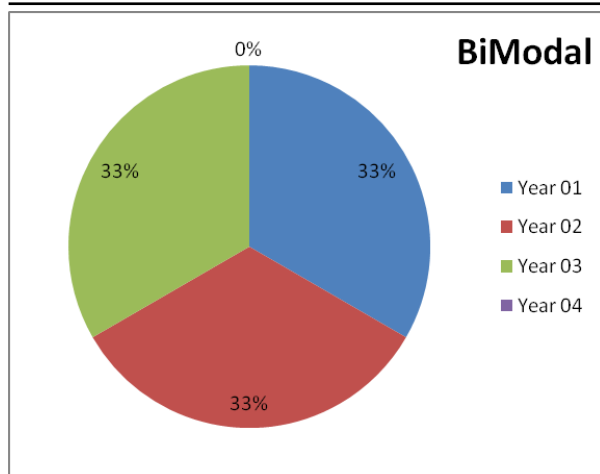
YEAR	Uni-Modal		Bi-Modal		Tri-Modal		Multi-Modal		Total year wise	
	n / frequency	%	n / frequency	%	n / frequency	%	n / frequency	%	n / frequency	%
1	24	52	1	2	0	0	21	46	46	100
2	20	67	1	3	0	0	9	30	30	100
3	16	41	1	3	0	0	22	56	39	100
4	22	49	0	0	0	0	23	51	45	100
Overall/ Total	82	51	3	2	0	0	75	47	160	100



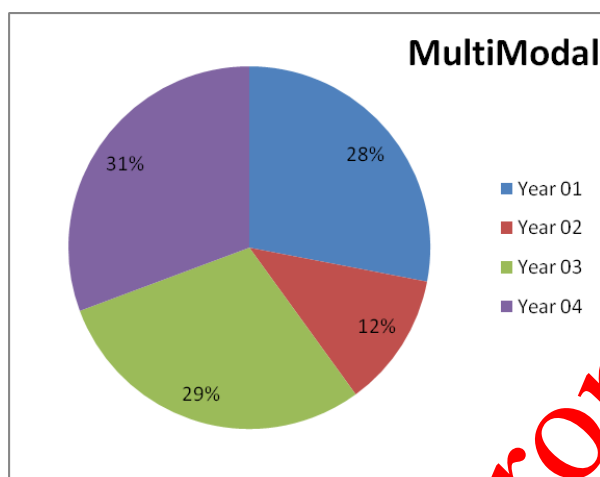
**Graph No.1; Distribution of students based on number of modalities of preference n=160**



**Graph No.2; Distribution of students preferring uni-modal learning style (year-wise) n=82**



**Graph No.3: n=3- Distribution of students preferring bi-modal learning style(year-wise)**



**Graph No.4: Distribution of students preferring multi-modal learning style (year-wise) n=75**

## DISCUSSION

Health care students are encountered with a challenge of ever expanding knowledge when they enter their professional educational environment. How each individual handles, processes and assimilates this information varies from one person to another<sup>11</sup>. Likewise, their preferences for the sensory modalities for learning are also different.

Instructors on the other hand are also faced with a challenge of accommodating diverse student population with different preferences. It has been identified by educational researches that there exists a mismatch between students' and teachers' styles<sup>12</sup>. For efficient teaching and learning it is imperative for the students to know the learning preferences so that these can be modified as per the requirements of the new learning environment; and also for the teachers so that they can plan the instructional strategies whenever feasible<sup>13</sup>. Linking the preference to the mode of instruction may enhance learning.<sup>14,15</sup>

The current study determined the different learning style preferences of dental students year wise.

The response rate of the study was 80%. In the current study most students were either uni-modal (51%) or multi-modal (47%). Only a few were bi-modal (2%) and amazingly, none were tri-modal. Almighal<sup>16</sup> found out that most students (43.5%) from King Saud Medical University preferred to use all the four modalities of VARK followed by 21.2% for Aural modality. Zerrati<sup>17</sup> also observed that multi-modality was the preferred style for 35.5% of medical and midwifery students. Mukherjee<sup>18</sup> and other researchers found out that Indian students from Bankura, mostly preferred using more than one modality (84.21%) and of these bi-modal were most common (32.63%). Another study from India<sup>19</sup>, stated that 75.8% of the dental students had a preference for multimodal learning style. When they related the learning styles to gender no statistical significant difference was found ( $P > 0.05$ ). When Prabha studied dental students using VAK questionnaire he observed that most of the participants of the study 57.96% preferred a single mode of information presentation. 61 out of 98 pre-clinical medical students from Malaysia preferred multimodal learning style.<sup>20</sup> They did not find any gender related difference in preferences.

A study from Rawalpindi, Pakistan used a different questionnaire (LSQ), and compared undergraduate and post graduate medical students. They observed that preferences for all learning styles as defined by LSQ were seen in both groups.<sup>21</sup> However, the data cannot be compared statistically to our results as they have used a different tool.

Another Pakistani study from Islamabad, using the VARK questionnaire revealed that most students (52%) were uni-modal, which is in agreement with our study.<sup>22</sup>

## CONCLUSION

It could be concluded that dental students from this institution preferred either uni-modality or using all the VARK modalities for learning style preferences. This information can be utilized to design the teaching strategies and guide the students better.

**Recommendation:** Use of a combination of instructional strategies may be required to increase the efficiency in teaching and learning.

As a way forward more studies need to be done to determine the relationship of difference in preferences to gender, marital status, age of the students and also to students' achievements in terms of grades. Multi-institutional studies will give more reliable results. A longitudinal study may be done to follow students through years to determine any changes in their preferences for learning style during the course of the study.

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

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# Lithium Induced Histological Alteration in Testes of Albino Rats and Their Amelioration with Vitamin E

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## ABSTRACT

**Objective:** To evaluate the lithium induced histological alteration in testes of albino rats and their amelioration by Vitamin E.

**Study Design:** Experimental study

**Place and Duration of Study:** This study was conducted at department of Anatomy, Baqai Medical University, Karachi from July 2010 to August 2010.

**Materials and Methods:** The rats were assigned into three experimental groups (eight rats/group): control group, lithium group and lithium plus vitamin E treated group. Lithium (50 mg/kg/day) and vitamin E (50mg/kg/day) were given intraperitoneally for 21 days. At the end of experiment, rats were sacrificed and testes removed and processed for routine H&E. Slides were studied for histological examination under light microscope.

**Results:** Lithium treated rats showed decreased body and testicular weights, spermatogenic cells such as primary and secondary spermatocytes and spermatids were decreased, very little spermatozoa were seen in lumen of seminiferous tubules, significant increase in tubular count observed while tubular diameter, germinal epithelial thickness, number and size of nuclei of leydig cells were highly significantly reduced. In lithium plus vitamin E treated group, body and testicular weight, primary and secondary spermatocytes, spermatids were restored near to control. Tubular lumen also showed many spermatozoa. Tubular diameter, germinal epithelial thickness, number and size of nuclei of leydig cells were also returned to control.

**Conclusion:** Our study conclude that lithium causes detrimental effect on testicular morphology through oxidative stress and vitamin E provided protection through its antioxidative property.

**Key Words:** Lithium, Vitamin E, Testes

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## INTRODUCTION

Lithium carbonate is the most prescribed drug in psychiatric illness especially in bipolar disorder. In spite of its extensive use, lithium has wide ranges of side effects at therapeutic dose, including thyroid disorders and nephrogenic diabetes insipidus<sup>(1)</sup>.

Lithium also causes substantial adverse effects on male reproductive system<sup>(2)</sup>. Many studies indicated that lithium reduced FSH, LH, prolactin and testosterone level<sup>(3, 4)</sup>. At therapeutic dose, lithium inhibited the testicular hydroxysteroid dehydrogenase activity, steroidogenesis and spermatogenesis<sup>(3-6)</sup>. At higher dose, lithium decreased the weight of reproductive organs as well as secretions of prostate and seminal

vesicle. Furthermore, spermatozoa were absent in lumen of epididymis and vas deferens. Histological examination showed the degeneration of germinal epithelium and leydig cells and vacuolization of cytoplasm of sertoli cells<sup>(6, 7)</sup>.

Vitamin E is a fat soluble vitamin that considered as main antioxidant of body. Many studies indicated that vitamin E ameliorates the reproductive toxicities caused by various toxic stimulants<sup>(8, 9)</sup>. Vitamin E had a protective role on biochemical and morphological changes on testes induced by pre and post natal administration of ethanol<sup>(10)</sup>. In another study, pretreatment of vitamin E ameliorated the histopathological alteration of testes following cadmium chloride administration<sup>(11)</sup>. These results support the concept that vitamin E has a protective role on reproductive system, so we designed to observe the effects of vitamin E on lithium induced morphological alteration in testes of albino rats.

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## MATERIALS AND METHODS

Thirty six male rats of 150-200 gm weight were selected randomly for this study. They were kept in plastic cages (4 rats per cage) in the animal house of Baqai Medical University and maintained under standard temperature,  $28 \pm 2^\circ\text{C}$ , illumination, 12 hours dark and 12 hours light cycle and humidity,  $55 \pm 5\%$ . All animals were kept in close observation for seven days. They were fed at laboratory chow and water ad libitum. Animals were divided into three groups with eight animals in each group. Groups were as follows: Group 1 served as control, group 2 served as lithium treated, group 3 was lithium plus vitamin E treated. Control group received daily 1cc intraperitoneal injection (i.p) of normal saline for 21 days. Group 2 animals received lithium (50mg/kg/day i.p) daily for 21 days<sup>(12)</sup>. Group 3 animals received both lithium (50mg/kg/day i.p)<sup>(12)</sup> and vitamin E (50mg/kg/day i.p)<sup>(13)</sup> for 21 days. After 21 days, weight of each animal were recorded and sacrificed by overdosing of ether anesthesia. Testes were removed from surrounding tissue and weighted by Sartorius electro balance and put into separate bottle containing 10% normal buffered formalin. Afterwards 24 hours, it was rinsed with water, dehydrated in ascending grades of alcohol, cleared in xylene-I and II and embedded in paraffin at  $58^\circ\text{C}$ . Finally, five micron thick sections were cut by rotary microtome and stained with haematoxylin and eosin and studied under light microscope. Data were expressed as mean $\pm$ SEM. One way ANOVA followed by Post Hoc tukey test by using SPSS -18. Values of  $p < 0.05$  was considered as significant and  $p < 0.01$  was considered highly significant.

## RESULTS

**Body Weight Changes:** Mean final body weight was significantly increased in all groups when compared with their mean initial body weight. However, the weight gain in lithium group was higher than the weight gain by other group animals (Table-1).

**Table No. 1: Body, Testicular And Relative Testicular**

Parameter	Control	Lith-treated	Lith+Vit E treated
Initial body weight (gm)	179.63 $\pm$ 5.78	184.37 $\pm$ 4.13	184.88 $\pm$ 5.11
Final body weight (gm)	194.87 $\pm$ 5.89 <sup>a</sup>	213.00 $\pm$ 2.62 <sup>a</sup>	206.25 $\pm$ 2.19 <sup>a</sup>
Weight gain (gm)	15.25 $\pm$ 1.53	28.87 $\pm$ 3.7	21.37 $\pm$ 6.09
Testicular weight (gm)	1.23 $\pm$ 0.07	0.97 $\pm$ 0.60 <sup>b</sup>	1.17 $\pm$ 0.52 <sup>c,d</sup>
Relative testicular weight	0.62 $\pm$ 0.02	0.45 $\pm$ 0.03 <sup>b</sup>	0.56 $\pm$ 0.02 <sup>c,d</sup>

Results are given as means  $\pm$  SEM. Lith=Lithium, Vit E= Vitamin E. <sup>a</sup>  $P < 0.05$  when compared with initial weight, <sup>b</sup>  $P < 0.05$  when compared with control group, <sup>c</sup>

$P < 0.05$  when compared with lithium treated group, <sup>d</sup>  $P > 0.05$  when compared with control group.

**General Histological Observation:** In lithium plus vitamin E treated group, the tubular lumen was more than that in lithium group. More primary and secondary spermatocytes were recognized in seminiferous tubules in lithium plus vitamin E treated and control groups than the lithium treated group. In most of the tubules spermatozoa were 2 layers in lithium plus vitamin E treated and control groups in contrast to lithium treated group in which it was one layer thick. Similarly, spermatid's layer restored to 4-5 layers in lithium plus vitamin E treated and control groups while it was 2-3 layers in lithium treated group (Figure-1 & 2).

**Count of the Seminiferous Tubules:** The mean tubular count of lithium plus vitamin E treated group were restored near to normal and highly significantly lower ( $P < 0.01$ ) as compared to that of lithium group but statistically insignificant ( $P > 0.05$ ) when compared to that of control rats (Table-2, Figure -1 & 2).

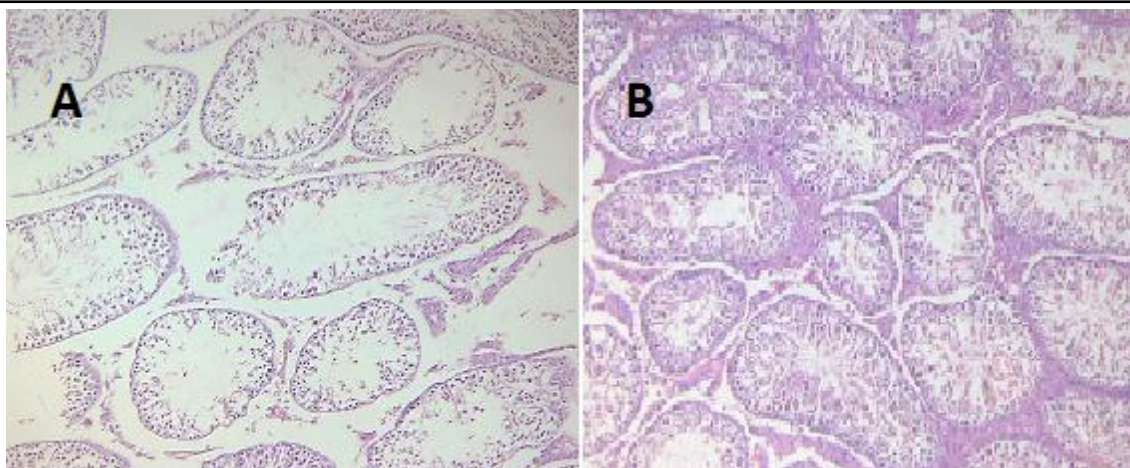
**Diameter of Seminiferous Tubules:** The mean tubular diameter of lithium plus vitamin E treated group were restored near to normal and statistically highly significant ( $P < 0.01$ ) as compared to that of lithium alone group but statistically insignificant ( $P > 0.05$ ) as compared to that of control rats (Table-2, Figure -2).

Results are given as mean $\pm$ SEM. Lith=Lithium, Vit E= Vitamin E. <sup>a</sup>  $p < 0.05$  when compared with initial weight, <sup>b</sup>  $p < 0.05$  when compared with control group, <sup>c</sup>  $p < 0.05$  when compared with lithium treated group, <sup>d</sup>  $p > 0.05$  when compared with control group

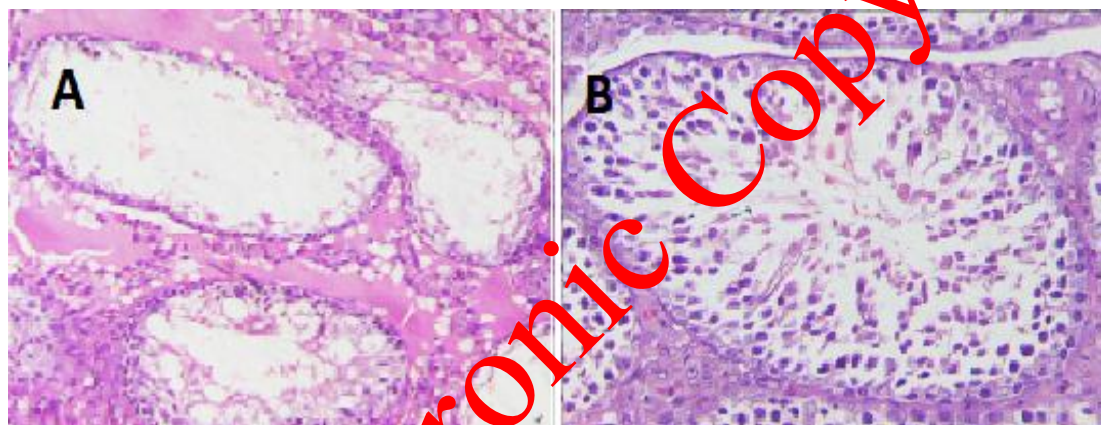
**Count and Diameter of Interstitial Cell Nuclei:** The mean number and diameter of interstitial cell nuclei in lithium plus vitamin E treated group were restored near to normal and statistically highly significant ( $p < 0.01$ ) as compared to those of lithium group but statistically insignificant ( $p > 0.05$ ) as compare to those of control (Table-2, Figure 3).

**Table No.2: Morphometric analysis of seminiferous tubules and Interstitial cell nuclei**

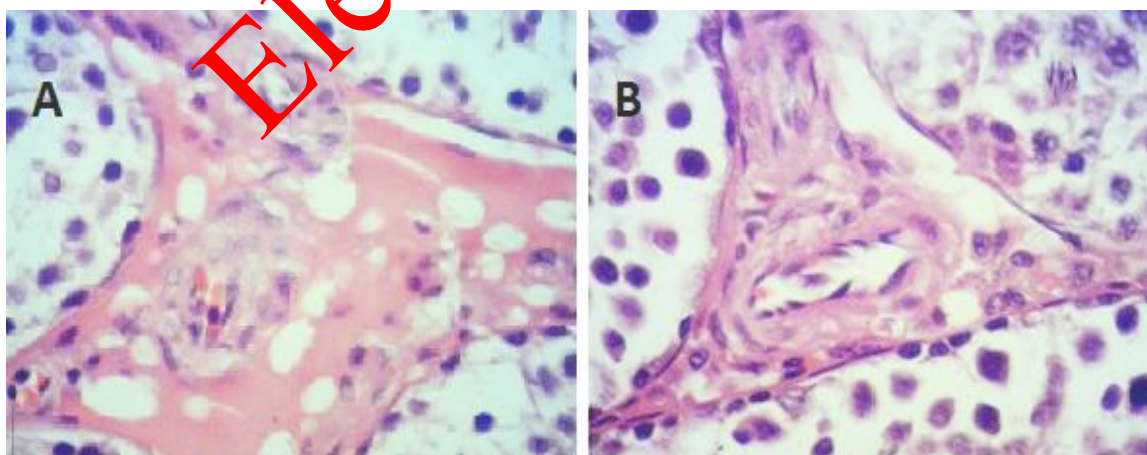
Parameter	Control	Lith-treated	Lith +Vit E treated
<b>Seminiferous Tubules</b>			
Count	17.51 $\pm$ 0.50	21.92 $\pm$ 0.47	18.46 $\pm$ 0.48
Diameter ( $\mu\text{m}$ )	269.93 $\pm$ 4.72 <sup>a</sup>	218.96 $\pm$ 2.69 <sup>a</sup>	265.36 $\pm$ 3.80 <sup>a</sup>
Thickness of the Germinal Epithelium ( $\mu\text{m}$ )	96.56 $\pm$ 1.44	72.08 $\pm$ 2.36	93.80 $\pm$ 2.03
<b>Interstitial Cell Nuclei</b>			
Count	14.50 $\pm$ 0.87	8.13 $\pm$ 0.48 <sup>b</sup>	13.75 $\pm$ 0.75 <sup>c,d</sup>
Diameter ( $\mu\text{m}$ )	4.00 $\pm$ 0.02	3.69 $\pm$ 0.03 <sup>b</sup>	3.98 $\pm$ 0.01 <sup>c,d</sup>



**Figure No.1:** Five micron thick section of testis of Lithium (A), Lithium and Vitamin E treated (B) groups. Figure A shows more no of tubules per field, reduced germinal epithelium thickness and very little spermatozoa in lumen. Figure B shows recovery and less no of tubules per field, normal germinal epithelium thickness and more spermatozoa in lumen(10 X).



**Figure No.2:** Five micron thick section of testis of Lithium (A), Lithium and Vitamin E treated (B) groups. Figure A shows reduced germinal thickness, less number of spermatogenic cells (Primary and secondary spermatocytes, spermatids). Lumen shows very little spermatozoa in it. Figure B shows recovery and more no of spermatogenic cells (primary and secondary spermatocytes, spermatids), normal germinal thickness and more spermatozoa are seen (40 X).



**Figure No.3:** Five micron thick section of testis of Lithium (A), Lithium and Vitamin E treated (B) groups. Figure A shows widened interstitial space with reduced number and diameter of interstitial cells of Leydig nuclei. Figure B shows recovery and more number and diameter of interstitial cells of Leydig nuclei (100 X).

## DISCUSSION

In this study, we demonstrated the lithium induced histological alteration in testes of albino rats and their amelioration by vitamin E.

All animals significantly increased their body weights when compared with their initial body weights. However, the weight gain by lithium alone treated animals was higher than the weight gain by other group animals. Our result closely corresponds with previous findings that lithium behaves as a nonspecific stressor to increase the body weight<sup>(14)</sup>.

Our study showed significant reduction in testicular weight in lithium treated group<sup>(6)</sup>. Testicular weight is correlated with spermatogenic activities; therefore reduction of testicular weight could be the results of decreased number of spermatocytes, spermatids, spermatozoa and sertoli cells<sup>(15)</sup>. Co- treatment of vitamin E prevented the lithium induced reduction of testicular weight. Our result is correlated with the previous findings that vitamin E can restore the decreased body and testicular weights caused by various toxic agents<sup>(16)</sup>.

The count of seminiferous tubules was highly significantly increased in lithium treated animals. Our result supports the earlier findings that Derangement of germ layer, loss of spermatids and spermatozoa cause shrinkage of tubules lead into more tubular count per field<sup>(6, 15)</sup>. Those animals who received lithium carbonate with vitamin E showed relatively decreased tubular count per field when compared with lithium alone group. These protective results could be due to vitamin E enhances germ cells production and maintains the normal architecture of seminiferous tubules<sup>(17)</sup>.

Our results showed the significant reduction in tubular diameter in lithium treated animals. Tubular diameter is correlated with the germinal epithelium and destruction of germinal epithelium lead into decreased diameter of tubules<sup>(18, 19)</sup>. These results have close correlation with findings of previous studies<sup>(2, 5)</sup>. Those animals who received lithium plus vitamin E depicted the increased tubular diameter when compared with lithium alone group that indicated the protective effects of vitamin E. Our results are also in line with the previous results when vitamin E significantly increased the diameter of atrophic tubules caused by chromium<sup>(20)</sup>.

Germinal epithelial thickness was also highly significantly decreased in lithium treated animals. Two layered spermatocytes decreased into one layered and four to five layered spermatids decreased into two to three layered and merely few spermatozoa were recognized in lumen of tubules. Our results supports the previous findings that lithium treatment disarranged the germ cells, reduction in spermatogenesis, decreased primary and secondary spermatocytes, spermatid and spermatozoa<sup>(21)</sup>. Those animals who received lithium

plus vitamin E showed increased thickness of germinal epithelium. These compensatory results are in accordance with previous findings when vitamin E was used with para-nonyphenol<sup>(22)</sup>.

The number and diameter of nuclei of leydig cell were highly significantly reduced in lithium treated rats. These findings are in accordance with previous results that lithium caused degeneration of leydig cells<sup>(6)</sup>. Co treatment with vitamin E showed increased number and diameter of interstitial cell nuclei when compared with lithium alone treated animals. These results are in line with previous report that supplementary effects of vitamin E increased the interstitial cells' count in cyclosporine A induced testicular toxicity<sup>(23)</sup>.

## CONCLUSION

Our study showed that lithium caused detrimental effect on testicular morphology through oxidative stress and vitamin E provided protection through its antioxidative property. Further studies are needed to clarify the precise nature of lithium toxicity and protection by vitamin E.

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

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# Pattern of Utilization of Dental Services in Public Teaching Hospital of Karachi

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## ABSTRACT

**Objective:** To describe the configuration of consumption of Facilities offered by the Public Teaching Hospital in Karachi.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the OPD of Dr. Ishrat ul Ibad Institute of Oral Health Sciences, Karachi from December, 2011 to June, 2012.

**Materials and Methods:** The preformed questionnaire was distributed in the OPD. A total of 579 patients attending the OPD of the Public Teaching Dental Hospital Dr. Ishrat ul Ibad Institute of Oral Health Sciences.

**Results:** Our study demonstrated that mean were in the age group 20 – 39 yrs. 56.5%, while slightly more than 30 per cent were between the ages 40 – 59 yrs. About 11.9% of the subjects were over 60 years old. However, no significant difference was found between the age groups and the gender ( $p>0.05$ ).

**Conclusion:** Our study concluded that application of facilities in the people is poor. The mainstream of the people for dental approach were for the treatment of severe symptoms rather than for preventive measures. Motivation and proper awareness are required to use existing services.

**Key Words:** Utilization, Dental Visits, Tooth Ache, Oral Hygiene.

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## INTRODUCTION

The concentration of the existing study was on the reasons effected the application of the dental services by local populations in teaching hospitals of Karachi. Earlier surveys on the utilization of dental services in Western-European countries were look over and it was found that features such as sex, age, education, and income had been shown to impact the use of dental services. The utilization thru the "consumers" of medical and oral care has long been used as one of the indicators describing important aspects of people's health related behavior. Many studies have been conducted to why, how and how often people utilize health care services and the factors determining their utilization behavior<sup>[1]</sup>

Studies conducted in many countries have shown that sex, age, occupation, and socio-economic status were some of the most influential predictors of utilization of dental service.

In addition to these variables, the oral health position, the level of oral health information, the approaches toward oral health care, the dentist-patient affiliation and the family were also found to influence people's utilization.<sup>[2,3]</sup> Vast dissimilarities are in health status

including oral health between metropolitan and urban people in India and other developing countries.<sup>[4]</sup>

It is highlighted by the WHO Oral Health Program that combination of effort for oral health upgrade into general health is maximum important for national and public health programs. The association between oral health and general health is noticeable in older people, and this was most lately highlighted in a policy paper<sup>[5]</sup>

how the work for improved oral health of older people in the world could strengthen. Because of the continuing demographic development, the focus is on older people. Within the next 30 years, 80% of elder people universally will live in developing countries.<sup>[6]</sup> Where there is restricted contact to health care matched with developed countries. Even in India with large personnel maximum people do not contact the basic oral health care.<sup>[7]</sup> In these developing countries, the upgrade of health and oral health must be measured in a much wider sense within the setting of national and community public health plans, without trusting on dental professionals where there is inadequate access to health care paralleled with developed countries. The dentist to population ratio is 1:10,000 in urban areas however it extremely decreases to 1:150,000 in rural areas.<sup>[8]</sup> There can be no doubt that studies on the utilization of health care services in the future will be part of a larger social-medical investigations in which disciplines such as Epidemiology, Cultural Anthropology, Sociology, Behavioral Sciences and Statistics will be represented in a multidisciplinary team approach<sup>[9]</sup>

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This can lead to the growth of undesirable approach toward dentist or dental treatment and therefore cause in non-utilization of dental services.<sup>[10]</sup>

Poor oral health leads to poor nutrition, and both these factors create a vicious cycle, which may lead to the overall deterioration of health. Though oral-dental health problems are hardly life threatening, but they affect the quality of life. Dental diseases are costly to treat, but simple to prevent. Oral disease is the fourth utmost costly condition to treat in most developed countries.<sup>[11]</sup> If we have to generate consciousness and permit on the welfares of durability of teeth across the society, dental profession should pay attention on to the strategy in order to have beneficial dental insurance schemes for the common people.<sup>[12]</sup>

## MATERIALS AND METHODS

The cross sectional study was held in the department of operative Dr. Ishrat ul Ibad Institute of Oral Health Sciences. Data was collected on perceived oral health status, number of visits to the dentist in the last 12 months, aims for the visit (e.g. dental checkup, tooth repair, dental scaling, tooth extraction, having a prosthesis made, and painful tooth or gums). The reasons for not visiting the dentist included, for example., high cost of treatment, inconvenient consulting hours, fear of the dentist/dental tools, ignorance regarding where to go, lack of transportation, language barrier, long waiting time, and difficult to time out.

Basic tools used for the study was, including examination instrument and mask, gloves. Inclusion criteria in this study were all patients coming to OPD for dental services who were willing to participate in the study. Exclusion criteria in this study was those dental patient who are mentally retarded, suffering from some systemic disease and unwilling to participate in the study. Total 579 subjects were included in the study. Questions such as their oral health associated information, approaches, oral hygiene behaviors, and the consumption of dental services.

The characteristic of all the patients in the descriptive analysis was studied. The categorical variables like gender were presented as proportions.

The analysis of the data was carried out on the using the Statistical Package for Social Sciences - Version XII (SPSS-XII). Frequency distribution tables of each coded variable shall be obtained.). Frequency distribution tables of each coded variable shall be obtained. Chi-square test will be used to compare results from different groups. Relationship between the groups was assessed at confidence interval of 95% and  $p > 0.05$ .

## RESULTS

**Demographic Profile:** The gender and age distribution of participants of the study is given in the table-1. The

majority of the participants in the study were in the age group 20 – 39 yrs. 56.5%, while slightly more than 30 per cent were between the ages 40 – 59 yrs. About 11.9% percent of the subjects were over 60 years old. However, no significant difference was found between the age groups and the gender ( $p > 0.05$ ).

Table 1 shows that about two quarters of the participants in the study were married.

**Table No.1: Demographic Profile**

		N	%
Gender	Male	234	40.4
	Female	345	59.6
Marital Status	Single	248	42.8
	Married	331	57.2
Age Group	20-39 Years	327	56.2
	40-59 Years	183	31.6
	60-79 Years	69	11.9
Total Subjects		579	

**Dental Service Utilization Behavior:** According to results twenty seven percent of the participants reported that they use dental services on a regular basis while seventy three percent of participants said that they do not utilize the free dental services on a regular basis (Table 2).

**Table No.2: Do you visit the Dentist on a regular basis?**

Age Group	%		Frequency		
	Yes	No	Yes	No	Total
20-39 yrs.	28.4	71.6	93.0	234.0	327
40-59 yrs.	23.0	77.0	42.0	141.0	183
60-79 yrs.	31.9	68.1	22.0	47.0	69
Total	27.1	72.9	157.0	422.0	579

Approximately ninety four percent participants reported that they have visited the public dental hospital before; table also shows almost equal distribution between the age groups.

**Table No.3: When did you last visit a Dentist (%)**

Age Group	< 12 Month Ago	1-2 Years Ago	2-3 Years Ago
20-39 Yrs	35.52	49.8	15.0
40-59 Yrs	37.7	41.5	20.8
60-79 Yrs	33.3	52.2	14.5
Total	35.8	47.5	16.8

Thirty six per cent of the contributors informed that they regularly visited the dentist, less than 12 months after the last visit. Another 47 per cent reported 12 - 24

months. Seventeen per cent reported that visits were usually spaced by more than two years (Table-3).

Eighty one percent of participants reported they visited a licensed private dentist last time. Only 17% participants visited a public dental hospital or government dentist last time. And approximately 2% participants reported to visit a non-licensed dental practitioner.

As to the reason for the last visit, 29 percent of the participants reported that they just went for a tooth cleaning or scaling. Broken teeth and toothache were the other main reasons given by the participants (17% and 18%, respectively) for their last visit to the dentist. Sixteen percent of the subjects went to see the dentist for tooth extraction (Table 4).

**Table No.4: Why did you visit the dentist last time?**

Positive Response	Count	%
I had toothache	108	18.6
I had a broken tooth	102	17.6
I had a broken filling	105	18.1
I had a gum problem	97	16.7
To have clean my teeth	167	28.8
For tooth extraction	97	16.7
To get my teeth straighten	105	18.1

Ninety two percent of participants were of the opinion that the public dental service is beneficial. Sixty five percent gave a reason that dentist made the appointment in the last visit and fifty three percent visited the hospital because the service is free of charge. (Table-5)

**Table No.5. Why do you visit the Public Hospital**

Positive Response	Count	%
The Public Dental Service scheme is beneficial	531	47.7
It is because the dentist made the appointment with me after the last visit.	377	65.1
It is free of charge	310	53.5

**Table No.6: If you have dental problems, please tell us what are the problem(s)?**

Positive Response	Count	%
A swelling inside the cheek or lips	57	9.8
A broken tooth	70	12.1
A broken filling	151	26.1
Gum boil, sinus	35	6.1
Gingival inflammation	159	27.5
Apthous ulcers	97	16.7
Bad breath	272	46.9
Bleeding gums	102	17.6
Toothache	210	36.2
Loose teeth	51	8.8
Dental calculus	171	29.5

Most important dental problems from the patient's point of view was reported as bad breadth forty seven

percent, followed by toothache thirty seven percent and dental calculus thirty percent respectively (Table 6).

Forty seven percent participants reported that they were afraid of pain, therefore do not visit the dentist on a regular basis. Approximately thirty four percent said waiting time is too long. Thirty percent reported either too far to go or not, had time to go to the dentist. (Table-7)

**Table No.7: Why you have never visited the dentist before?**

Positive Response	Count	%
I do not know the public dental service	23	4.0
I am afraid of the pain	273	47.2
I am afraid of the dentist	79	13.6
It is too far to go	170	29.4
I have not had time to go	173	29.9
I am unable to get off work	76	13.1
Waiting time to see the dentist is too long	194	33.5
I do not like the dentist	17	2.9

## DISCUSSION

A significant amount of data on the dental service utilization, the oral health awareness, the approaches and behaviors of the local population were collected in the present survey. it was accomplished by means of focused interview. A minority of the subject 27% told that they were regular users of public dental services. A large number of proportion of the subject stated that they were irregular users 72% of the services. No significant difference was found between other demographic variables (such as age, marital status) and the type of users. More than 20% of the regular users. These agendas improved provider payment, provided training for dentists and families, educate outreach staff for dealings with families, and provided program direction to dentists and families. Investigators have also suggested increasing access by giving the children with a usual source of dental care<sup>[13]</sup>

However, the motivation or reasons for these asymptomatic, preventive visit were obscure because the government dentist made the appointments with them. About one –third of the irregular users visited a dentist within the last 12 months. . In Malaysia, oral health care is delivered services in both public and private sectors, and the Ministry of Health is the prime organization in providing care to the public. Oral health program for reproductive mothers has been in place since the early 1970 s<sup>[14]</sup>

However, 29 percent of the irregular users had never visited dentist in the past three years. The long time it takes to make an appointment with the Government dentists and perception of no need (no dental problem) were the two main reasons for not visiting a public dental teaching hospital 'bad breath' and 'hole in the

tooth' were the two major problems experienced by the subjects at the time of interview.

Toothache, loose tooth and gingival inflammation were the three problems that most of the interviewees thought required immediate treatment. Dental phobia particularly to dental pain was also informed by some mothers, and it is acknowledged that dental fear and nervousness have important influence on dental care attitude to utilize it.<sup>15-17</sup>

Studies show that females use oral health care services more than males (Jensen, 1976; Heel & Ronstadt, 1975; Schwarz & Hansen, 1976; Douglass et al., 1979; Northern, 1979 Erikson & Hkansson, 1982; Rise & Holst, 1982; Yellowitz et al. 1982; Widstrm, 1984).

Widstrm (1984), investigating dental visiting patterns of Finns & Swedes living in Sweden, found that for both Finnish immigrants and Swedes, women visited dentists more frequently. Females are usually found to reveal higher prevalence rates than males. This finding is normally correct for different cultures with different survival systems and for a wide range of consecutive phases. It may indicate that the influence of gender on the frequency of services utilization is a general phenomenon irrespective of the nationality of the subjects. With respect to the types of services used by the subjects, some studies have shown that women used the preventive and restorative dental services more than men (Tronstad, 1975; Norheim 1979, Yellowitz et al., 1982)

Yellowitz et al., (1982) found that older women had more teeth and were in better condition. Fear of dental treatment was highly reported among the study population; This might be recognized due to the lack of proper oral health education programs for both children and parents, which is associated to the above mentioned reasons rendered dental treatment undesired. Oral health problems are common, costly and painful. Luckily most of them are mainly avoidable.<sup>18</sup>

## CONCLUSION

The present dental care delivery system of public dental hospitals seeks to cover the dental care needs of very different categories of 'consumers' with a standard approach or strategy. This standard and stereotyped strategy which is disease-orientated and curative rather than preventive and health-orientated has been abandoned in many countries. With the growing health-conscience of the people it has proven its ineffectiveness and inefficiency. A review of patient satisfaction studies shows that the characteristics of health care delivery that influence patient satisfaction the most are accessibility<sup>[19,20]</sup>

If the dental care demand and the service utilization by the users increase substantially at the same time as the consumer become more quality-conscientious than care expenditure could sky rockets it has in many countries. It was found that access to the routine of health

services, including dental care, among non-elderly adults declined between 2000 and 2010.

It is, therefore, better to prevent this from happening as early as possible. It is important to conceptualize and design the future delivery system for the public teaching hospitals in a way which stimulates, encourages and rewards regular, asymptomatic visits to the dentist.

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

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# Screening of Hepatitis B and C Viruses in Patients before Ocular Surgical Procedures

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## ABSTRACT

**Objective:** To screen and see the incidence of hepatitis B and C among patients before ocular surgical procedures.

**Study Design:** Prospective / Observational Study

**Place and Duration of Study:** This study was conducted at the Department of Ophthalmology, Dow University Hospital (ojha campus) of Dow International Medical College, Karachi, Pakistan from May 2014 to December 2014.

**Patients and Methods:** 223 patients above the age of 18 years were screened for hepatitis B and C before going ocular surgery by immune-chromatographic method (ICT). The patients who were positive for hepatitis were further confirmed by Enzyme Linked Immunosorbent Assay (ELISA).

**Results:** Total number of patients screened was 223. 11 (4.93%) patients were positive for hepatitis B and C, out of which 2(0.9%) were hepatitis B positive and 9(4%) were hepatitis C positive. Prevalence among male patient was 6.97% while among female was 2.12%.

**Conclusion:** The eye patients show high incidence of hepatitis B and C. Therefore, it is mandatory for all patients who need ocular surgery to be screened by serological test for hepatitis B and C preoperatively.

**Key Words:** Hepatitis B, Hepatitis C, Surgery

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## INTRODUCTION

Viral hepatitis B and C are common and important causes of chronic liver disease and in Pakistan hepatitis B and C are leading health problems.<sup>1</sup> Chronic hepatitis B and C are also the major risk factors of primary hepatic cancer worldwide.<sup>2,3</sup>

Hepatitis viruses are blood borne and can be transferred through blood or body secretions (serous, saliva, or vaginal secretions)<sup>6,7</sup> but hepatitis C virus (HCV) is spread only by blood borne and transmitted through blood.<sup>8</sup> In ophthalmology there is risk of transmission of hepatitis B virus (HBV) and HCV during various ocular procedures like biometry, measuring of intraocular pressure and in operation theatre while giving anesthesia, using of sharp instruments (blades, needles etc) and during sterilization and finally disposal of biomedical waste.<sup>9</sup>

In developing countries like Pakistan, preoperative screening facilities for hepatitis B and C are not available particularly at primary and secondary level even for elective/planned surgery. Tertiary care facilities are available only in large/teaching hospitals of big cities. Hepatitis B and C is highly prevalent in our country and its incidence is on the rise. In this situation the most effective preventive measure against these two blood borne pathogens is building awareness

and adopting preventive measures to minimize transmission.

This study was carried out to determine the incidence of hepatitis B and C in patients before ocular surgical procedures.

## MATERIALS AND METHODS

This study was conducted in eye department of Dow University Hospital (ojha campus), Dow International Medical College, Karachi from May 2014 to December 2014. The informed consent was taken from every patient. We included all patients who came to eye Out Patient department (OPD) and underwent ocular surgery. All patients were interviewed in detail especially of jaundice and blood transfusion. The blood samples of all these patients were taken in hospital lab and hepatitis B and C serological test were carried out using immunochromatography (ICT) method. Enzyme Linked Immunosorbent Assay (ELISA) was done in patients in which the serological test results were found to be positive. Data was analysed using SPSS version 16.0.

## RESULTS

The total number of patient included in our study was 223. Out of 223 patients 129(57.8%) were male and 94(42.2%) were females (Table 1). Their ages ranged from 18 years to 75 years (Table 2). A total of

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11(4.9%) were found to be positive for HBV and HCV. Out of 11(4.9%) patients, 2(.9%) were positive for HBV and 9(4%) were positive for HCV (Table 3).

Out of 129 male patients, 9(6.97%) patients were positive for hepatitis B and C and out of 94 female patients, 2(2.12%) were positive for hepatitis C. Table 1

**Table No.1: Incidence of Hepatitis B and C cases regarding gender.(n=223)**

	No. of Cases	Hepatitis B		Hepatitis C		Hep. B+C
Gender	n (%)	Positive, n (%)	Negative, n (%)	Positive, n (%)	Negative, n (%)	Positive, n (%)
Male	129 (57.8)	2 (1.6)	127 (98.4)	7 (5.4)	122 (94.6)	9 (6.97)%
Female	94 (42.2)	0 (0)	94 (100)	2 (2.1)	92 (97.9)	2 (2.12)%
Total	223 (100)	2 (0.9)	221 (99.1)	9 (4.0)	214 (96.0)	11 (4.9)

**Table No.2: Incidence of Hepatitis B and C cases at different age groups.(n=223)**

	No. of Cases	Hepatitis B		Hepatitis C	
Age	n (%)	Positive, n (%)	Negative, n (%)	Positive, n (%)	Negative, n (%)
< 20	7 (3.1)	0 (0)	7 (100)	1 (14.3)	6 (85.7)
21 - 30	13 (5.8)	0 (0)	13 (100)	2 (15.4)	11 (84.6)
31 - 40	8 (3.6)	0 (0)	8 (100)	0 (0)	8 (100)
41 - 50	49 (22.0)	1 (2.0)	48 (98.0)	2 (4.1)	47 (95.9)
51 - 60	69 (30.9)	0 (0)	69 (100)	4 (5.8)	65 (94.2)
> 60	77 (34.5)	1 (1.3)	76 (98.7)	2 (2.6)	75 (97.4)
Total	223 (100)	2 (0.9)	221 (99.1)	9 (4.0)	214 (96.0)

**Table NO.3: Incidence of Hepatitis B and C Positive at different diagnosis. (n=223)**

	No. of Cases	Hepatitis B (Positive)	Hepatitis C (Positive)	Hep. B+C (Positive)
Diagnosis	n (%)	n (%)	n (%)	n (%)
Cataract	155 (69.5)	1 (50.0)	7 (77.8)	8 (72.8)
Intravitreal Avastin	31 (13.9)	0 (0)	1 (11.1)	1 (9.0)
Other Surgery	37 (16.6)	1 (50.0)	1 (11.1)	2 (18.2)
Total	223 (100)	2 (0.9)	9 (4.0)	11 (4.9)

## DISCUSSION

Hepatitis B and C is very common in Pakistan and its incidence is increasing within last 10 years<sup>4,5</sup> and the possible sources include sharing by barbers, dental treatment, use of contaminated syringes and instruments, needles and improper sterilization of medical devices.<sup>10</sup> A large number of carriers of hepatitis B and C found in Pakistan. 10%<sup>4,11</sup> were found to be carriers of HBsAg while anti HCV antibodies were seen in 4% to 7% in of Pakistani population.<sup>12,13</sup>

In our study the prevalence of hepatitis infection among patients operated is 4.93%, in which HCV infection is 4% and hepatitis B is 0.9%, which is high as compared to hepatitis B. This is similar to studies carried out in NWFP and Punjab, where studies showed high

prevalence of HCV as compared to HBV.<sup>1,14,15,16,17,18</sup>. Different studies conducted by Sheikh et al<sup>19</sup>, Malik et al<sup>20</sup>, Kazam and colleagues<sup>21</sup> and Khattak<sup>22</sup> and other members found 2.8% to 10% of HBsAg carrier rate. These are on much higher side than our study, which is 0.9%. The seroprevalence of hepatitis C observed in our study is 4% which is much lower than that 11.6% reported in other studies.<sup>23,24</sup>. The seroprevalence of Hepatitis C virus in our study is on the lower side and it might be because the targeted population in our study belong to middle class and educated and they have adequate awareness about infection as well as routes of transmission of infection and they can easily bear the cost of routine screening tests.

The seroprevalence of Hepatitis B and hepatitis C virus in our study is high in males 6.97% compared to female

patients 2.1%. This could be because of more social mobility in males and more males went to OPD than the females, thus the higher detection rate and this is comparable to other studies<sup>25,26,27</sup> in which prevalence of Hepatitis B and C is more in males as compared to females.

Both Hepatitis B and C are found in between forty and sixty years of age. This phenomenon can be partly explained because more cataract patients were screened in older age group. This finding is comparable to the study of Talpur et al, in which 65% positive patients were above the age of 40 years.<sup>23</sup>

Screening for Hepatitis B and C is not routinely carried out in most of public health settings as well as government hospitals. We recommended screening for hepatitis B and C and this should be made compulsory for all patients undergoing surgical procedures because of high incidence of hepatitis B and C in our population.

## CONCLUSION

All patients undergoing ocular surgeries are highly recommended to be screened for hepatitis B and C, as the prevalence of these infections are high. The awareness program amongst people should be arranged on major scale through electronic media, newspaper and workshops as a precautionary measure.

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

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# Effect of Female Education on Family Size, Contraceptive Awareness and its Practice

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## ABSTRACT

**Objectives:** To determine the association of female education with family size, contraceptive methods awareness and its practice

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

**Place and Duration of Study:** This study was carried out at Gyane and Obs Department, Fauji Foundation Hospital from 1st Oct, 2011 to 31 Oct, 2011.

**Patients and Methods:** One forty nine married females having children were included in the study. Subjects were patients from Out Patient Department Of Gynaecology and employees of Fauji Foundation Hospital. Data was collected through a questionnaire by convenience sampling.

**Results:** A total of 149 females were selected by convenience sampling. Thirty five (23%) females were uneducated and 114 (77%) were educated from 5<sup>th</sup> grade to FCPS. Average age at marriage was found to be 22 years. Most of females were house wives 80 (53%) while rest 69 (46%) were working, showing their capabilities in field of teaching, nursing, medicine and working as Aya. One hundred and two (89%) of educated females were having small families i.e 4 or less children while 11 of uneducated were small family size the difference is statistically significant (p value<.01).

Ninety six (83%) educated females were aware of contraceptive methods as compared to 23 (65%) of uneducated females and the result was statistically significant (pvalue<.05). Regarding use of contraception no statistically significant difference was noted between two groups as 19 (54%) of uneducated were using contraceptive methods compared to 75(65%) of educated females. Condoms were the most commonly used method 26 (17%), followed by IUCD 17 (11%) natural method (8%) and bilateral tubal ligation (8%) while rest of females were using combination of contraceptive methods.

**Conclusion:** Education of females has association with family size and awareness of contraception while use of contraceptive methods has no association with education and some other motivational factors play role in the use of contraceptive methods.

**Key Words:** Contraception, female education, fertility

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## INTRODUCTION

High fertility, low contraceptive prevalence resulting in high population growth is a main problem of developing countries compounded by low status of females.

There is rapid and dramatic rise in world population. It has increased from six billion in 1999 to estimated 6,928,198,253 in mid year 2011.<sup>1</sup>

This expanding population of world is time bomb to existing ecology of human beings. Pakistan is sixth most populous country with population of over 187 million in 2011<sup>3,4</sup>. Pakistan urban population has increased over sevenfold while total population increased by fourfold during 1950-2011. The population growth rate now stands at 1.6%.<sup>5</sup>

The economic development and the life of citizens are believed to be improved by reduction in population

growth. Throughout the world, more education is associated with smaller family size. In less developed countries uneducated women have twice the number of children as women who are educated upto ten or more years of school.<sup>4</sup>

Educated women want smaller families marry later, experience sexual intercourse at later age and are more likely to use contraception than uneducated women. Educated women are different from uneducated women in different ways like they are wealthier, living in urban areas and have better access to contraceptive services. The influence of non school factors like socioeconomic status, ethnicity, parental education, individual goals, later age at marriage and marriage to an educated husband on child bearing decisions varies from one setting to another. Women education has a greater impact on fertility than husband education.<sup>6</sup>

Use of contraception is directly related to factors like education, later age at marriage, socioeconomic status, ethnicity, individual goals and parental education. These factors increase contraceptive use by raising

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aspiration for higher standard of living, better understanding of reproductive process and providing opportunities for personal advancement. They also improve access to modern and effective means of contraceptive services as well as freeing women from traditionalism.

Keeping in view the depressing effect of female education on fertility it is hypothesized that fertility level of a state will vary inversely with the level of female education of the state.<sup>7</sup>

This study specifically focused on the effect of literacy on family size and to assess the knowledge and use of different contraceptive methods in our set-up. Study was conducted in Fauji Foundation Hospital. Results of the study are helpful in better understanding of the effect of literacy on family size in our set-up.

## MATERIALS AND METHODS

This descriptive / cross-sectional study was carried out at Gyane and Obs Department, Fauji Foundation Hospital from 1st Oct, 2011 to 31 Oct, 2011.

One forty nine married females having children were included in the study. Subjects were patients from outpatient department of gynaecology and employees of Fauji Foundation Hospital. Data was collected through a questionnaire by convenience sampling. Eligibility criterion was married females having children. Data collection was through convenience sampling. Detail information was recorded in pre-designed proforma.

**Inclusion Criteria:** All married female having children.

**Data Analysis:** Computer programme Statistical Package for Social Sciences (SPSS) version 10 was used for data processing and analysis of the results. Test of significance (chi-square test) was applied to analyse the statistical significance of results.

## RESULTS

A total of 149 female were selected by convenience sampling. Thirty five (23%) females were un-educated and 114 (77%) were educated from 5<sup>th</sup> grade to FCPS. Average age at marriage was found to be 22 years. Most of females were working 78 (52%), while rest 71 (47%) were housewife. Working females were cashing their capabilities in field of teaching, nursing, medicine and working as Aya. Sixty two (41%) females were living in joint family system and 87 (49%) had independent houses. Majority of females 128 (85%) were in favor of small family size while rest (15%) were in favor of large family size. Only 13 of educated women had large family i.e. 5 or more, 42 had 3 to 4 children and 60 had 2 or less children. This difference is significant statistically with a p value<.01. While in uneducated females, only 3 women had 2 or fewer children, 8 women had 3 to 4 children and rest had 5 or more children. Regarding knowledge of family planning practices 96 (83%) of educated women and 22

(65%) of uneducated were aware of family planning practices (p-value <0.05). Considering use of contraception seventy five (65%) of educated females and 55% of uneducated were using different methods of contraception. This difference was not statistically significant between educated and uneducated females (p- value >.05)

Condoms were the most commonly used method 26 (17%) followed by IUCD 17 (11%) natural method (8%) and bilateral tubal ligation (8%) while rest of females were using combination of contraceptive methods.

## DISCUSSION

Women education is the single most influential investment that can be made in developing world according to World bank. Our study results showed that female education has a role in limiting family size. In our study 149 females had filled the questionnaire. Out of these 77% were educated and 23% were uneducated. Only 13 of educated women had large family i.e. 5 or more, 42 had 3 to 4 children and 60 had 2 or less children. While in uneducated females, only 3 women had 2 or fewer children 8 women had 3 to 4 children and rest had 5 or more children. This difference is strongly significant (p<.01)). This finding is confirmed by many national and international studies. A study carried out in Quetta by Zaheer khan showed similar effect. Study by Ali and Zahir also showed the inverse relation between female education and family size.<sup>8</sup> Study by Hyatte DE showed similar result.<sup>9</sup>

A study conducted by Jain and Nag showed that female education largely effect fertility through proximate determinants. Age at marriage of educated females was higher than their illiterate counterparts and the use of family planning methods is also greater among educated women.<sup>10</sup>

A study by Akmam , showed a significant and inverse relationship between education and fertility. The study also found success of family planning policies in reducing the fertility rate in that country.<sup>11</sup>

Tuman, Ayoub and Roth-Johnson study confirms the results of previous studies in the region which indicate inverse relation between female education and fertility rate.<sup>12</sup>

Regarding knowledge of family planning practices 96 (83%) of educated women and 22 (65%) of uneducated were aware of family planning practices, the finding is statistically significant. Considering use of contraception seventy five (65%) of educated females and 55% of uneducated were using different methods of contraception. This difference was not statistically significant between educated and uneducated females. It showed that awareness does not always lead to the use of contraception and a lot of educational and motivational activities and improvement in family planning services are needed to promote the use of

contraception and to decrease fertility rate. Religious beliefs regarding contraceptive use and social pressure from in-laws may also be an explanation for this finding. This finding is also revealed by a study carried out in India by Neelum Saluja.<sup>13</sup> The study showed that the knowledge about any method of contraception was 97.2%, but only 59.2% of the couples were practicing family planning methods. In contrast another study carried out in Lahore by Robina Sarmad and Shamim Akhter showed that education has positive impact on contraceptive use.<sup>14</sup> Another study in India by Agarwala SN showed similar result. Our study confirm the finding of previous studies regarding inverse relation of female education and family size and positive effect on contraceptive knowledge. Further research is needed to inquire on reasons for not using contraceptive methods despite of knowledge.

## CONCLUSION

Education of females has association with family size and awareness of contraception while use of contraceptive methods has no association with education and some other motivational religious and social factors may play role and these factors need to be researched.

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

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# A Study of the Spectrum of Homicide in Rawalakot, AJ&K

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## ABSTRACT

**Objective:** To find out the incidence of homicide, age and gender distribution of victims, type of weapons used and the most frequently targeted regions of body in victims of homicide in Rawalakot, Azad Kashmir, AJ&K.

**Study Design:** Retrospective study.

**Place and Duration of Study:** This study was conducted at SKBZH/CMH Rawalakot, AJ&K from Jan 2012 to May 2015.

**Materials and Methods:** Performa was designed for retrospective cohort study. The study was conducted in the mortuary SKBZH/CMH Rawalakot. Consent was implied and relevant information was gathered from the available record. Out of all the cases autopsied during this three and a half year period, 66 were homicidal in nature. Rest of the cases were excluded.

**Results:** Male to female ratio was 5.6:1. Maximum number of victims belonged to 21-40 yrs age group. Single injury was present in 85% (n= 56) cases while 15% (n=10) cases had multiple injuries. The most common region of the body targeted was chest 31.8%(n=21) followed by limbs, head and neck and abdomen. The most common tool used to kill was firearm in 75.8% (n=50) cases followed by sharp edged weapon in 18.2% (n=12) cases and others (including RTA, electrocution etc.) in 6.1%(n=4) cases.

**Key Words:** Homicide, Firearm, Victims, Rawalakot (Rwk), FWC.

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## INTRODUCTION

In our criminal justice system, the medicolegal investigation of death is governed by section 174 of Criminal procedure code. Primarily the examiner is concerned with violent, sudden and unexpected natural, homicidal, accidental and suicidal deaths. The commonest instruments in these kind of deaths are firearms<sup>3</sup>, sharp edge weapons and blunt objects. Firearm wounding is a special form of trauma producing a breach through the body of a victim by a bullet or shot charge. Firearms are barreled weapons of any type or description from which a shot bullet or other missile can be discharged with some velocity and momentum and where in appropriate circumstances, can cause injury and death. Recognition of firearm wound complex(FWC) depends upon its features produced by the fireblast containing projectile, flame, hot explosive gases, smoke and other components of ammunition such as lead, unburnt powder and grease taken from within the barrel. All these elements affect the body of victim as a whole in the form of signs at the place of strike to produce characteristic change known as FWC. Its characteristic features are mainly central

damage produced by the metallic projectile (bullet or shot charge) and other around the hole that is caused by other elements of the ammunition. These elements produce two types of effects: a) **wounding effect** that is the result of strike by the projectile, flame, hot gases, lead and other components of ammunition b) **Non wounding effects** caused by smoke, unburnt powder and grease. FWC has four parts: 1) An entry wound 2) A track with its direction 3) Place of resting of bullet/shot charge 4) Exit wound.

Features	Accidental injuries	Suicidal injuries	Homicidal injuries
Site of entry wound	Any part	Head or chest	Any
Range	Close	Close or contact	Any
Direction	Any	Upward or downward	Any
No of wounds	One	Usually one	One or Multiple
Firearm residues on hand	Present	Present	Absent
Weapon on the scene	Present	Present	Absent Or planted
Motive	Absent	Depression, Personal worry etc	Present (revenge, enmity, etc)
Suicide note	Absent	May be present	Absent

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Apart from firearm, another major cause of homicidal injuries is sharp edge weapons. The sharp edge weapon can be any object having a sharp or pointed edge starting from a paper to the axe that can have a sharp border/edge and can break the continuity of the tissue, deep enough to cause haemorrhage, visceral damage and other impending or immediate causes of death. The wound can either be stab or incised. Stab wounds have depth greater than length, while the incised wounds are longer, less deep and always broader than the edge of the weapon creating spindle shaped wound with everted margins.

## MATERIALS AND METHODS

Performa was designed for retrospective cohort study. The study was conducted in the mortuary SKBZH/CMH Rawalakot. Consent was implied and relevant information was gathered from the available record from Jan 2012 to May 2015. Out of all the cases autopsied during this three and a half year period, 66 were homicidal in nature. Rest of the cases were excluded. Study was found out on the basis of grouping them according to gender, age, no. of injuries (single or multiple), use of various kinds of weapons. Descriptive statistics were analyzed for frequency distribution of various variables using SPSS version 20.

## RESULTS

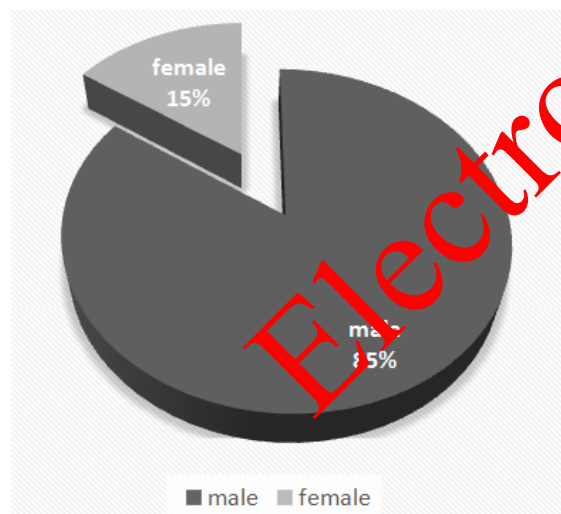


Figure No.1: Gender distribution(n=66)

Table No.1: Proportion of Homicide cases in various Age groups

	Frequency	Percent	Valid Percent	Cumulative Percent
11 to 20 yrs	2	3.0	3.0	3.0
21 to 30yrs	11	16.7	16.7	19.7
31 to 40 yrs	22	33.3	33.3	53.0
41 to 50 yrs	19	28.8	28.8	81.8
51 to 60 yrs	5	7.6	7.6	89.4
61 to 70 yrs	7	10.6	10.6	100.0
Total	66	100.0	100.0	

In this study, 66 cases were autopsied, out of which 56 were male and 10 were female. Victims falling in age group of 20-39 yrs were 50 % (n=33). Single injury (85% ; n=56) was more common than multiple injury. The most common site of homicidal assault was chest which was 31.8% (n=21). The most common weapon of murder was firearm, 75.8% (n=50).

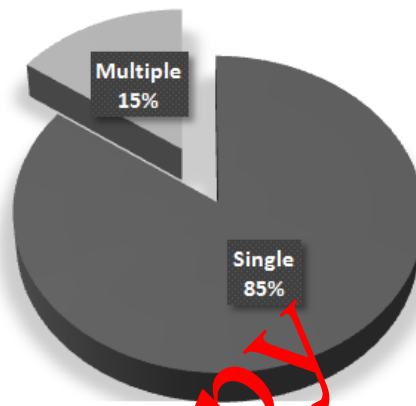


Figure No.2: Single versus Multiple Injuries



Figure No.3: The proportion of site of assault in homicide

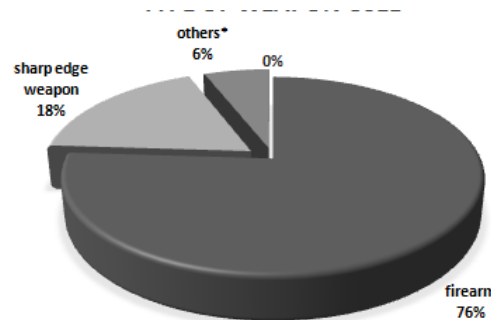


Figure No.4: Type of weapon used

## DISCUSSION

Homicide is a reflection of extreme aggression. Many factors influence such a behaviour. Family environment, urbanization and the presence of weapons<sup>1</sup>.

Intentional homicide caused the deaths of almost half a million people (437,000) across the world in 2012. The

global average homicide rate stands at 6.2 per 100,000 population<sup>2</sup>. The world witnesses over 500,000 deaths due to homicide annually<sup>4</sup>. Despite the fact that law enforcement agencies are catering for this crime, it is still on rise in various parts of the world<sup>5,7</sup>.

Our study was carried out in Rawalakot, which is the district headquarters of Poonch Division and Poonch District, with total population of 1.8 million. A total of 66 autopsied cases were found homicidal. The highest number of victims were between 31-50 yrs which was 59% of total cases (n=41). The mean age was 40.25 yrs. The maximum number of victims lied in the range of 31-40 yrs (n=22), followed by 41-50 yrs (n=19). The same pattern was seen in various parts of the Pakistan<sup>6,10,11,13,14</sup>. Male to female ratio in this study was 5.6:1 which shows a significant outnumbering of males to females, similar pattern of male predominance was observed in the autopsy studies conducted in other cities of Pakistan<sup>8,12,15,16</sup>. All the females were in their reproductive age group and 40% were unmarried. Single injury was found in 85% (n=56) while 15% (n=10) had multiple injuries. The most common region involved in single injury cases was chest<sup>14,16,17,18</sup>, which was 21 followed by limbs<sup>16</sup>, Head and Neck<sup>13</sup> and Abdomen<sup>6</sup> which corresponds to previous studies. The most common weapon used was firearm<sup>9,10,13,14,15,16</sup> involved in 75.8% (n=50) cases, followed by sharp weapons which was 18.2% (n=12). The results are comparable to the study conducted in Mirpur in 2012 where chest was the most common site of assault in homicide and 66.25% of victims were murdered with firearm weapon.

Death due to injuries from ballistic weapons is an important social problem. The rampant proliferation of illicit small arms combined with poor policing has eroded the human rights, weakened democratic institutions and polarised the ethnic, religious, economic and political differences among citizens. It is difficult for law enforcement agencies to keep a check on violence when during elections, private armies of politicians carrying illicit firearms roam at large.

## CONCLUSION

The males were the main target of homicide. The most common age group of the victims was between 31-40 yrs. The most common target of homicidal assault was chest and the most common weapon of assault in homicidal deaths was firearm followed by sharp edge weapons. Most deaths occurred due to single injury rather than multiple injury.

**Suggestions:** The higher incidence of firearm homicidal deaths in such a heavenly place with homicidal rate of 3.7 deaths per 100,000 population merits proper check of licence of weapons and the

weapons themselves by the law enforcement agencies. The weapon licence should be issued first and then the weapon, not the other way around.

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

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# Outcome of Surgical and Medical Management of Anal Fissure

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## ABSTRACT

**Objective:** To study the outcome of Surgical and Medical treatment of Anal Fissure.

**Study Design:** Prospective study

**Place and Duration of Study:** This was study carried out in Surgical Department of Ghazi Khan Medical College, Dera Ghazi Khan, from January 2014 to December 2014.

**Materials and Methods:** A total of 75 patients form Surgical OPD were included in the study. Patients having anal fissure were diagnosed clinically and were selected according to inclusion criteria.

**Results:** Out of 75 patients, 49 (65%) were male and 26 (35%) were female patients. The patients were from the ages of 23 to 54. Painful defecation was present in all the patients (100%), constipation in 67 (90%) patients, whereas bleeding per rectum in 52(70%). Sentinel pile was seen in 50 (67%) patients and associated superficial fistula only in 1 patient.

**Conclusion:** it is concluded that lateral internal sphincterotomy is the most effective way of treatment of chronic anal fissure, whereas chemical sphincterotomy with topical glyceryl trinitrate is relatively less effective.

**Key Words:** Dentate line, lateral sphincterotomy, defecation

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## INTRODUCTION

Anal Fissure is a linear tear or ulceration in the lining of the squamous epithelium in the anal canal distal to dentate line (mucocutaneous junction) due to local trauma. The fissure causes excruciating pain during defecation that persists for two to three hours. Hypertonicity and hypertrophy of the internal sphincter is so severe that it causes spasm, pain and ischemia leading to non-healing of the fissure<sup>1</sup>.

The fibers of the internal anal sphincter are visible in the base of chronic anal fissure and often an enlarged anal skin tag is present in the anal canal proximal to the fissure known as sentinel pile<sup>2</sup>.

The lateral internal sphincterotomy is the first line surgical option for all the fissures associated with hypertonicity and hypertrophy of the internal anal sphincter<sup>3,4,5</sup>. It can be performed using open or closed methods, depending upon the surgeon's choice.

Another procedure viz advancement flap, is usually reserved for recurrent fissures or fissures with low pressure (Tone). The procedures, like Lord's anal dilatation and mid-line posterior sphincterotomy, are obsolete because of high rates of recurrence, incontinence and delayed wound healing<sup>6,7</sup>.

The conventional treatment of anal fissure is surgical lateral internal sphincterotomy. The alternative option of Chemical sphincterotomy using medication such as

topical glyceryl trinitrate induces rapid healing of anal fissure. It is a new, easily handled and affective alternative to surgical lateral sphincterotomy<sup>8</sup>. It offers a significant healing rate for acute anal fissure and prevents it's evolution to chronicity<sup>9</sup>.

## MATERIALS AND METHODS

This was a prospective study carried out in Surgical department of Ghazi Khan Medical College, Dera Ghazi Khan, from January 2014 to December 2014. A total of 75 patients form Surgical OPD were included in the study. Patients having anal fissure were diagnosed clinically and were selected according to inclusion criteria. All patients were divided in two groups, group A patients were treated surgically undergoing lateral internal sphincterotomy and group B patients were treated medically with topical 0.2% glyceryl trinitrate and adjuncts.

## RESULTS

Among 75 patients, 49 (65%) were male and 26 (35%) were female.

**Table No.1: Gender Distribution (N=75)**

Gender	No. Of patients	Percentage
Male	49	65%
Female	26	35%

All the patients were between the ages of 23 to 54 year.

Regarding symptoms, painful defecation was present in all the patients (100%), constipation was a feature in 67 (90%) patients while bleeding per rectum was documented in 52 (70%) patients. Sentinel pile was

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found in 50 (67%) of the patients whereas associated superficial fistula was noted only in 1 patient.

**Table No.2: Age Distribution (n=75)**

Age Years	No of Patient	Percentage
20—30	32	40%
30—40	26	36%
40—50	13	18%
>50	4	6%

**Table No.3: Presentation (symptoms) (n=75)**

Symptoms	No. of Patients	Percentage
Painful defecation	75	100%
Constipation	62	90%
Bleeding per rectum	50	70%
Associated fistula	1	1.3%

Anal Fissure was present at the posterior mid-line in 61 (82%) patients, in 9(12%) patients fissure was lateral in position while in 5(6%) patients, it was present at anterior mid-line.

**Table No.4: Position of Anal Fissure (n=75)**

Position	No. of Patients	Percentage
Posterior Midline	60	82%
Lateral	9	12%
Anterior Midline	5	6%

Out of 75 patients, 48(64%) opted for surgical treatment and underwent lateral internal sphincterotomy, were placed in group A whereas 27(36%) patients opted for medical treatment with topical glyceryl trinitrate and adjuncts, were placed in group B.

**Table No.5: Treatment option (n=75)**

Treatment Option	No. of Patients	Percentage
Surgical	48	64%
Medical	27	36%

## DISCUSSION

All the patients were given the surgical and medical options of the treatment and were placed in group A or B according to their selected choice after informed consent. In our study, 48(64%) of the patients who opted for Surgical treatment underwent lateral internal sphincterotomy and all of them had uneventful recovery in a short period of time but one of them had some soiling. Our results are comparable to Lysy, who had 100% healing and 0% recurrence with lateral internal sphincterotomy<sup>10</sup>.

Though, surgery for anal fissure is associated with few complications like permanent incontinence of faeces, transient in-continnence of flatus and soiling but such complications can be prevented by the use of judicious

surgical techniques and by familiarity with ano rectal anatomy. Gosse link found a flatus in-continnence rate in 30% of the patients after lateral internal shincterotomy<sup>11</sup>, in-another retrospective study where the patients underwent closed or open lateral internal sphincterotomy, 21% cases had a flatus or liquid incontinence<sup>12</sup>.

In our study, 27(36%) patients who opted for medical treatment underwent chemical sphincterotomy with topical 0.2% glyceryl trinitrate, 20(74%) of the were cured over a period of 06 weeks while 7(26%) of the patients had a prolonged duration of healing and 2 of them opted to undergo the Surgical treatment. Our result are comparable to some other studies who have shown healing rate up to 70% with topical glycerin trinitrate<sup>13,14,15</sup>.

Comparing the efficacy of surgical and medical options on the basis of effectiveness regarding the control of symptoms and side effects, both are comparable, though topical modality has a relatively higher recurrence and persistence rate but with insignificant side-effect like headache. Whereas, the surgical option, lateral internal sphincterotomy is associated with serious side-effects like permanent in-continnence of faeces or flatus and soiling.

## CONCLUSION

It is concluded that in patients with anal fissure, lateral internal sphincterotomy is the state of art gold standard procedure but associated with some serious side-effects, while chemical sphincterotomy with topical glyceryl trinitrate is a suitable and reliable alternative to lateral internal sphincterotomy which can be offered as a first line treatment to the patients presenting with anal fissure.

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

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# Frequency of Acute ST Elevation Myocardial Infarction and Various Reasons of Pre-Hospital Delay in Early Morning Hours

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## ABSTRACT

**Objective:** To determine the frequency of acute ST elevation myocardial infarction and various reasons of pre-hospital delay in early morning hours

**Study Design:** Cross-sectional survey

**Place and Duration of Study:** This study was conducted in the department of Cardiology, Chaudhary Pervaiz Elahi Institute of Cardiology, Multan from 18<sup>th</sup> September 2012 to 17<sup>th</sup> March 2013.

**Materials and Methods:** 164 patients of either sex giving mid-section torment in right on time morning were incorporated in this study. The meeting secured the patients' indications, the season of onset of side effects, the consequent occasions and the past history. Entry time short the season of side effect onset was ascertained as pre-healing center postponement and it was computed in hours.

**Results:** 164 patients were included in the study. The mean age of patients was 54.85 years with standard deviation of 10.684 years. 77 (46.95%) patients were male and 87 (53.05%) patients were female. Mean delay of patients with chest pain was 3.49 hours with standard deviation of 1.777 hours. 96 patients had pre-hospital delay of more than 3 hours while 68 patients had no pre-hospital delay. 130 patients presenting with morning chest pain had ST elevation MI while 34 patients did not have ST elevation MI.

**Conclusion:** In conclusion, onset of symptoms at night especially in morning causes more prolonged delay in hospital arrival because transport means and medical helps are beyond reach at these times.

**Key Words:** Acute ST elevation myocardial infarction, early morning hours, pre-hospital delay, various reasons

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## INTRODUCTION

Despite late consoling reductions in the demise rate, serious myocardial dead tissue (MI) is the fundamental wellspring of death worldwide.<sup>1</sup> The mortality associated with MI has been falling in the western world consistently as a delayed consequence of better healthcare<sup>2</sup> yet is depended upon to rise in the making world.<sup>3</sup> It is in the blink of an eye by and large saw that ischemic scenes in the midst of each day activities tend to take after a circadian appointment, with a crucial peak in the morning. Circadian rhythms are characteristic rhythms that happen endogenously in most regular organisms.<sup>4</sup>

In one study repeat of exceptional ST stature myocardial confined rot (STEMI) in front of calendar morning hours was 74%.<sup>5</sup> This recognition exhibits that

the onset of these cardiovascular events is not discretionary, and gives a clue to segment. An atherosclerotic plaque is displayed to systemic physiologic processes<sup>6</sup> that could enhance the likelihood of plaque break and thrombosis in the region of a frail plaque. Countless methods increase in force in the morning, including plasma catecholamine levels, mindful development, heart rate, circulatory strain, vascular tone, platelet aggregability and blood consistency increase, while some guarded variables, for instance, vagal activity and fibrinolytic activity are decreased.<sup>7,8</sup>

The backbone of treatment for intense STEMI is reperfusion treatment. An imperative variable in administration of intense MI is its auspicious administration.<sup>9</sup> Most of the deaths because of intense MI happen out of the healing center before admission.<sup>10</sup> The "way to-inflatable" time, that is, time taken from the section into the clinic to PCI ought to be under 90 minutes.<sup>11</sup> The "way to-needle" time, that is, time taken from passage into the doctor's facility office to beginning of thrombolytic treatment ought to be under

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30 minutes.<sup>12</sup> The treatment stays of advantage up to 12 hours particularly if Q waves have not been formed.<sup>13</sup>

## MATERIALS AND METHODS

It was a cross-sectional study, conducted on patients admitted through emergency department of Chaudary Pervaiz Elahi Institute of Cardiology, Multan. Non probability purposive sampling technique was used. Patients of both genders, age between 20-80 years with intense average mid-section torment displaying in crisis branch of CPEIC in ahead of schedule morning hours and myocardial localized necrosis were incorporated. Patients with intense Non-ST rise myocardial localized necrosis, past history of ST height myocardial dead tissue, left package branch square, past history of valvular coronary illness and diabetes mellitus were avoided.

After endorsement from neighborhood moral advisory group, patients coming in CPEIC crisis satisfying the consideration criteria were chosen. After educated assent patients or orderlies were met by preset poll. The meeting secured the patients' indications, the season of onset of side effects, the ensuing occasions and the past history. The mid-section agony was arranged into mellow, direct and serious as per VAS score. Landing time short the season of indications onset was ascertained as pre-healing facility deferral and it was computed in hours.

All the information was entered and investigated utilizing PC program SPSS adaptation 10.0. Clear measurements were utilized to figure mean and standard deviation for age of the patients and pre-doctor's facility delays. Frequencies and sites was ascertained for sex and time of intent. ST height myocardial localized necrosis in ahead of schedule morning hours and different reasons as expressed in operational definition. Effect monitor was controlled through stratification of age and gender to see the effect of these on outcome variables applying chi-square test taking  $p \leq 0.05$  as significant.

## RESULTS

A total of 164 patients were included in the study. The mean age of patients was 54.85 years with standard deviation of 10.684 years, median age of patients was 57.00 years, minimum age of patients was 28 years, maximum age of patients was 78 years and range of age of patients was 50 years as shown in table no: 1. Out of 164 patients, 77 (46.95%) were male and 87 (53.05%) patients were female as shown in figure no: 1.

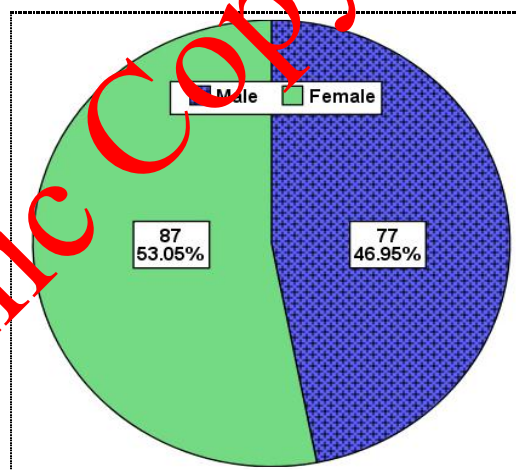
Mean delay of patients with chest pain was 3.49 hours with standard deviation of 1.777 hours, minimum delay was 1 hour, maximum delay was 8 hours and range of delay was 7 hours as shown in table no: 2

Mean delay in male was 3.58 with standard deviation of 1.915 hours and in female the mean delay were 3.40 with standard deviation of 1.653 hours.

130 patients presenting with morning chest pain had ST elevation MI while 34 patients did not have ST elevation MI.

**Table No. 1: Age of patients in years**

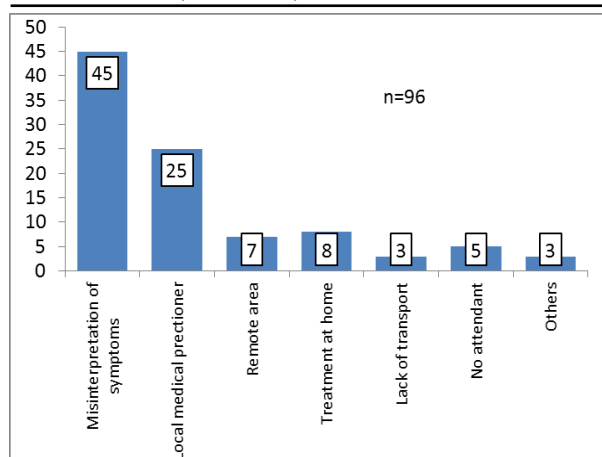
Total no of cases	Valid	164
	Missing	0
Mean age of patients in years		54.85
Median age of patents in years		57.00
Mode		58
Std. Deviation		10.684
Range		50
Minimum age of patients in years		28
Maximum age of patients in years		78



**Figure No: 1: Gender of patients**

**Table No. 2: Mean delay in hours**

Total no of patients (n)	Valid	164
	Missing	0
Mean delay in hours		3.49
Median delay in hours		3.00
Mode		2
Std. Deviation		1.777
Variance		3.159
Range of delay in hours		7
Minimum delay in hours		1
Maximum delay in hours		8



**Figure No.2: Frequency of various reasons of pre-hospital delay**

**Table No: 3: Pre-hospital delay (>3 hours) in different gender of patients**

Gender of patients	Pre-hospital delay		Total	P-value
	Yes	No		
Male	52 67.5%	25 32.5%	77 100%	0.028
Female	44 50.6%	43 49.4%	87 100%	
Total	96 58.5%	68 41.5%	164 100%	

**Table No. 4: Pre-hospital delay (>3 hours) in different age group of patients**

Age group of patients	Pre-hospital delay		Total	p-value
	Yes	No		
20-40 years of age	7 38.9%	11 61.1%	18 100%	0.195
41-60 years of age	56 60.2%	37 39.8%	93 100%	
61-80 years of age	33 62.3%	20 37.7%	53 100%	
Total	96 58.5%	68 41.5%	164 100%	

In the frequency of pre-hospital delay, 96 patients had pre-hospital delay of more than 3 hours while 68 patients had no pre-hospital delay.

52 male patients and 44 female patients had pre-hospital delay while 25 male patients and 43 female patients had no pre-hospital delay with significant p value of 0.028 as shown in table no: 3

7 patients in 20-40 years of age group, 56 patients in 41-60 years of age group and 33 patients in 61-80 years of age group had pre-hospital delay while 11 patients in 20-40 years of age group, 37 patients in 41-60 years of age group and 20 patients in 61-80 years of age group had no pre-hospital delay with insignificant p value of 0.195 as shown in table no: 4.

In 96 patients with pre-hospital delay, 45 patients had misinterpretations of symptoms, 25 patients went to local medical practitioner, 7 patients were from remote area, 8 patients got treatment at home, 3 patients had lack of transport, 5 patients had no attendant while 3 patients had other causes as shown in figure no: 2.

61 male patients and 69 female patients had ST elevation MI while 16 male patients and 18 female patients had no ST elevation MI with insignificant p value of 0.989.

## DISCUSSION

The pre-doctor's facility deferral stays one of the primary driver of the decreased advantage of reperfusion treatment for the patients with an intense myocardial dead tissue (AMI). In this manner a few studies have explored how AMI patients think and act amid side effect presentation. Onset of indications during the evening yields more drawn out deferral in healing center landing on the grounds that vehicle means and restorative aides are far-off at these times.<sup>14</sup> Variables connected with pre-doctor's facility deferral were age > or = 65 years, retirement or unemployment, history of myocardial dead tissue, side effect onset at home and irregular side effects, while vicinity of onlookers, for example, companions, associates or even outsiders, deplorable side effects, dyspnea, sweating, syncope and attribution of indications to heart cause were identified with right on time presentation to the hospital.<sup>15</sup>

The mean postponement in our study was 3.49 hours with standard deviation of 1.777 hours. 96 (58.54%) patients touched base at healing facility with deferrals of over 3 hours when maximal impact of reperfusion had passed. In outside studies mean pre-healing facility deferral shifts from 1.6 to 42.4 hours.<sup>16</sup>

Ank<sup>17</sup> in his study uncovered that the mean aggregate postponement time for the patients with an intense myocardial localized necrosis was 17.42 (+/- 24.03) hours. This finding is clarified by the actualities that there are intricate variables connected with this finding. In another study directed by Alidoosti M<sup>18</sup> demonstrated that the mean pre-doctor's facility postponement time in patients with intense myocardial localized necrosis in morning was 7.6±9.1 hours. Elderly persons, likely because of individual non-adequacy, would defer in achieving restorative care.<sup>19</sup> Dracup et al<sup>20</sup> reported that just 14% of the patients touched base inside of one hour of the onset of side effects, 28.5% inside of two hours and 41% inside of four hours. Then again, 54% landed at the clinic over six hours after first encountering cardiovascular

indications. Ying et al<sup>21</sup> uncovered that just 34% of the patients looked for medicinal consideration inside of one hour and a further 36% of the patients displayed to one of the eight doctor's facilities inside of two hours after the onset.

A study done by Sari et al<sup>22</sup> who expressed that from 439 patients with AMI, 80% patients were male and 20% patients were female. As per Ying et al who concentrated on 102 patients with AMI, 78 (76.5%) were male patients and 24 (23.5%) were female patients.

Our study uncovered that the male who suspected intense myocardial dead tissue were more probable than female to postpone time. Factually, there were a huge contrast in the middle of men and ladies in pre-doctor's facility deferral time. This finding is bolstered by Blohm et al<sup>23</sup> who uncovered that in the pre-doctor's facility defer, the free indicator of a drawn out deferral in patients with AMI was the male sex.

As per their age, the aftereffects of our study report that the mean period of patients with AMI was 54.85 and SD 10.684. This is upheld by Norgaz et al<sup>24</sup> who expressed that the mean age was 56.7±11.6 years with ST-height AMI.

Ting et al<sup>25</sup> uncovered that the age of the more established patients with AMI was connected with longer defers in looking for treatment. Johansson et al<sup>26</sup> demonstrated that the most continuous explanation behind not picking a rescue vehicle was that patients did not see the side effects to be not sufficiently kidding to legitimacy an extreme activity like calling the crisis number (43%).

The second most regular purpose behind not picking a rescue vehicle was that the patients did not consider Emergency Medical administration being a choice (38%). While, (26%) thought it was pointless to call an emergency vehicle.

In our study, the middle postponement time was fundamentally more in patients who first exhibited to a neighboring facility/nearby healing center, contrasted with the individuals who straightforwardly introduced to a clinic completely furnished with consistent heart care. The present's consequences study may legitimize the requirement for straightforwardly exchanging patients with the signs and side effects of AMI to a healing facility outfitted with coronary consideration unit, catheterization research facility, as opposed to a neighboring center/nearby clinic. Beginning presentation to a neighboring facility/nearby doctor's facility may prompt underutilization of reperfusion methods, bringing about expanded horribleness and mortality.<sup>27</sup>

A few studies reported that solitary, separated, or dowager patients showed longer pre-doctor's facility delays.<sup>28</sup> However, conjugal status was not connected with pre-healing facility delay in our study.

The quantity of kids, restriction of AMI, and day of presentation (weekday versus weekend) were not connected with pre-healing facility delay. In another study led by Banks AD et al<sup>29</sup> demonstrated that Single,

widowed, or separated patients had longer postpone times than did wedded patients (5.33 versus 2.50 hours), and patients with diabetes deferred longer than did those without diabetes (7.29 versus 3.50 hours).

In our study, patients who thought their signs or indications were not kidding; on the other hand, their reaction time was longer than that of the patients who thought their signs or side effects were not genuine. These outcomes are as opposed to those of Dracup and Moser<sup>30</sup> who found that crediting signs and manifestations to the heart and assessing signs and side effects as genuine were indicators for shorter postponement times. On the other hand, in our concentrate, despite the fact that a large portion of the patients in the specimen saw their signs and side effects as genuine, their middle postponement time was longer than that of patients who saw their signs and indications as not genuine.

In light of the present's consequences think about, the analyst prescribes that the instruction projects ought to be created and executed by focusing on the general group particularly the patients with coronary supply route maladies. It ought to be centered around the AMI manifestations, the significance of ahead of schedule presentation and to decrease pre-doctor's facility delay. Future exploration is fundamental on the off chance that we are to see more about which particular elements foresee the individual segments of postponement in order to target intercessions viably furthermore give the method for ahead of schedule analysis and treatment.

## CONCLUSION

In conclusion, onset of symptoms at night especially in morning causes more prolonged delay in hospital arrival because transport means and medical helps are beyond reach at these times. Furthermore it is important to inform the general population, especially high risk persons about manifestations of myocardial ischemia and a need to prompt hospital referral by means of ambulance in case confronting these symptoms. Public campaign and medical care providers have substantial role in this regard.

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

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# Results of Hemiarthroplasty in Basicervical Fracture Neck of Femur (Gardon Type-III & IV) using Austin Moor Prosthesis and their Assessment in Terms of Charnley Hip Score and Harris Hip Score

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## ABSTRACT

**Objective:** To determine the long term results of Hemiarthroplasty with Austin Moor Prosthesis and to evaluate the results in terms of Harris hip score and Charnley hip score.

**Study Design:** Experimental study.

**Place and Duration of Study:** The study was conducted at Khawaja Muhammad Safdar Medical College/Allama Iqbal Memorial Teaching Hospital, Sialkot from January, 2001 to December, 2011.

**Materials and Methods:** Total 55 patients 40 male (72.72%) and 15 female (27.27%) were selected for study after Hemiarthroplasty with Austin Moor Prosthesis in elderly patients. The age range from 60 to 95 years with an average age of 68 years. 34 patients (61.81%) had Gardon type-III and 21 patients (38.18%) had Gardon type-IV fracture neck of the femur.

**Results:** Post operatively, all patients were assessed radiologically as well as clinically with dual assessment scale using Harris hip score (pain 44 point, function 47 point, deformity 4 point, range of motion 5 point) and Charnley hip score in terms of pain, movement and walking ability with scale of 1 to 6. One being totally disable and six being a normal status. According to H.H.S. we noted 78.18% excellent, 14.54% good and 7.27% poor result at five years follow up and 70.83% excellent, 14.58 good and 14.58% poor results between five to ten years follow up in our study. As per Charnley hip score scale we noted 96.85% satisfactory results and 3.15% poor results at five years follow up and 77.08% satisfactory results at 5 to 10 years follow up in our study. The complications noted during follow up include; infection in 5 patients (9.09%), pain in 10 patients (18.18%) shortening in 03 patients (5.45%), sciatic nerve injury with foot drop (0%). According to radiological assessment, we noted dislocation in 1 patient (1.08%), acetabulum protrusion in 2 patients (3.63%), osteolysis 5 patients (9.09%), calcar resorption 5 patients (9.05%), loosening of implant patients (12.72%)

**Conclusion:** Hemiarthroplasty in type-III and IV Basicervical fracture at the neck of femur with Austin Moor Prosthesis is simple, safe and cost effective method with low incidence of mortality and morbidity in old age patients and gives safely 5 to 10 pain free years to the patients.

**Key Words:** Basicervical fracture neck of femur, Gardon Classification, Hemiarthroplasty, Austin Moor Prosthesis, Harris hip score (HHS), Charnley Hip Score.

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## INTRODUCTION

Fracture neck of the femur is the most common fracture in elderly patient above 60 years of age and its treatment is challenging for an orthopaedic surgeon due to high mortality and morbidity. With increase life expectancy the number of elderly people are increasing and it is estimated that number of hip fractures will rise

from 1.66 Million in 1990 to 6.26 Million by 2015. In Germany it is forecasted that there will be rise of 74% in the incidence of Proximal Femoral fracture by the year 2020. According to Swedish National Hip Fracture Register, Intracapsular fracture of femoral neck constitutes 53% of hip fractures with 33% undisplaced and 67% displaced<sup>1,2,9</sup>.

The fracture neck of the femur has drawn its importance because of difficulty in achieving reduction, maintenance of reduction and avascular necrosis leading to reintervention rate of 35% with decreased function and increase morbidity as reported by Lu-Yao<sup>12,23,24,28</sup>.

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The risk factor for mortality includes development of one or more post-operative complications like chest infection leading to pneumonia, deep vein thrombosis, UTI leading to renal failure, muscle wasting and bedsores. Early and effective mobilization is the key to success to decrease mortality and morbidity in this age group patients. Replacement of femoral head and neck with Prosthesis is an effective way to get rid of these dreadful complications and to prevent the complications of internal fixation which leads to avascular necrosis and reintervention, hence increasing morbidity and mortality. There are different schools of thought for management of these fractures and there is no consensus on how to treat patients with displaced intracapsular fractures. It is because of poor clinical date that the displaced intracapsular fractures are referred to as "the unsolved fractures"<sup>1,2,3,4,5,16,17,22</sup>.

Moor and Bohlman after removal of joint cell tumor of femoral head introduced Hemiarthroplasty in 1940. Later on Dr. Austin Moor (1899-1963), from south Carolina performed 1<sup>st</sup> Hemiarthroplasty for fracture neck of femur in 1942 to which he gave his name.

The credentials of hemiarthroplasty as treatment of choice in Gardon type-III and IV fractures in old age patients has been under cloud due to advent of newer type and designs of Bipolar and total hip orthoplasties. But considering the old age, poor medical conditions, osteoporosis, long duration of surgery, more blood loss in already compromised patients, associated cardiovascular complications due to use of bone cement during surgery and above all the economical factor, hemiarthroplasty is advocated as the best treatment for transcervical fractures in elderly patients due to early rehabilitation thus preventing the dreadful complication of non-union and avascular necrosis. Currently two types of endoprosthesis are in common use: Thompson type and the Moor type. The moor type is more popular as it distributes stresses over wide area in proximal femur minimizing shear stresses.<sup>3,4,5,16,20,22,23</sup>

Although there are various reports in literature indicating the good result of A.M Prothesis but there are no longterm data is available. We have studied the long term results of A.M Prothesis in Basicervical Gardon type-III& IV fracture neck of the femur in our hospital and evaluating their results in terms of Harris hip score and Charnley hip score to assess the long term results.<sup>7,14,22,25,28</sup>

## MATERIALS AND METHODS

Total 55 cases were operated and selected for study from January, 2001 to December, 2011 and followed up for a period of 10 years with an average follow up of 8 to 10 years. Out of 55 patients 40 patients (72.72%) were male and 15 patients (27.27%) were female. The minimum age of the patients selected for study was 60 years and maximum was 95 years with an average age of 68 years. The age range between 60 to 65 years in 18

patients (32.72%), 65 to 80 years in 22 patients (40%) and more than 80 years in 15 patients (27.27%). Average period between injury and surgery was after one to four weak of trauma. Out of 55 patients 34 patients (61.81%) had Gardon type-III and 21 patients (38.18%) have Gardon type-IV fracture neck of femur.

All pateints were assessed pre-operatively both by the physician and anesthetist and written consent was taken before surgery. All patients were evaluated by routine medical tests which include Blood C/P, HB, Sugar, Urea, Creatinine, LFTs, HBs, HCV, Blood Grouping, ECG, X-ray Chest and Pelvis. Old Bed ridden patients pathological fractures, open fracture, Hemiplegia of the effected limb, liver cirrhosis with ascites, uncontrolled diabetes with associated complications, fracture more than 3 months duration, old age problems like dementia, parkinsonism and all other patients unfit from anaesthesia point of view were not selected for surgery.

Inclusion criteria was active patients who wanted to fight against the disease with better quality of bone with respect to their age were selected for surgery. Prophylactic antibiotics were given to all patients. All patients underwent Austin Moor Hemiarthroplasty. Postoperatively all patients were mobilized with the help of crutches or walker along with range of motion and quadriceps exercises. All patients were discharged 3<sup>rd</sup> to 4<sup>th</sup> day after surgery with the advice to come for the removal of stiches two weeks after the surgery.

They were advised to come for follow after two weeks for one month, then after 3 to 6 months and later on after one year till the completion of study. During follow up all patients were assessed both clinically in terms of Harris hip score and Charnley hip score in order to evaluate the results. The radiological assessment was made with special reference to fracture of implants, dislocation, Acetabulum Protrusia, Oestolysis, Calcar resorption and loosening of implants. The complications associated with procedure like wound infection, pain, shortening, sciatic nerve injury with foot drop was also observed along with dual assessment scale using HHS and Charnley hip score.

Statistical programme for social sciences (SPSS) version 15 was used to analyse the data, Chi-Square statistical test was also applied to know the significance of various results.

## RESULTS

The mean operating time was 25 to 35 minutes, while the mean follow up period was 8 to 10 years. None of the patients died during hospital stay. All were discharged in satisfactory conditions out of 55 patients operated 2 patients (3.63%) died within 5 years of surgery due to associated medical conditions, 5 lost to follow up and remaining 48 patients were followed up from 8 to 10 years after surgery. All patients were assessed according to Harris hip score and charnley hip

score initially at 5 years and then at the end of the study along with radiological assessment.

Out of 55 patients 40 male (72.72%) and 15 female (27.27%) the HHS at five year interval was excellent (B/W 80-100 points) in 43 patients (78.18), good (70 to 80 points) in 8 patients (14.54%) and poor (b/w 60 to 70 points) in four patients (7.27%); whereas HHS rating was dropped at the end of follow up period in which out of 48 patients 11 female (22.91%) and 37 male (77.68%) the score was excellent in 34 patients (70.83%) good in 07 patients (14.58% and poor in 7 patients (14.58%). According to Charnley hip score assessment was also made with reference to pain, movement and walking ability with 0 to 6 point. And patients were graded excellent b/w 5 to 6 point, fair b/w 3 to 4 point and poor from 1 to 2 point and results were rated satisfactory if score rated b/w 4 to 6 and poor b/w 1 to 2 point. According to Charnley hip score scale at 5 years follow up, out of 23 patients 18 male (32.72%) and 5 female (9.90%) were having score b/w 5 to 6 point, out of 30 patients 22 male (48%) and 8 female (9.08%) were having 4 to 6 point and 2 patients (3.63%) both female were having 1 to 2 points. Overall satisfactory results were noted in 53 patients (96.53%) and poor results in 02 patients (3.63%) upto 5 years follow up. After 5 years till to end of follow up the overall satisfactory results were also dropped as in HHS assessment. The satisfactory result was (77.08%) instead of (96.53%) at the end of follow up. Poor or

totally disabled persons were none as these patients either died or were lost to follow up.

As per radiological assessment we noted fracture of implant 0%, dislocation 1 patient(1.8%), Acetabulum Protrusion in 02 patients (3.36%), Osteolysis in 5 patients (9.09%), Calcar resorption 5 patients, loosening of implant 7 patients(12.72%), 1 patient had periprosthetic fracture femur 7 years after the surgery which was managed successfully with Circlage wiring. Many of the patients were having one or more than one above mentioned complication. The other complications noted during follow up were infection 5 patients (9.09%), pain 10 patients (18.18%), shortening with limp 3 patients (5.54%). Sciatic nerve injury with foot drop does not occur in any of the operated patients.



Fracture of femur different type

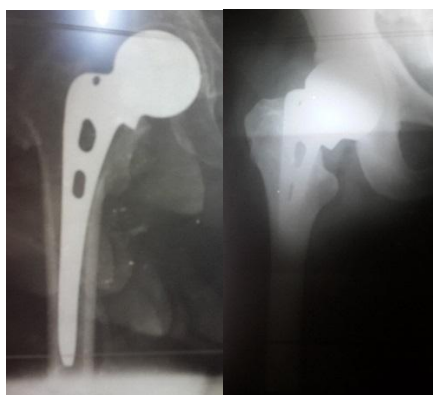


Fixation with A.M. Prosthesis

fixation with A.M. Prosthesis

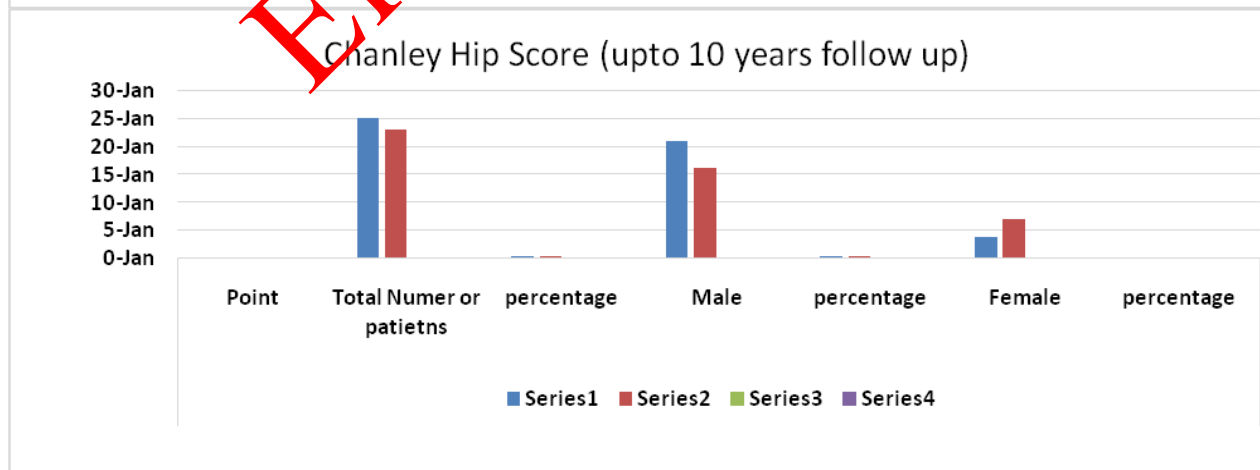
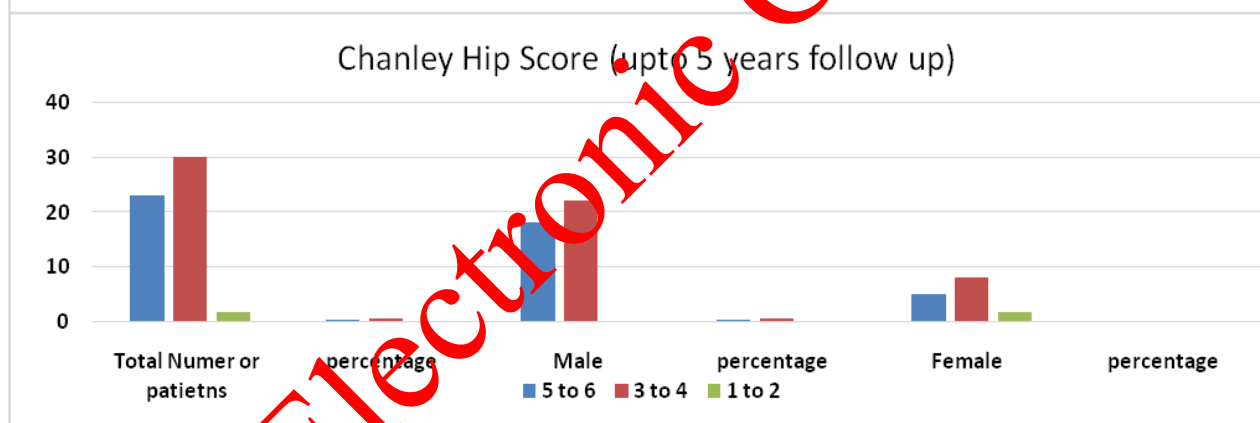
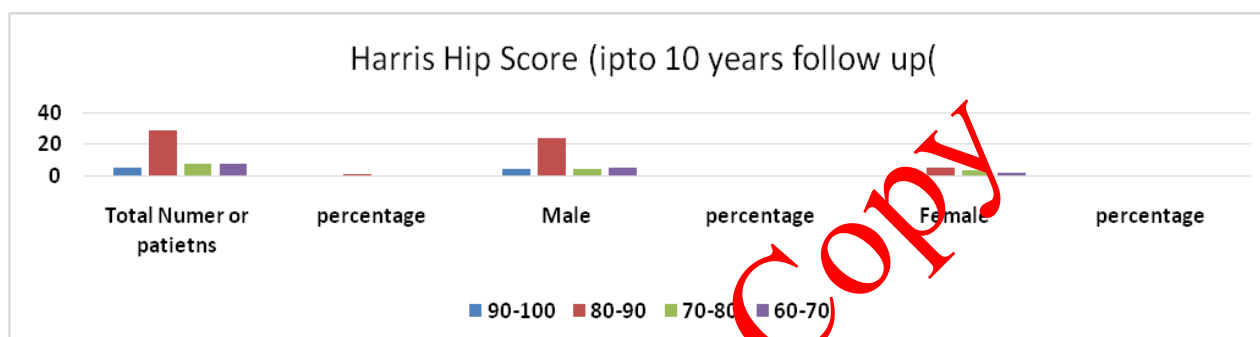
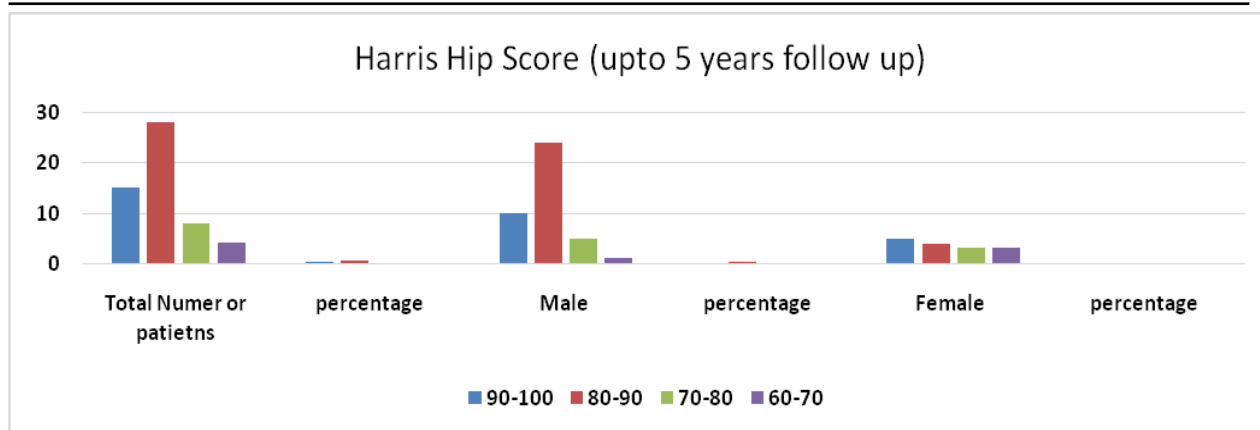


Calcar resorption during follow up



Per-Prosthetic fracture





## DISCUSSION

The management of basicervical fracture neck of femur has been challenging for an orthopedic surgeon since many decades. In the literature there is lot of discussion about its management which varies from internal fixation to hemiarthroplasty either unipolar or bipolar, cemented or uncemented to total hip replacement. The dreadful complications of reduction and internal fixation along with high rate of revision surgery has lead to increase in morbidity and mortality. This age group has drawn attention to hemiarthroplasty not only for fractures but different system comorbidities are responsible for mortalities.

Various studies have shown mortality rate of 15%, 23%, 26%, 38% in their series in elderly patients treated with A.M Prosthesis<sup>1,3,5,17,18,19,20</sup>.

The frequency of femoral neck fracture is also increasing with increase in life expectancy and is predicted to be doubled in next 20 years and triple within 2050.

In the study of Jadhav A.P. et al, it was reported that the mean age is 65.7 years. Onceand Yinusa in his study and Essoh et al reported age b/w 55 to 58 years with standard deviation of 7.2 years. In our study the mean age was 68 years.

Ahmed et al reported the ratio of male to female 1:2 in his series whereas in our study 72.72% were male and 27.27%.

Essoh et al have shown Garden type-III 32.1% and type-IV 67.9% in his series whereas in our series out of 55 patients 30 patients (54.54%) were having type-III and 15 patients (27.27%) had Gardons type-IV fracture neck of the femur.

Many others have reported dislocation after Hemiarthroplasty in their series. Barnes C.L et al reported 1.5% dislocation rate in his series whereas other reported 4% dislocation rate. Tellisi and Wahab reported 3.4% dislocated rate in their series. Ahmed reported 4.3% dislocated rate in his series. We noted 1 dislocation (1.8%) in our study. We observed that maximum chance of dislocation is while shifting the patient from Operation Theater to ward, during X-Ray shifting and in irresponsible patients who do not follow post operative instructions. We always depute one medical officer during shifting and during post operative X-rays and were able to achieve good results. The incidence of wound infection in developing countries is high which is the key source of post operative pain, loosening and erosion leading to different complications and increasing the mortality and morbidity. Apart from general measures this also depends upon duration of surgery and soft tissue handling. In our series we noted 5 patients (9.09%) with wound infection after one month to one year of surgery<sup>20,22,27,28</sup>.

The incidence of Acetabular erosion increases with physical activities younger age group, post op infection and long duration of surgery. Baker R.P. reported 21 erosions, 66% in his series among 32 patients. In our series we noted that 7 patients (12.72%) had acetabular erosion during follow up where as acetabulum protusia was not noted in our series. We noted gradual reduction over 5 to 10 years post operatively in terms of Harris hip scale and Charnley hip scale but we observed that the deterioration was not only associated with surgery but was also due to gradual deterioration of health and involvement of other systems leading to reduction in activities. So we reached the conclusion that Hemiarthroplasty is safe and cost effective method in managing the patients in old age group.  
4,6,7,14,17,20,22,23,27,28

## CONCLUSION

We reached to the conclusion that Hemiarthroplasty with Austin Moor prosthesis is safe and cost effective method with decreased mortality and morbidity; it gives 8 to 10 pain free years after surgery with negligible complications.

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

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# Renal Mal-Development – A Devastating Side Effect of Ginsenosides

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## ABSTRACT

**Objectives:** To determine the side effects of ginseng product on human.

**Study Design:** Experimental study.

**Place and Duration of Study:** This study was conducted at the Department of Anatomy, University of Health Sciences, Lahore from Jan 2005 to December 2007.

**Materials and Methods:** Thirty adult albino mice were split into three groups of 10 mice (eight pregnant females and two males) in each group. Group A received distilled water for full term of gestation. Group B received HTD (780 mg/kg/day) mixed in 0.1ml of distilled water and Group C received MTD (1560/mg/kg/day) mixed in 0.1ml of distilled water for full term of gestation. Embryos were taken by doing C-section on gestational day 18. The fetuses were prospected and kidneys were removed. The kidneys were fixed; processed and microscopic slides were prepared.

**Results:** Histological examination showed signs of renal tubular malformation as well as varying degrees of undifferentiated mesenchymal connective tissue along with congestion and erythrocyte infiltration in the tissue preparations. These alterations were dose dependent in experimental groups. These changes were remarkable in the group C as compared with the group A or group B. Our study shows that Ginseng has embryotoxic consequences and indicates that more researches and close observation of embryotoxic outcomes of Ginsenosides on pregnancy are required.

**Conclusion:** Our investigation indicates that Ginseng products have teratogenic effects in vivo and suggest that further investigations and monitoring of embryonic effects of Ginsenosides on human pregnancy are warranted.

**Key Words:** Kidney, Renal, Malformation, Congenital, Ginseng

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## INTRODUCTION

In modern world, herbal medicine practice virtually vanished from the therapeutic map, however, many developing countries never abandoned herbal medicine practice, among all alternative therapies practiced worldwide Panax Ginseng is the most abundantly used herbal drug<sup>1,2</sup>, as it contains the highest number of functional elements and has the wide range of pharmacodynamics and distinct mechanism of actions<sup>3</sup>. As the Ginseng root symbolizes the human body, the plant is assumed as a mean of healing for all ailments of the body<sup>4</sup>. It is used for augmenting fertility and sexual activity, and for increasing the strength the body, mood elevation and health building<sup>5,6</sup>.

Triterpene saponins called Ginsenosides are the main functional constituents of Ginseng<sup>2</sup>; of various Ginseng saponins that have been discovered, six (Rb1, Re, Rc, Rd, Rb2 and Rg1) have been selected as judgement tool for other Ginseng commodities. Ginsenosides act in different ways as it produces different actions in the same tissue so Ginsenosides have complex

pharmacokinetics.<sup>5</sup> Ginsenosides produce its effects by acting on hypothalamus-pituitary-adrenal axis and by stimulating immune system<sup>5,7,8</sup>.

The Maximum Tolerated Dose of Ginseng is 2-9gm/day as designated by the European Committee for Herbal medicines<sup>9</sup>. It was reported in many studies that 15% of women use Ginseng in pregnancy as it is thought to be beneficial for fetuses<sup>10</sup>.

It is documented fact in many studies that ginsenosides affect rat embryos directly<sup>11,12,13,14</sup>. There may be an endocrine like active substance in Ginseng which effect the development of embryo<sup>15</sup>. Placental membrane is freely crossed by the unconjugated steroid hormones<sup>16</sup>. There is a significant variability in teratogenicity of different Ginseng saponins<sup>17</sup>.

## MATERIALS AND METHODS

Thirty albino mice (twenty-four female and six males) of 6-8 weeks age were procured for use in this study. The experimental animals were kept in experimental animal room of UHS Lahore. Rodent chow and water was provided ad libitum. Female mice were left for mating and the day on which vaginal plug was detected was taken as day 0 of gestation<sup>3</sup>. Experimental animals were arbitrarily split into three groups. There were eight female and two male mice in each group. Commercially

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pocurable Panax Ginseng root powder was purchased from Sigma containing 3 % Ginsenosides.

#### Grouping

**Group A:** Animals received distilled water for the full term of gestation.

**Group B:** Animals received HTD (780mg/kg/day) mixed in 0.1ml of distilled water for full term of gestation - low dose treated group

**Group C:** Animals received MTD (1560/mg/kg/day) dissolved in 0.1ml of distilled water for full term of gestation – high dose treated group

**Microscopic Examination:** The gravid mice were killed on the 18<sup>th</sup> day of pregnancy and the fetuses were taken out. The fetuses were resected and kidneys were excised. The kidneys were preserved in neutral buffer 10% formaline for two days. After processing (paraffin embedding) sections were prepared and stained with hematoxylin and eosin and PAS staining for microscopic examination.

## RESULTS

The data was analyzed by using computer software Statistical package for social sciences (SPSS) version 15. For quantitative data student 't' test was used and for qualitative data chi-square test was used.

**Morphological and histological features of the fetal kidney:** In histological sections, the cortical region composed of straight tubules alternating with regions containing glomeruli and convoluted tubules.(Figure 1)

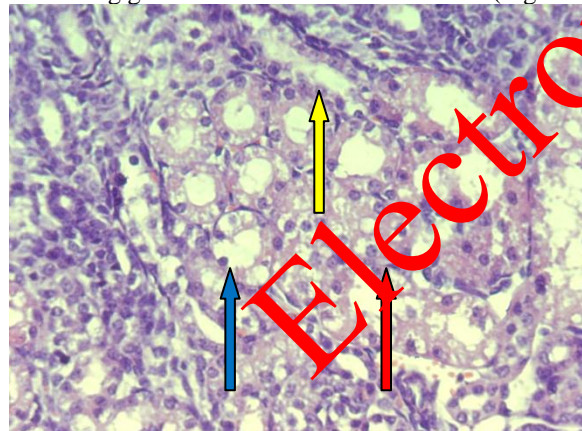


Figure No.1: Photograph of fetal renal tissue from control group demonstrating completely differentiated renal tubules. Evident in the section are well formed PCT (red arrow), DCT (blue arrow), and collecting tubule (yellow arrow) are evident in the section. X 200, H & E stain.

The cortical nephrons ranged from 1-6 per mm<sup>2</sup>, 1-4 per mm<sup>2</sup> in group B and group C respectively as compared to 3-6 per mm<sup>2</sup> in group A. The difference in the number of glomeruli in experimental groups compared to the group A was statistically significant  $p < 0.05$ . (Table 1).

**Table 1: Comparison of number of renal glomeruli in experimental and control groups. Values were analyzed according to student 't' test.**

Group	Range per mm <sup>2</sup>	Mean $\pm$ SE	Value of 't'	P- Value
A (52)	3-6	4.17 $\pm$ 0.126	34.785	0.000*
B (47)	1-6	2.27 $\pm$ 0.16	14.221	0.000**
C (43)	1-4	1.8 $\pm$ 0.133	14.035	0.000***

Figure in parenthesis demonstrates the number of fetuses in each group. (\* Group A Vs Group B; \*\* Group A Vs Group C; \*\*\* Group B Vs Group C).

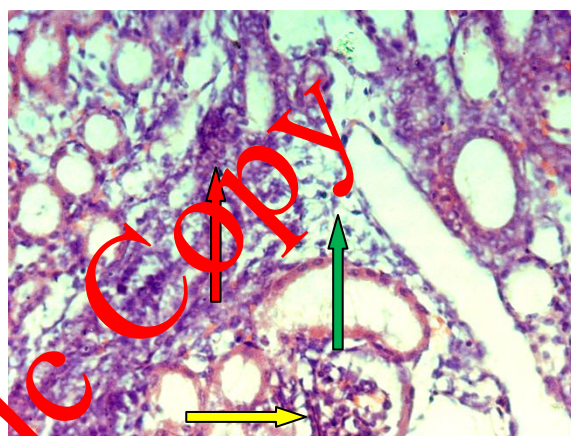


Figure No.2: Photograph of fetal kidney of high dose treated group, showing areas of tubular degeneration (red arrow), hemorrhages in the Bowman's capsule (yellow arrow) and mesenchymal tissue (green arrow). X 150, H & E Stain.

**Table 2: Association of malformations of renal glomeruli of fetuses of group A, B and C; data was analyzed by using chi-square test.**

Group	Fetuses with malformations	Fetuses with no malformations	df	X <sup>2</sup>	p- Value
A (52)	00	52	1	12.30	< 0.05*
B (47)	10	37	1	9.87	< 0.05*
C (43)	20	19			

Values in parenthesis show total number of fetuses in each group. (\* Group A Vs Group B; \*\* Group A Vs Group C; \*\*\* Group B Vs Group C).

The Bowman's capsule was composed of visceral and parietal layers, between the two layers of renal corpuscle was the Bowman's space. An evident malformation of architecture of Bowman's capsule was observed in the treated groups (Figure 2, Figure 3) as compared to the Group A. The malformation observed in groups B and C as compared to the group A was statistically significant ( $p < 0.05$ : Table 2).

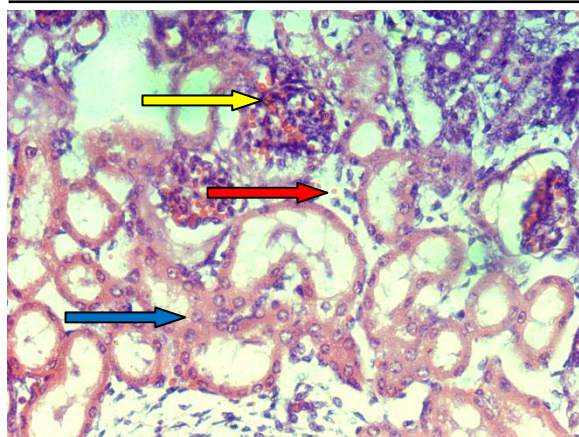


Figure No.3: Photograph of fetal renal tissue of Group B, depicting mesenchymal tissue (red arrow) and tubular degeneration (blue arrow). Also evident in the section are hemorrhagic areas (yellow arrow), and PCT (pink arrow). X 200, H & E stain.

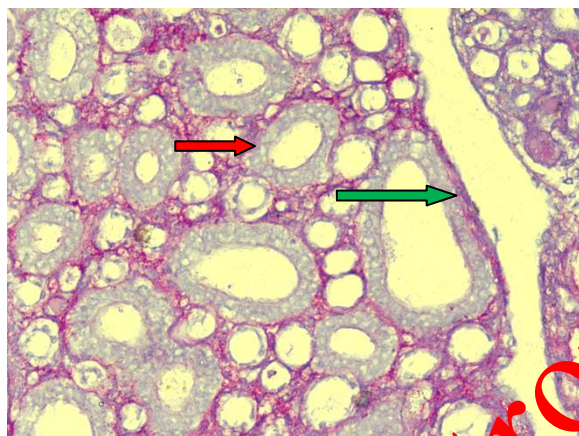


Figure 4: Photograph of renal embryonic tissue of group B showing renal tubules (red arrow) and collecting tubules (green arrow) are also visible. X 200, P.A.S. Stain.

The cells of the PCT did not show discrete limits when seen under the light microscopy, and the lumen was narrower than that of DCT. However, in treated groups apart from normal looking tubules there were some tubules showing processes of degeneration. Multiple pale-staining homogenous areas were seen in the microscopic preparations of the kidneys of the experimental groups; these were more marked in the group C than in the group B. The areas were extensively distributed throughout the kidney, commonly seen in the sub-cortical or the juxta-medullary region. To rule out the presence of amyloid deposition, the sections were stained with Congo red and viewed under polarized light. The sections did not take any red color of the stain and there was no birefringence under polarized light. The sections were stained by P.A.S. technique; the stain appeared not only to stain the basement membranes but the lumen of

the suspected tubules (Figure 4) in comparison to the group A.

The tubular degeneration was pronounced in the group C as compared to group B, and it was statistically significant ( $p < 0.05$ ) when compared with the control group (Table 3).

**Table 3: Comparison of tubular degeneration of fetuses of group A, group B and group C; data was analyzed by using chi-square test.**

Group	Fetuses with tubular degeneration	Fetuses with no tubular degeneration	df	X <sup>2</sup>	P value
A (52)	00	52	1	18.04	< 0.05*
B (47)	14	33	1	9.87	< 0.05**
C (43)	20	19			

Figure in parenthesis indicate total number of fetuses in each group. (\*Group A Vs Group B; \*\* Group A Vs Group C)

## DISCUSSION

About 65-80% of people uses herbal medicines as main health care as suggested by WHO. These herbal medicines should be assessed about their safety and efficacy.

All Ginsenosides (except Ro) contain steroids called saponins. Ginseng, one of the steroidal saponins<sup>18</sup>, possess endocrine hormone like activities due to structural similarity with steroidal hormones. Ginsenosides have the same biochemical architecture as steroid hormones, it is high probability that they can cross the placental barrier and affect the developmental process<sup>19</sup>. The properties of Ginsenosides are debated; it is reported to have reparative ability of damaged tissue like brain and endothelial cells<sup>6</sup>. On the other hand constituents of herbal medicines, including Ginseng, are thought to be harmful, resulting in tissue damage<sup>20</sup>.

The kidneys showed degenerated pale areas in the sub-cortical region; the nuclei were scattered and showed signs of decay; the cells did not exhibit any distinct cell boundaries; the degenerative alterations seen in the microscopic preparations of kidney were may be due to apoptosis (Figure.2) or cell death caused by Ginseng saponins.

Ginsenosides inhibit cell proliferation in tumor cell, others have been shown to cause differentiation and prevent metastasis; Ginsenoside Rh2 interfered with growth and halted cell cycle at the G1 stage<sup>22</sup>. As Ginsenosides, share structural features with steroids, can penetrate the cell membrane freely and can inflict cell injury. Steroid hormones bind with nuclear receptors and alter protein synthesizing capacity of the cell by altering the transcription of mRNA leading to cell death<sup>21</sup>.

In programmed cell death, there is a chain of molecular and biochemical events which lead to cell death characterized by sequence of changes. Cells in

apoptosis are shrunk and elongated due to intracellular water loss. It is followed by nuclear condensation, degeneration of nuclear envelope and finally breakdown of nucleus. Apoptotic bodies are formed which are nothing but nuclear fragments along with cytoplasmic constituents enveloped by cell membrane. Apoptotic bodies are ultimately shed from the dying cell<sup>22,23</sup>. Chemical agents affecting the differentiation and proliferation of cells can cause cell death as witnessed in renal tubules; Ginseng saponin is known to act on the distal convoluted tubules via Hypothalamus-pituitary-adrenal axis producing steroid like effect, accounting for degeneration of DCT. Compound K is produced as a result of action of intestinal flora after oral intake Ginseng in mammals<sup>24</sup>. It has been assumed that mitochondrial membrane is penetrated by compound K, the major protopanaxadiol saponin which leads to activation of caspase 9<sup>20</sup>. In early stages of programmed cell death, caspases get activated causing lysis of proteins as well as agents required for normal cellular functions. In addition the caspases also result in degeneration of DNA in the nucleus by stimulating enzymes<sup>25</sup>.

The levels of NO and NO<sub>2</sub> increases after administration of Ginsenosides<sup>26</sup>. Glomerular endothelial and mesangial cells possess an inducible cytokine-stimulated NO synthase activity. NO is also produced in the renal epithelial cells of convoluted tubules and macula densa<sup>27</sup>. Nitric oxide produced from enzymes known as nitric oxide synthases (NOS) also activate cellular degeneration. It is implied, therefore that the signs of cellular degeneration, evident in the renal tubules, probably resulted on account of NO production triggered by Ginsenosides

## CONCLUSION

Ginsenosides found in readily available over the counter preparation can produce embryotoxic effects after oral ingestion. However the findings in animal studies may vary and further investigation and experimentation is therefore suggested.

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

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# Estimation of Time Since Injuries (Age of Wound) in Living Medico-Legal Cases of Mansehra

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## ABSTRACT

**Objective:** The objective was to study the way in which duration of injury or time since injury (age of the wound) is assessed in live medico legal cases in rural area, to know and analyze the time since injury recorded in Medico Legal register and have an idea that how much time later the injured person is examined after injury or how much time later he reach to a doctor for opinion of duration of injury and other opinion..

**Study Design:** Retrospective study.

**Place and Duration of Study:** This study was carried out at a medico legal centre of Mansehra District from January to August of 2005.

**Materials and Methods:** The study is a record based research, 100 cases were selected which were consecutively recorded from the previously registered MLC cases in a center of Mansehra district. Data of time since injury or duration of injury (age of the wound) along with preliminary data was recorded from the record and analyzed.

**Results:** In 100 cases the time since injuries were 0 to 59 minutes, 1 hour to 6 hours, 7 hours to 12 hours, 13 hours to 24 hours and others. Among the victims having 25 years of age only one (1%) had times of injury of 0 to 59 Minuit's, of age of 26 year to 45 year only 2(2%) were having time of 0 to 59 mints and no one above 45 years of age has the same time. 35 (35%) cases of age 25 years were having time since injury of 1 to 6 hours, 33(33%) cases of age 26 to 45 years were having same time and only 5 of above the age of 45 years had duration of injury of 1 to 6 hours. 17(17%) of all the cases has age of injury up to 7 to 12 hours. 7 (7%) of total cases has time of 13 to 24 hour.

**Conclusion:** Our study reflect the true situation of subjected society where the hospital is in the reach of population and this also reflect upon some influence of injured person act 2004, according to which the victim shall be taken to hospital for treatment as early as possible and the legal matter can be dealt with later on , among male victims 2(2%) and among female 1(1%) has age of wounds of 0 to 59mints mean less than one hour, 48(48%) male and 25(25%) female had age of wound of 1 to 6 hours, 1(1%) female and 6(6%) male were having time of injury of 13 to 24 hours.

**Key Words:** Histological, Bio Chemical, Injury

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## INTRODUCTION

**Timing of Wound:** There are methods by which you can measure the time or age of a wound since infliction, these methods are of four types. You can also say whether it is ante-mortem or post mortem? And these are Medico- Legal questions.<sup>1-5</sup>

(1) **Naked Eye Method:** By this one can answer whether wound is fresh or old and also ante or post mortem. The wound in life, if an open one, bleed profusely, infiltration of deeper tissue occur, edges are gapping, the blood is firmly coagulated and stick to the tissue, does not easily wash away. Closed wounds are first red, hot, swollen, and then changes colors.<sup>1-5</sup>

The above will not be present in postmortem wound.

When life has existed for some time then it's easy to say whether ante-mortem or postmortem due to vital reaction. When vital reaction is there, it make changes in tissues with time, and it is confirmed that the person was alive, this reaction can be observed by other three methods, and by all these four methods you can also give the approximate time since injury or age of wound.<sup>6-10</sup>

(2) **Histological Method:** When injuries occur there are morphological changes in tissue with time and these can be noted histologically by the experienced one. These are as under.<sup>6-10</sup>

I) if Survival is less than 4 hour. No signs of inflammation or vital reaction seen.

II) Survival 4 to 16 hours. Perivascular neutrophils and granulocytes seen up to 4 hours. In 8 to 12 hours macrophages, fibroblast appears in peripheral wound zone. And granulocytes to macrophages ratio is

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5:1. There is necrosis in central wound zone after 12 hour.

III) 16 to 48 hours. Macrophages increases, ratio is 0:4. After 16 hours fibrin stain red with martius stain. From 1st day to 2, 3 days granulocytes and fibrin reaches maximum. Epidermis growth starts from edges in 48 hours. Macrophages reach maximum at peripheral zone of wound in 48h.

IV) Survival 2 to 4 days. Fibroblast is in peripheral zone, epithelia are quite covering the small abrasions. 2 to 3 days capillary buds appear.

V) 4 to 8 days, at 4 day collagens fiber seen. Capillaries grow till 8 day. Epidermis thickens, at 6 day lymphocytes are in wound periphery.

VI) 8 to 12 days leucocytes, fibroblast, and capillaries decreases. Collagens increases.

VII) survival more than 12 days. Cellular activity diminish, epithelia show basement membrane, shrinkage of connective tissue and maturation of scar starts.<sup>6-10</sup>

(3) **Histochemical Timing of Wound.** 8 to 12 hour no histological change. Therefore if survival period is less than 12th hour then compliment this method of time of injury analysis with histochemical one.

In wounds there are two zones,

A. Central zone B. Peripheral zone.

Central zone is in the immediate vicinity of wound and peripheral a bit away from the center

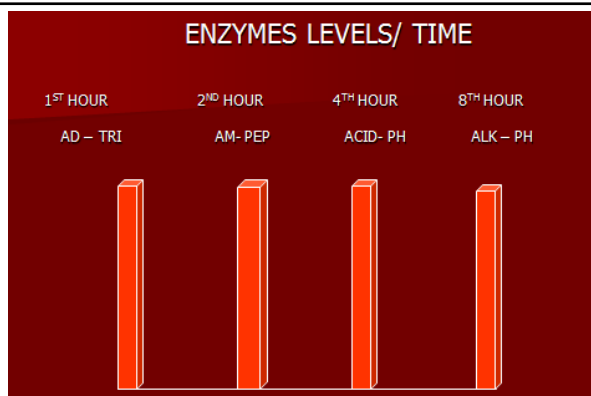


There is increase in enzymes activity at peripheral zone after injury so called + tive vital reaction. The decrease in the central zone of enzyme activity due to necrosis and regressive changes is called -tive vital reaction.

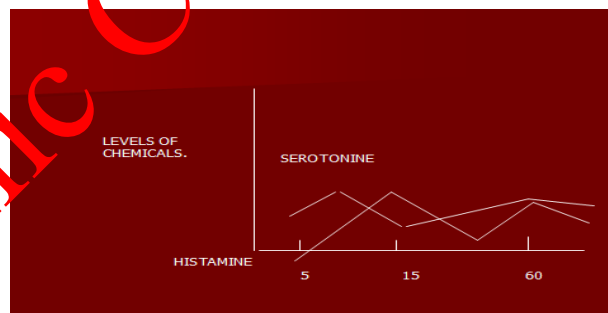
In 1st hour Adenosintriphosphatases and esterases increases in wound periphery. In 2nd hour amino peptidases. In 4th hour acid phosphatases. In 8th hour alkaline phosphatase. This biological method still leaves adventure

for forensic subject, which is solved by other method.

The biological method has errors in case if body has suffered from cachexia, blood loss and cold etc.<sup>6-10</sup>



(4) **Biochemical Timing of Wound.** When injury occurs there is increase in vaso - active substances like serotonin and histamine in the area. The serotonin increases by 2 fold and histamine by 1.5 fold. The tissue sample from the injured area and control a bit away from it are taken and the above chemicals are measured. Before 5 minutes of death serotonin is increased, at 15 minutes histamine increases, at 60 minutes again serotonin increase. No such changes in chemical level after death occur.<sup>6-12</sup>



**Age of Scars:** The approximate age of a scar can be estimated from its ageing process, viz. vascular to avascular ( 2 weeks to 2 months), tender to non-tender (2 months to 6 months), and soft to tough (more than 6 months ).

- (1) Depending upon vascularity, a recently formed scar may appear reddish or bluish. It is tender and soft. The age of such a scar is up to two weeks.
- (2) As the vascularity diminishes, the scar becomes pale and white but it is still tender and soft. Its age is up to 2 months.
- (3) With age the scar contracts.it becomes smaller and whiter but it is still a little tender and soft. The age is between 2 to 6 months.
- (4) As the scar further contracts, it becomes tough, white and glistening. The age is probably not less than 6 months to an indefinite number of years.<sup>12-17</sup>

## MATERIALS AND METHODS

A medico-legal center of Mansehra district was selected, the method of record research was adopted, the record of retrospectively recorded cases was taken, researched and record was formed in a Performa. The total time interval of recorded cases in Performa was 8 months from January to August of 2005. The consecutively recorded cases were researched, a questionnaire was developed to record preliminaries, type of injuries, and there duration or age of injury. From the previous record at a recorded point in time, the onward record was searched of a selected population sample of victims and data of the recoded information were made from the medico-legal register, such register are maintained for record of MLO and court matters. The collected data was subjected to analysis and the results were interpreted.

## RESULTS

47(47.0) cases were of age 25 years, 46(46.0%) were of age 26 to 45 years and only 7(7.0%) were of age above than 45 years. (Table- 1)

From the record of said cases of said register 100 cases were selected, 69(69%) were male and 31(31%) were female. (Table – 2)

**Table No.1: Time of injuries and age groups in years**

Time since injury	Age Groups			Total
	Up to 25 years	26-45 years	Above 45 years	
0-59 min	1	2	0	3
1-6 hours	35	33	5	73
7-12 hours	8	8	1	17
13-24 hours	3	3	1	7
Total	47	46	7	100

**Table No.2: Time of Injuries and sex**

Time since injury		sex	
		Male	Female
time	0-59 min	2	1
	1-6 hours	48	25
	7-12 hours	13	4
	13-24 hours	6	1
Total		69	31

1(1.0%) people of age 25 years has age of injury of 0 to 59 minutes or less than 1 hour, while people above than 45 years of age reached the doctor later than youngers and their age of injury was more than 13 to 24 hours, in 100(100%) cases age of injury was less than 24 hours, of age less than 25 years, only 47(47%) reached the doctor after time since injury of 13 hours, 46(46%) cases of age 26 to 45 years reached the doctor before 24 hours after

injury, and this was the age of their injury, cases of above than 45 years of age had time of injury 13 to 24 hour.(Table -3)

**Table No.3: Age groups, frequencies of injuries, % and valid**

	Age groups	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Up to 25 years	47	47.0	47.0	47.0
	26-45 years	46	46.0	46.0	93.0
	Above 45 years	7	7.0	7.0	100.0
	Total	100	100.0	100.0	

## DISCUSSION

In our study the total sample of population was 100 cases, as compared with our national level studies our results were matching <sup>17-22</sup> male percentage was high than female in medico-legal cases, males were 69(69%) and female 31(31%). This was compared to a national study of Ithor done at King Edward Medical college in which male were 85.44% and female 14.56%.<sup>18</sup> the age group involved in this study was compared to our own previously published studies nationally and internationally<sup>19-22</sup> and Tajammal N, et al<sup>18</sup>. In this the age group up to 25 years was involved up to 47% and group of age 25 to 45 years was involved up to 46 %, means the middle aged were more than youngers and elders.<sup>19-22</sup> There is no study at national level about the time since injury or age of wounds, however in our study 3(3%) people had time since injury up to 0 to 59 Minuit's, 73(73%) had age of wound up to 1 to 6 hour, 17(17%) had up to 7 to 12 hours, and 7 (7%) had time since injury of 13 to 24 hours. From the study it was known that all the victim reach the hospital within 24 hours, and it is due to injured person act 2004 and its effect so the delay in hospitalization is reduced.

## CONCLUSION

Our study reflect the true situation of subjected society where the hospital is in the reach of population and this also reflect upon some influence of injured person act 2004, according to which the victim shall be taken to hospital for treatment as early as possible and the legal matter can be dealt with later on, among male victims 2(2%) and among female 1(1%) has age of wounds of 0 to 59mints mean less than one hour, 48(48%) male and 25(25%) female had age of wound of 1 to 6 hours, 1(1%) female and 6(6%) male were having time of injury of 13 to 24 hours.

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

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# “Choosing the Best Modality for Undergraduate Clinical Training” A Mixed Method Approach

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## ABSTRACT

**Objective:** To compare the effectiveness of clinical skills training of undergraduate students who have undergone three different modalities of training consisting of real patients, mannequins/simulations and combination of both by summative assessment.

**Study Design:** Descriptive and comparative study

**Place and Duration of Study:** This study was conducted at Foundation University Medical College Islamabad for eight months.

**Materials and Methods:** The study was conducted on undergraduate medical students during gastrointestinal tract (GIT) and Renal modules in year two. Clinical skills techniques of 100 students were examined during an objective structured clinical examination (OSCE). The examination was carried out using real patients, simulated/mannequins and combination of both techniques on Group A (batch 2011), Group B (batch 2012) and Group C (batch 2013) respectively. Total number of stations was ten and examiner rated students independently on clinical skill techniques.

**Results:** Descriptive and comparative statistics for student scores were compiled from the OSCE forms used at the stations. Measures of central tendency, mean and standard deviation were calculated for ten OSCE stations as well as an overall score. Inter-rater reliability between student scores ranged from 0.84-0.89 for the different modalities. There was a significant difference in the performance of group A (real Patients) and group B (Simulated patients) from group C (mixed technique) at all stations and p value 0.05 was considered significant.

**Conclusion:** Significant improvement was noted in the clinical skill techniques of undergraduate students who were trained through mixed method approach as compared to the individual methods.

**Key Words;** Clinical Skills Laboratories, Centers of simulation, mannequins, OSCE

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## INTRODUCTION

Medical education has traditionally relied on training with real patients in actual clinical settings where hands-on, experiential learning is indispensable, while medical educators are increasingly concerned about and committed to the safety of patients<sup>1</sup>.

With the increasing advancement in technology, the hospital stay of patient has been reduced leading to dearth of patient available for clinical training. Similarly patient may refuse to be examined by a trainee physician due to increased awareness of patients' rights. There is evidence that all these factors lead to non fulfillment of physicians' training needs thus resulting in poor performance of graduating doctors.<sup>2</sup>

The training needs of undergraduates and postgraduate students are now being fulfilled through the establishment of clinical skill facilities and the use of

simulation. Clinical skills facility provides specialist expertise for all those who deliver healthcare services to patient and communities.<sup>3</sup> The clinical skills centre can be defined in terms of facilities, specialist equipment & specialist tutors.<sup>4</sup>

Simulation is a powerful learning tool which is often used to support teaching in clinical centre. Simulation can be a person, a device or set of conditions that tries to present patient problems authentically, the learner is required to respond to the problem as he or she would under natural circumstances<sup>5</sup>. Many studies have shown that simulation is a valuable educational tool in undergraduate medical education. Simulation has been used as an evaluation tool to assess knowledge gaps in medical students and residents in the management of acutely ill patients<sup>6</sup>. Interactions with simulated patients /mannequins can meet the specific educational goals. Simulation is an educational technique that allows interactive activity by recreating all or part of a clinical experience without exposing patients to the related risks.<sup>7</sup> The simulation based clinical skills training boost the confidence of undergraduate students as compare to

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real patients who at times are not in such a condition to allow the students for examination.<sup>8</sup>

The integrated modular teaching program was implemented at Foundation University Medical College (FUMC) in year 2009. In the earlier years of implementation this new program, the undergraduate students of year 1&2 were visiting the hospital wards for the clinical skills training on real patients. In year 2012, after establishment of clinical skill lab at FUMC the clinical skills training of students was carried out on mannequins and simulated patients.

In this study a mixed method approach has been introduced for clinical skills training. The students are trained on simulation initially and then the same experience is repeated on real patients.

The objective of study was to evaluate the difference in the performance of three groups of second year students undergone three different methods of training, the group A trained on real patients, group B trained on simulation and Group C trained on both modalities.

It was expected that study will explore a more effective method of clinical skills training of medical students during the preclinical years at Foundation University Medical College.

## MATERIALS AND METHODS

The study was of eight months duration, conducted during two modules for year two undergraduate students. Each module was of five weeks duration. Students were trained on history taking, general physical examination, systemic examination and communication skills.

Total number of participants was 320, consisting of 100 students of year two from session 2011 trained on real patients, 118 students of year two from session 2012 trained on manikins and 102 students of year two from session 2013 trained on both manikins and real patients. Clinical skills techniques of students were examined during an objective structured clinical examination (OSCE). Total number of stations was ten and consisted of history taking, physical examination and communication skills stations. The Instrument used was Objective Structured clinical examination (OSCE) form. Each examiner rated the students independently using OSCE form on each station. Each station was of seven minutes duration. Approval from ethical review committee of Foundation University Medical College was acquired. All the students attending the sessions were included in the study except for the students who had less than 80% attendance. Results were analyzed using SPSS -16. Descriptive and comparative statistics were compiled from the data gathered from OSCE forms used at the stations. Measures of central tendency, mean and standard deviation were calculated for each OSCE station as well as for overall score.

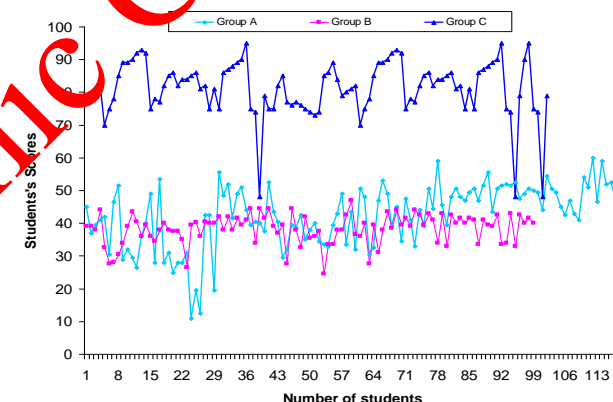
An independent sample t test was conducted to evaluate differences in student scores. The p-value less than 0.05 was considered statistically significant. Comparison

between Group Scores (A, B and C) were performed by ANOVA (analysis of variance).

## RESULTS

Descriptive and comparative statistics for student group scores were compiled from the OSCE forms used at the stations. Measures of central tendency mean and standard deviation were calculated for ten OSCE stations as well as an overall score. The Groups means  $\pm$  SD with range were:  $38 \pm 5$  (24-47),  $42 \pm 9$  (11-60) and  $81 \pm 8$  (70-95) Group A, Group B and Group C respectively. Inter-rater reliability between student scores ranged from 0.84-0.89 for the different modalities. An independent sample t test was conducted to evaluate differences in student scores. There was a significant difference between the group A (real Patients) and group C (mixed technique) with *p* value 0.001 as shown in table-1, and again significant difference was noted between group B (Simulated patients) with Group C (mixed technique) at stations (*p*=0.001) as shown in table -2. Analysis of variance also showed a difference in OSCE scores between the groups (*p*=0.001).

**Table 1: Graphical representation of students' scores in groups**



**Table No.2: Descriptive and Comparative Statistics among Groups A & C**

Groups (Scores)	N	Range	Mean $\pm$ S.D	<i>p</i> -value
Group A	100	24 - 47	$38 \pm 5$	<b>0.001*</b>
Group C	102	45 - 80	$68 \pm 1$	

**Table No.3: Descriptive and Comparative Statistics among Groups B & C**

Groups (Scores)	N	Range	Mean $\pm$ S.D	<i>p</i> -value
Group B	118	11-60	$42 \pm 9$	<b>0.001*</b>
Group C	102	45 - 80	$68 \pm 1$	

The analysis of variance also gave the significant result between groups (*p*=0.05). Inter-rater reliability between student scores ranged from 0.84-0.89.

## DISCUSSION

In this study three different modalities of clinical skills training are used for three groups of undergraduate medical students. The results show improved scores of students undergone a mixed method approach using both simulation and real patients for training when compared with other two groups. There was significant difference in the performance among three groups of students

The undergraduate students of group A were trained on traditional bedside teaching method. In the traditional method, the clinical skills training depends upon the availability of patients during the sessions, which results in varied experience among student though they belong to same cohort<sup>9</sup>. In addition, the increased awareness of patients' rights and changing expectations of society has gradually made traditional bedside teaching inadequate for physicians training needs. This type of opportunistic training could be one of the reasons of an average performance of group A students in this study.

The performance of students of group B trained on simulation in the clinical skills lab was found better compared to group A. The previous section has discussed many possible reasons for the difference in performance among the two groups including the increasing number of students, decreasing availability of patient for bedside teaching<sup>10</sup>. Similar factors have highlighted the importance of use of simulators which appeared in anesthesia as one of the first places in medicine<sup>11,12</sup>. Simulations have been used for many different purposes, from skills training to decision making, from individual to group training<sup>13</sup>. Simulation technology has begun to gain widespread acceptance in medical education because of the safety of the environment, the ability to demonstrate multiple patient problems, the reproducibility of content, and the ease of simulating critical event. The ability to provide immediate directed feedback is the primary advantage of simulation. This opportunity is typically lacking in the clinical setting. It also effectively addresses the diversity of both learners and situations with its adaptable, programmable structure. The main limitation of simulation is learner-dependent, as it requires full participation and engagement by the individual.<sup>14</sup>

Introduction of simulation does not mean the replacement of training in clinical wards but to augment it. It is important to transfer this training on simulation to real life experience. In one of the study poor correlation has been reported between skills lab and real patients performance of students.<sup>15</sup>

In the present study the third group of students (group C) was trained on both simulation and then on real patients and it showed better performance compared with first and second group. The results of the study are comparable to another study according to which the effectiveness of training program is in doubt when the

element of transfer of knowledge has not been incorporated in it.<sup>16</sup>

Students may have problems transferring the skills they learned in clinical skills lab. Clinical skill lab training is ultimately challenged by the degree of transfer of skills to patient care. One of the study shows a positive correlation between skills training and outcome but few have also shown that during clerkship students do not find it easy to apply skills on actual patients which they have learnt in clinical skills laboratory. Few of the reasons for which could be the change of context and unpredictable responses by patients. To avoid such deficiencies the early clinical exposure sessions can be positioned in the clinical setting to make the experience more realistic.<sup>17, 18, 19</sup>

According to Kolb's cycle the learning must start with concrete experience, that is learner being immersed in the experience not only by simulation but also with real patient interaction. This method can address not only the issue of fragmentation of training but will reduce the gap between the two experiences and delay of learning.<sup>20</sup> In the present study, students showed increased motivation to learning clinical skill with the addition of real life experience to the training sessions. There was improvement in the clinical skills of undergraduate students who were trained on both simulation as well as real patient compared to the individual methods of training.

## CONCLUSION

It can be concluded that significant improvement can be achieved in the clinical skill techniques of undergraduate students by the use of mixed method approach consisting of simulation and real patients compared to the individual methods of training. By combining both methodology at preclinical year we shall be able to take care the issues of patient safety, transfer of skills and contextualization of experience for student training. This study was limited by being a single-center study with limited number of participants.

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

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# Placenta Previa; Risks and Morbidity

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## ABSTRACT

**Objective:** To evaluate and determine the risk factors and outcome of placenta previa in patients undergoing cesarean section at Islam Teaching Hospital, Sialkot.

**Study Design:** Case control, Observational and comparative study

**Place and Duration of Study:** This study was carried out at the Department of Obstetrics and Gynaecology, Islam Teaching Hospital, Islam Medical College, Sialkot from September 2010 to December 2014.

**Materials and Methods:** Our study included all the patients who underwent cesarean section for singleton pregnancy after 28 weeks of gestation during the study period, data was collected and analyzed retrospectively for determining risk factors and patients were followed prospectively to see the morbidity and outcome of cesarean section in patients with placenta previa labeled as Group I and patients without placenta previa labeled as Group II. The patients who had normal vaginal delivery were not included in the study. Data was recorded using SPSS version 20 and frequencies were calculated. Statistical analysis and significance was done using OpenEpi calculators. P value was calculated using two by two table and relevant Fischer and mid-P exact tests. P value <0.05 was used to show significant difference.

**Results:** During the specified period 46 patients were those whose pregnancy was complicated by placenta previa while 734 patients who underwent cesarean section were not having antenatal or peroperative evidence of placenta previa. The maternal age >35 years was present in 27 patients in group I and 234 patients in group II so placenta previa is associated with age greater than 35 years (OR 3.036, 95% CI 1.655-5.572, P value 0.0001700).

The multivariate retrospective analysis showed that independent factors of prior LSCS (OR 2.33, 95% CI 1.272-4.271, P value 0.003940) previous history of D&C (OR 2.341, 95% CI 1.029-4.936, P value 0.02163) and malpresentation (OR 4.142, 95% CI 1.852-8.725, P value 0.000530) were associated with placenta previa.

Placenta previa was associated with adverse maternal outcome. In our study postpartum haemorrhage occurred in 20 patients of group I as compared to group II (43.47% vs 5.3%, P value <0.05). But massive blood transfusion (transfusion of more than 4 units of blood) was required in 8 patients in group I as compared to 22 patients in group II (17.4% vs 3.0%, P value <0.05). Cesarean hysterectomy was done in 4 patients in group I and no cesarean hysterectomy was required in group II (8.6% vs 0.00%, P value <0.005). In 3 patients, indication of hysterectomy was placenta accreta with previous history of cesarean section. In one patient there was fibroid uterus along with placenta previa; so fibroid uterus was a confounding factor in our study so that cesarean hysterectomy percentage is somewhat more in our study. In all 3 cases of placenta accreta, there was history of previous cesarean section so that there is 15% chance of placenta accreta in patients with previous history cesarean section along with placenta previa. The placenta previa was also associated with adverse fetal outcome as perinatal mortality (17.4% vs 2.9%, P value <0.05), low APGAR score at 5 min (19.6% vs 7.1%, P value <0.05) congenital anomalies (10.8% vs 4.1%, P value <0.05) was high in group I patients. Placenta previa was not associated with intrauterine growth restriction (4.3% vs 2.6%, P value 0.2379).

**Conclusions:** Advanced maternal age, previous cesarean section, previous history of D&C and malpresentation are associated with increased risk of placenta previa. Placenta previa is definitely associated with adverse maternal as well as neonatal outcomes. The obstetrician should be vigilant in antenatal as well as peripartum care of such patients in order to manage the associated complications and to decrease maternal and fetal morbidity and mortality.

**Key Words:** Placenta previa, placenta accreta, cesarean section, cesarean hysterectomy, lower segment cesarean section.

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## INTRODUCTION

Placenta praevia is an obstetrical problem with known adverse consequences including high perinatal

mortality rate as 12.6 to 21.3%, low APGAR score, congenital anomalies, prematurity and maternal morbidity. It is a common cause of antepartum haemorrhage which is 3-4%. Placenta praevia occurs in 0.8% of all pregnancies and is one cause for 22% cases of all antenatal haemorrhage<sup>1</sup>.

Placenta praevia means that the placenta is situated completely or in part in the lower uterine segment at or

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after 28 weeks of gestation. Before 28 weeks, placenta may be situated in or close to the developing lower segment and is labeled as low lying. Most of the low-lying placentae are unlikely to become the placenta praevia<sup>2</sup>.

Classification depending upon the level is important and decisive in the management and the mode of delivery in patients having placenta praevia<sup>3</sup>. Placenta praevia is diagnosed by trans-vaginal sonography according to classification as follows: Type-I: The edge of placenta just encroaches on lower uterine segment. Type-II: Placenta reaches the margin of the cervical os. Type-III: Partial placenta, covers the internal os partially. Type-IV: Total placenta completely covers the internal os.

The clinical course of placenta previa is highly suggestive, but the etiology of this condition still remains unclear<sup>4</sup>. The strongest relation was found with previous history of c-section, high parity, advanced maternal age history of previous spontaneous or induced miscarriage previous placenta previa, child sex at birth (more in baby boys). The chances of Placenta previa increase in scarred uterus after previous caesarean section and D & C (dilatation and curettage)<sup>5</sup>. Mal-presentations are associated with major degree placenta previa. Maternal mortality can be lessened by performing urgent caesarean section in patients having moderate to heavy vaginal bleeding, but increased perinatal mortality and morbidity are still important problems<sup>6,7</sup>. The introduction of Macafee's expectant management has reduced the perinatal mortality rate but for this purpose good antenatal care is required and reduction in emergency cases is must. The most important cause of perinatal mortality and morbidity is prematurity<sup>8,9,10</sup>.

Placenta previa is a morbid entity for the patient and at the same time; it tests the clinical acumen of obstetricians as well as dependability of obstetric unit. The magnitude of the problem of placenta previa has lead to different multivariate analytical studies worldwide. Same is the condition in our teaching hospital; so the goal of our study was to analyze risk factors in our patients, to see the morbidity associated with placenta previa and to compare the findings with those of international studies.

## MATERIALS AND METHODS

It was a hospital based study, all patients who underwent cesarean section for singleton pregnancy after 28 weeks of gestation during study period were included and data was collected and analyzed retrospectively for determining risk factors and patients were followed prospectively to see the morbidity and outcome of cesarean sections in patients with placenta previa labeled as Group I and patients without placenta previa labeled as Group II.

Patients with twin or multiple pregnancies were excluded. The patients who had normal vaginal delivery were not included in the study. Similarly the patients with at least 6 weeks follow up were included in the study and those having no follow up or lost to follow up were excluded from the data.

Data was recorded using SPSS version 20 and frequencies were calculated. Statistical analysis and significance was done using OpenEpi calculators. P value was calculated using two by two table and relevant Mid Extract P& Fischer tests. P value <0.05 was used to show significant difference.

## RESULTS

During the specified period 46 patients were those whose pregnancy was complicated by placenta previa while 734 patients who went LSCS were not having antenatal or peroperative evidence of placenta previa.

The maternal age >35 years was present in 27 patients in group I and 234 patients in group II so placenta previa is associated with age greater than 35 years (OR 3.036, 95% CI 1.655-5.572, P value 0.0001700)

The multivariate retrospective analysis showed that independent factors of prior LSCS (OR 2.33, 95% CI 1.272-4.271, P value 0.003940) previous history of D&C (OR 2.341, 95% CI 1.029 -4.936, P value 0.02163) and malpresentation (OR 4.142, 95% CI 1.152-8.725, P value 0.0005307) were associated with placenta previa..

Statistical data in general for the two groups is shown in Table 1.

**Table No.1 General Data**

	Group I CASES	Group II CONTROL
Total no (n)	46(100%)	734(100%)
Age>35years	27(58.69%)	234(31.88%)
History of previous LSCS	20(43.47%)	182(24.79%)
History of previous D&C	9(19.56%)	80(10.89%)

Details of group I frequencies are given in Table 2.

**Table No.2: Group I frequencies**

Group I – Cases n= 46		
Age	19-45 years mean 36.37 (SD 7.7)	
History of previous LSCS (n=20)	0	26 (56.5%)
	1	7 (15.2%)
	2	10 (21.7%)
	3	2 (4.3%)
	>3	1 (2.2%)
History of previous D&C	9 (19.6%)	
Malpresentations (other than cephalic)	10 (21.7%)	

Details of group I frequencies are given in Table 3

**Table No.3: Frequencies**

Group I1 – Control n= 734		
Age	18-41 years mean 29.24 (SD 7.246)	
History of previous LSCS(n=182)	0	552 (75.2%)
	1	62 (8.4%)
	2	85 (11.6%)
	3	25 (3.4%)
	>3	10 (1.4%)
History of previous D&C	69 (9.4%)	
Malpresentations (other than cephalic)	46 (6.3%)	

Table 4 shows maternal outcome.

**Table No.4: Maternal Outcome**

	Group I – Cases n= 46	Group II – Control n= 734
Caesarean Hysterectomy	4 (8.7%)	0
Postpartum Haemorrhage	20 (43.47%)	39 (5.3%)
Massive Blood Transfusion	8 (17.4%)	22 (3.0%)

Table V shows fetal outcome.

**Table No.5: Fetal Outcome**

	Group I Cases n= 46	Group II Control n= 734
Perinatal mortality	7 (15.2%)	21(2.9%)
APGAR score <7 at 5 mins	9 (19.6%)	52 (7.1%)
Congenital anomalies	5 (10.8%)	30 (4.1%)
Intra uterine growth restriction	2 (4.3%)	15 (2.6%)

Placenta previa was associated with adverse maternal outcome. In our study postpartum hemorrhage occur in 20 patients of group I as compared to group II (43.47% vs 5.3%, P value <0.05). But massive blood transfusion (transfusion of more than 4 units of blood) was required in 8 patients in group I as compared to 22 patients in group II (17.4% vs 3.0%, P value <0.05). Caesarean Hysterectomy was done in 4 patients in group I and no caesarean hysterectomy was required in group II (8.6% vs 0.00%, P value <0.005). In all 3 cases of placenta accrete, there was history of previous cesarean section along with placenta previa so that there is 15% chance of placenta accreta in patients with previous history cesarean section along with placenta previa. The placenta previa was also associated with adverse fetal outcome as perinatal mortality (15.2% vs 2.9%, P value <0.05), low APGAR score at 5 min (19.6% vs 7.1%, P value <0.05) congenital anomalies (10.8% vs 4.1%, P value <0.05 ) was high in group I patients. Placenta

previa was not associated with intrauterine growth restriction (4.3% vs 2.6%, P value 0.2379).

## DISCUSSION

In obstetric practice, placenta previa is associated with high maternal and fetal morbidity. So it is one cause of stress for both mother and the treating physician

In our study the placenta previa is associated with maternal age >35years. This is comparable as in the study of Jun Zhang and David A<sup>11</sup> and the study of Tai-Ho Hung<sup>12</sup>.

Previous reports by Tuzovic L<sup>13</sup>, Jhonson LG<sup>14</sup> and Tai-Ho Hung<sup>12</sup> have identified more frequent history of evacuation of uterus of retained product of conception in women with placenta previa. This was 19.6% in our study.

In our study other identified risk factors for placenta previa are previous history of cesarean section and malpresentation.

As compared to the control the odds of having a placenta previa are 2.65 times in prior cesarean section. This is comparable to the study of Ayesha Shaukat<sup>15</sup> and the study of E.Sheiner<sup>16</sup> in which OR is 1.8

In our study there is 15% chance of placenta accreta in patients of placenta previa with uterine scar, in other studies it is up to 25%. So if placenta previa is associated with history of previous uterine scar, then we should be more vigilant because in these cases there are more chances of placenta accreta, so these patients should be prepared thoroughly and counseled properly about the risk of hysterectomy and other associated morbidity. Senior obstetrician, surgeon, hematologist, pediatrician and anesthetist should be informed before scheduling these elective cases so that better outcome can be achieved by multidisciplinary effort.

In E.Sheiner<sup>16</sup> study placenta previa is associated with malpresentation (OR 7.6% 95% CI5,7-10.1). This is also confirmed by our study (OR 4.142 95% CI 1.852-8.725)

Our study showed that placenta previa is associated with adverse pregnancy outcome. This is also confirmed by studies of Tom Rosenberg<sup>17</sup>, E Sheiner<sup>16</sup>, Anneke Kwee<sup>18</sup>. In our study postpartum hemorrhage, massive blood transfusion and cesarean hysterectomy is more in patients with placenta previa. In 3 patients, indication of hysterectomy was placenta previa & accreta with previous history of cesarean section. The study by Dan O<sup>19</sup>, also showed that cesarean deliveries especially repeat cesareans in women with placenta previa significantly increase the risk of emergency peripartum hysterectomy. In one patient, there was fibroid uterus along with placenta previa; so fibroid uterus was a confounding factor in our study so that cesarean hysterectomy percentage (8.6%) is somewhat more in our study. In one patient of placenta accreta urinary bladder was also involved (percreta) and surgeon was called for its repair. The hospital stay was prolonged in this patient and massive blood transfusion was required. This is also proved by other studies that such patients are at more risk of morbidity<sup>20</sup>.

Our study shows that placenta previa is associated with adverse fetal outcome. In our study Perinatal mortality (15.2%), low APGAR score <5 at 5min (19.6%) and congenital anomalies (10.8%) was high in placenta previa group. In the study of Razia Mehboob<sup>21</sup>, PNR was 12.6% and low APGAR score <5 at 5min was 21.3%. This PNMR of 15.2% is also comparable to 17.7% reported from Loto O<sup>22</sup>. The perinatal mortality can be decreased by more conservative management in preterm cases of placenta previa and by improving the neonatal care.

## CONCLUSION

Advanced maternal age, previous caesarean section, previous history of D&C and malpresentation are associated with increased risk of placenta previa. Placenta previa is definitely linked with adverse maternal as well as neonatal outcomes. The obstetrician should be vigilant in antenatal as well as peripartum care of such patients in order to manage the associated complications and to decrease maternal and fetal morbidity and mortality.

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

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# Postoperative Nausea and Vomiting (PONV): An Experience With and Without Metoclopramide With Opioid Use for Control of Pain

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## ABSTRACT

**Objective:** To evaluate postoperative nausea & vomiting (PONV) with and without metoclopramide with opioid use for control of pain.

**Study Design:** Interventional comparative study

**Place and Duration of Study:** This study was carried out at KAH, Bisha, Saudi Arabia for period of 3 months 18th July 2014 to 17th October 2014.

**Patients and Methods:** Fifty patients were included and divided into Group A & B. Group A was given inj. Fentanyl 1.5mg/kg intra-operatively and Inj. Pethidine 1.5mg/kg post-operatively to control pain. Group B was given inj. Metoclopramide 0.15 mg/kg intra-operatively and same dose postoperatively in addition to Inj. Fentanyl and Pethidine.

**Results:** In Group A, 10 (40%) female patients and 02 (8%) male patients developed PONV while in Group B only one (4%) female patient developed PONV.

**Conclusion:** PONV is reduced when anti-emetics are used along with opioids for pain control. Inj. Metoclopramide, an anti-dopaminergic prokinetic, was found to give better results as its antiemetic action is considered.

**Key Words:** Post-operative nausea, Vomiting, Metoclopramide

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## INTRODUCTION

The term opioid refers broadly to all compounds related to opium. The word opium is derived from opos the Greek word for juice. The drug is derived from juice of opium poppy papper somniferum. Opioids can be classified, as naturally occurring, semi-synthetic, and synthetic. Natural occurring opioids are morphine, codeine. Semi-synthetic are heroin, buprenorphine and synthetic opioids are methadone, pentazocine meperidine, fentanyl, sufentanil, remifentanil etc. In addition to the remarkable analgesic effects of opioids, toxic side effects, and additive potential of these drugs have also been known. Many of the synthetic opioids share the side effects of natural opioids, pain control by opioids needs to be considered in the context of brain circuits modulating analgesia and functions of various types of receptors in these circuits.<sup>1</sup> Postoperative nausea/vomiting is a serious problem that often embarrasses patient and anesthesiologists.<sup>3</sup> The cause, treatment and prevention of postoperative nausea and vomiting has been investigated extensively,

intraoperative use of opioids and postoperative nausea and vomiting. Opioids decrease gastrointestinal motility.<sup>4</sup> Gastric emptying is delayed by opioids via supraspinal (vagus nerve mediated) and spinal as well as peripheral mechanisms.<sup>5</sup> Although transdermal therapeutic system (TTS) fentanyl not recommended for postoperative pain control. TTS fentanyl offers an alternative to oral morphine, TTS fentanyl for chronic pain of nonmalignant origin remains to be confirmed. Nevertheless TTS fentanyl produces the same adverse effects as other opioids mainly sedation, nausea, vomiting and constipation.<sup>6</sup> Opioids decrease gastrointestinal motility. Patients receiving parenteral opioid therapy are more likely to have full stomach regardless of their NPO status gastric emptying is delayed by opioids that leads to vomiting.<sup>7</sup>

Nausea and vomiting in postoperative period occurs in 20-30% of patients. Apfel's simplified risk score includes female gender, nonsmoker-status, history of nausea, vomiting, motion sickness, and use of postoperative intravenous opioids when 0, 1, 2, 3 or 4 of these factors are present the risk of PONV is about 10%, 20%, 30%, 40% 60-80% respectively. Although effective antiemetics to reduce PONV are cyclizine, metoclopramide, dimenhydrinate, droperidol, dexamethasone, ondansetron and dolasetron.

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Dopamine antagonist, metoclopramide, has been used for decades to prevent PONV. It's antiemetic properties are mediated through its anti-dopaminergic action. It also has prokinetic properties.<sup>8</sup> It acts peripherally as a cholinomimetic (i.e. facilitates acetylcholine transmission at selective muscarinic receptors). Its action as prokinetic is not dependent on vagal innervation, but is abolished by anticholinergic agents. Metoclopramide does not stimulate secretions.<sup>9,10</sup>

## PATIENTS AND METHODS

This is an interventional comparative study which was carried out at King Abdullah Hospital (KAH), Bisha Saudi Arabia, over a period of 3 months from 18th July 2014 to 17th October 2014. Permission was taken from the ethical committee of KAH. Fifty patients of surgical and allied groups were included in this study and they were randomly selected and divided into two groups, each with n=25. Group A given opioids injection fentanyl 1.5 mg/kg intraoperatively and inj. Pethidine 1.5 mg/kg postoperative in recovery area for control of pain. Group A patients were not given Inj. Metoclopramide for control of vomiting related to opioids therapy. Group B patients were given inj. Metoclopramide 0.15 mg/kg intraoperatively before giving opioids and same dose given postoperatively in recovery area before opioid therapy for pain. Patients in group B receive same dose of Inj. Fentanyl and inj. Pethidine HCl, calculated by mg/kg. Patients were divided into two groups. Both groups included age groups between 5-50 years of ASA I and II, weight of patients varied from 15.5 to 80 kgs. Patients age <5 years and >50 years, weight < 15.5 kg and >80 kgs, cataract eye surgery under local anesthesia, dental surgery under local anesthesia, intraoperative analgesics other than opioids, postoperative analgesics other than opioids, patients with ASA III and ASA IV were excluded. Type of surgery included general surgery, obstetrical and gynaecological surgery, dental surgery, orthopaedic surgery, eye surgery and urology.

## RESULTS

Overall incidence of PONV was 30% in group A. Out of 25 patients, females were 16. Thus 64% of patients in group A were females. 10 patients out of 16 females in group A had PONV. Thus 62.5% of female patients in group A had PONV. Thus 40% of group A patients had PONV. 9 patients in group A were male (36%), only 2 patients out of 9 male patients had PONV. Thus 22.2% males in group A had PONV. In group B, all patients were given Inj. Metoclopramide intra and postoperatively. Out of 25 patients in group B, only 01 patient had PONV (4%). Interestingly that 1 patient was male without any history of risk factors for vomiting. In group B, 14 patients were females (56%) and 11 were males (44%). One out of 14 female patients had PONV (4%). Thus incidence of PONV was 7.5 times more in

group A than group B. Female patients are mostly prone to develop PONV as compared to males.

**Table No.1: Frequency and percentage of genders**

Gender	Group A		Group B	
	No.	%	No.	%
Male	9	36.0	11	44.0
Female	16	64.0	14	56.0

**Table No.2: Frequency and percentage of PONV according to genders**

Gender	Group A		Group B	
	No.	%	No.	%
Male	2	8.0	-	-
Female	10	40.0	1	4.0

## DISCUSSION

PONV is a recognized clinical problem in patients undergoing operations under general anesthesia. Opioids are commonly being used for pain control intra and postoperatively. Out of all antiemetic, Inj. Metoclopramide was found very effective without any gross complications. PONV is unpleasant and distressing sensation and many patients consider it to be as debilitating as the pain associated with surgery. PONV may cause electrolyte disturbances and may affect the surgical outcome, with unexpected hospital admission and consequent higher health care costs. PONV is multifactorial, the important factors being age, sex, smoking status, history of PONV or motion sickness, type and duration of surgery, inhalation anesthetics and use of nitrous oxide, postoperative pain, opioid requirements, and inadequate IV fluid therapy.<sup>11</sup> In our study, 10 (40%) Female patients and 2 (8%) male patients developed PONV without Inj. Metoclopramide intra-operatively and post-operatively while only One (4%) female patients develop PONV with Inj. Metoclopramide. Female patients are mostly prone to develop PONV as compared to males in our study.

In a study by Wallenborn et al<sup>12</sup>, dexamethasone 8 mg IV, given before induction of anesthesia, was used instead as an active-control group. The dose of 25 mg IV of metoclopramide was used in dexamethasone-metoclopramide combination therapy group according to this study, who concluded in their large multicentric study that 25 mg or 50 mg metoclopramide added to the basic intervention of 8 mg dexamethasone is effective and safe way to prevent PONV. This study also showed that Metoclopramide in a dose of 50 mg IV has been shown to significantly reduce late PONV, but the side-effects profile is unsatisfactory.

In another study by Aftab et al (2008)<sup>13</sup>, 30% patients i.e. 60 out of 200 experienced PONV with female dominance i.e. 20% as compared to males i.e. 10% which is similar to our study. Jamil et al (2005)<sup>14</sup> experienced PONV with 20-30% incidence which also favors our study.

## CONCLUSION

PONV is reduced when anti-emetic are used along with opioids for pain control. Inj. Metoclopramide, an anti-dopaminergic prokinetic, was found to give better results as its antiemetic action is considered.

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

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## Corrigendum

The conclusion of article titled 'When Drotaverine (No-spa) Injected in to the Perivascular Tissues of Internal Mammary Artery (IMA) Relieves the Perioperative Vascular Spasm and Increases the Blood Flow in IMA When Used as a Pedicle Graft in CABG' of 1. Muhammad Musharaf 2. Sanaullah Junejo 3. Iqbal Hussain Pathan 4. Muhammad Jawad, published in Med Forum Vol. 26, No.8 August, 2015 at pages 62-65 may be read as follows:

"The application of Drotaverine injection into the perivascular tissues of Internal mammary artery relieves the perioperative spasm with preserved safety and better results than topical application as it increases the blood flow in IMA when used as a pedicle graft in coronary artery bypass surgery."

Editor in Chief

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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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