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## Balance Diet Beyond the Reach of Most People

Mohsin Masud Jan

Editor

Most physicians today would suggest a diet made up mostly of vegetables with meat and dairy products used to supplement the plant based foods. Of the meats, there exists some confusion but here again most doctors will suggest consuming an 'oily' fish at least twice a week and for the rest white meats and well-trimmed red meat as well as eggs are quite acceptable.

The idea is that meat and eggs should be mostly as side dishes rather than the primary meal. For carbohydrates, the most important idea is to avoid refined starches like white rice and white flour, and sugars. Whole wheat and other whole grains as well as lentils and beans are recommended.

It became controversial because many doctors felt that dietary fat of animal origin was responsible for increasing the amount of fat (cholesterol) in the blood and this lead to increase in heart artery blockages leading to heart attacks. So doctors recommended that consumption of fatty foods and animal fats like butter should be decreased.

Many people cut down the amount of fat they ate but to assuage hunger they ate a lot more carbohydrates especially bread. As a result more people became overweight. Becoming overweight led to another series of medical problems including high blood pressure and high blood sugar (diabetes). And these two problems led to an increase in heart attacks. So new 'studies' decided that fat in the diet wasn't all bad and did not really lead to high cholesterol.

The short answer to the question about fat is that a marbled steak, bread heaped with butter and other such stuff are fine as long as you don't eat it three times a day. And fats of vegetable origin are better than fats of animal origin. In other words, olive oil or canola oil is better than clarified butter (ghee) for regular use.

Once again, vegetables or rather plants of different types should form the basis of most diets. First and foremost plants produce the volume or roughage that fills us up and keeps our intestines working and pushing stuff through. Besides that plants are a source of many different nutrients including all 'water soluble' vitamins. The reason why I use the word plants is to include vegetables as well as fruits.

Most vegetables are eaten after being cooked and most fruits are eaten raw. The more colourful a fruit or vegetable is, the more nutrients it packs. And of course eating raw things like cucumbers, radishes and carrots as well as many fruits provides different vitamins and micronutrients. However, one important warning, all uncooked vegetables and fruits should be washed well with clean water before being consumed.

For protein chicken is about as good as it gets. So chicken is fine as a basic source of protein along with lentils, legumes and things like chickpeas. And occasional goat or lamb meat is also fine if it can be afforded. About chicken one important point. It must be cooked very well and entirely through and through to kill any bad bacteria that might be contaminating the meat.

For carbohydrates, whole grains like whole wheat are the best. But starchy vegetables like potatoes and yams (shakarkandi) are also recommended. The one thing that should be avoided or consumed as little as possible is sugar and drinks made with corn syrup. Sweets like *laddoos* and *gulab jamans* and cakes should also be consumed as rarely as possible. Fortunately, a majority of Pakistanis will find these goodies a bit too expensive for them to eat too often.

The importance of micronutrients or minerals that the body needs besides the vitamins. Here again a varied diet based on different vegetables, fruits, dairy products, eggs and meat will adequately make up for most micronutrients and vitamins. For pregnant women, folic acid and iron are important and might need to be provided as supplements though spinach is a good source for them.

Milk like fat keeps going in and out of favour among the medical community. Milk is an excellent balanced source of nutrition. And there is nothing wrong with consuming whole milk. Of course milk should not become the only source of fluids and it should be pasteurised or boiled before being consumed so that any bad bacteria in it might be killed. Pasteurisation of milk (heating it up to just below boiling point) was an important step to cut down the transmission of 'bovine tuberculosis' from cows to humans.

And that brings me to water. Clean water is one of the basic foods. As is well known, if we don't have water to drink, we tend to die. But sadly drinking contaminated water can also make us die. An average adult requires roughly one and a half litres of water in a day. This requirement goes up dramatically in hot weather and after strenuous physical activity or work.

About some particular nutrients. Vitamin D is vital for proper bone growth and strength. The body will synthesise this vitamin when exposed to sunlight. Sadly too many in our population are deprived of sunshine due to social and religious reasons. So added Vitamin D in foods like milk is a good idea. The other nutrient that is important for is Iodine. As a medical student 'goiter' or enlarged thyroid gland due to Iodine deficiency was a common sight. With Iodine added to salt this problem has almost disappeared.

# Shorter Fasting Time Before & After Operations: Need to Change the Traditional Fasting Protocols of Surgical Patients?

Muhammad Farooq<sup>1</sup>, Tufail Hussain Tahir<sup>2</sup>, Sajid Razzaq<sup>3</sup>, Muhammad Arif Mahmood<sup>3</sup>, Sadia Hanif<sup>4</sup> and Maryam Batool<sup>4</sup>

Fasting Time for  
Surgical  
Operations

## ABSTRACT

**Objective:** To provide evidence that shorter fasting time, until 2 hours before and after elective operations under general anesthesia (GA) or subarachnoid block (SAB) is more beneficial and equally safe than traditional 6-8 hours nil per oral (NPO) fasting.

**Study Design:** Course Comparative / descriptive study

**Place and Duration of Study:** This study was conducted at Sheikh Khalifa Bin Zayad Alnayan Hospital (CMH) Rawalakot Azad Kashmir from January to Oct 2019.

**Materials and Methods:** Recovery indicators and complications were assessed in 100 selected patients of four different specialties for elective operations under GA and SAB in a tertiary care SKBZAN Hospital (CMH) Rawalakot through a performa. These patients were divided manually into two equal unmatched groups by odd and even numbers. Group-A included 50 patients who were advised routine protocol of preoperative fasting after midnight and postoperative fasting for 6-8 hours. Group-B included 50 patients who were advised shorter fasting time; 6 hours for solid diet and until 2 hours for liquid diet before and after operation.

**Results:** In Group-B patients almost all recovery indicators were better with lesser complications and shorter hospital stay as compared to patients of Group-A. There was saving of 1-2 IV fluid drips of 1000ml each, per patient which reduced the cost of treatment, nursing services load and financial burden over Hospital.

**Conclusion:** Lesser fasting time allowing liquid diet until 2 hours before and after operation under GA/SAB was more beneficial than traditional NPO after midnight before & for 6-8 hours after operation. It was safe, cost effective & significantly reduced recovery time and hospital stay. Hospitals, anesthetists and surgeons are recommended to adopt this new protocol.

**Key Words:** Fasting time, surgical operations, general anesthesia, subarachnoid block, liquid diet, solid diet.

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## INTRODUCTION

The Traditional 6-8 hours fasting before and after any operation under General anesthesia (GA) or subarachnoid block (SAB) is advised to ensure gastric emptying, prevention of vomiting and pulmonary aspiration.<sup>1,2</sup> During anesthesia, pulmonary aspiration of gastric contents is rare but has an incidence of 1 in 7000-8000 in ASA-I,II and 1 in 400 in ASA-III,IV. The risk of aspiration is still considered a significant cause of anesthesia related deaths.<sup>3,4</sup>

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Pulmonary aspiration can lead to serious complications such as aspiration pneumonia, respiratory disabilities and related morbidity.<sup>5</sup> Prolonged fasting can actually increase the risk of pulmonary aspiration.<sup>6</sup> Unfortunately NPO order is blindly applied to both solid and liquid diets and has become a routine in our practice of anesthesia.<sup>7</sup> The time required for solid food to liquefy is shorter for carbohydrates and proteins as compared to fats and cellulose.<sup>8</sup> Complete emptying of solid food from the stomach takes 3 to 6 hours, but may be prolonged by fear, anxiety, pain or opioids.<sup>9</sup> However, the gastric emptying of liquid diet is faster and after intake of a carbohydrate drink is complete within 2 hours of ingestion.<sup>10</sup>

The Policy of NPO after midnight before and 6-8 hours after surgery begun in 1960.<sup>11</sup> An other factor which increases fasting time is delay in operations & transfer time to the place of operation. This prolonged NPO protocol needs modifications because of many complications particularly hypoglycemia, dehydration and metabolic stress which can slow down recovery of the patients and increase in operative complications. There is transient increase in glucagon and decrease in

insulin levels leading to insulin resistance & decreased glucose uptake by cells simulating type-2 Diabetes mellitus.<sup>12</sup> Depletion of glycogen levels intensifies the postoperative metabolic stress.<sup>13</sup> Main oral bad effects of prolonged NPO are dryness of mouth, tongue and throat leading to difficulty in speaking.<sup>14</sup> Prolonged NPO can lead to poor nutrition and psychological stress which may result in malnourishment, delayed wound healing and increased risk of wound dehiscence.<sup>15</sup> Lying on bed for a longertime after surgery with IV drips due to 6 hours or more NPO, increases risk of complications such as thrombo-embolic disorders like deep venous thrombosis, transient ischemic attacks, pulmonary embolism etc., postoperative ileus, infections, respiratory infections, cardiac complications and muscle wasting. It is therefore necessary to get out of bed as soon as possible after surgery to carry out normal activities. As prolonged NPO is not based on strong evidence, there is no solid reason why every patient should be kept "NPO" for 6 hours or more before & after surgery.<sup>16</sup>

Fasting guidelines have been relaxed in recent years for elective fit patients but traditional after midnight NPO order is still practiced for emergency and high risk patients. Prolonged fasting can lead to feeling of thirst, hunger, anxiety, headache, nausea, dizziness and dehydration leading to difficulty in drawing blood for necessary tests. American Society of Anesthesiologists recommends clear liquids such as water, ORS, Pedialyte, candies, broth, tea, black coffee, carbonated beverages & fruit juices without pulp until 2 hours before and after surgery. Light meals like toast and tea with milk until 6 hours and heavy meal such as fried fatty foods, and meat should be taken until 8 hours before & after surgery. Less fasting creates a higher postoperative anabolic state.<sup>17</sup> Taking fluid diet until 2 hours before surgery significantly reduces risk of postoperative nausea & vomiting.<sup>18</sup> Prolonged withholding of oral fluids don't improve gastric pH or volume, and permitting a patient to drink fluids preoperatively may even result in significantly lower gastric fluid volumes.<sup>19</sup> Modern GA & SAB technique has improved its safety with negligible risk of pulmonary aspiration.<sup>20</sup> In children clear fluids can be given safely until 1 hour before and after any elective operation under GA or SAB.<sup>21</sup>

## MATERIALS AND METHODS

Research study was carried out from January to October 2019, in Sheikh Khalifa Bin Zayad Alnayan Hospital (CMH) Rawalakot which is a tertiary care teaching hospital affiliated with Poonch Medical College Rawalakot Azad Kashmir. The departments which participated in this study were Otorhinolaryngology, Urology, General Surgery and Obstetrics & Gynecology. Approval from hospital medical ethical committee was taken. All Patients of either sex & any

age, requiring elective operations under GA or SAB, were included. Those patients who were excluded from study have gastro-esophageal reflux disorder (GERD), stomach paresis due to diabetes mellitus, or need rigid, laparotomy or extensive gut surgery. These high risk patients needed traditional 6-8 hours or more fasting before and after surgery. All 100 selected patients for elective operations under GA or SAB, were randomly divided manually by odd & even numbers into two equal unmatched groups; A & B. Group-A patients were placed on traditional fasting routine i.e. NPO after midnight and 6-8 hours after operations. Group-B patients were preoperatively counseled to have 6-8 hours NPO for solid diet and until 2 hours NPO for clear liquid diet before and after operation. Clear liquid diet advised was water, ORS, candies, sugar water, juices without pulp, broth, tea/coffee (without milk) and honey water. Milk, milk shake and pulpy juices were allowed until 4 hours before and after operations. Data regarding recovery indicators, complications, need of intravenous (IV) drips and hospital stay related to both protocols were noted by the treating doctor on a well-designed performa for each patient. Collected data was evaluated and analyzed by using SPSS-21. P-Value of less than 0.05 was considered significant. The P-values were computed through statistical package Minitab using hypothesis test for two independent proportions for each category.

## RESULTS

Mean age of patients was 27.4 years and range was 4 to 80 years. Male patients were 56 and female 44. In Group-B patients almost all recovery indicators were better as compared to patients of Group-A (table.1).

**Table No. 1: Recovery indicators and complications.**

Sr. No	Features	Group-A (No. of patients)	Group-B (No. of patients)	P-Value
1	Aspiration during anesthesia	Nil	Nil	
2	Feeling of thirst	48	5	<0.001
3	Feeling of hunger	44	7	<0.001
4	Anxiety/Stress	43	8	<0.001
5	Early mobilization of patient	6	48	<0.001
6	Nausea	15	4	0.048
7	Postoperative Vomiting	8	2	0.137
8	Pain abdomen	5	1	0.189
9	Need of IV drips/Fluids	50	24	0.047
10	Early recovery from operation	24	47	<0.001
11	Feeling of being comfortable	33	45	0.005
12	Wound infection	5	2	0.435

The categories of feeling of thirst, feeling of hunger, anxiety/stress, early mobilization of patient, nausea, need of IV drips, early recovery from operation (within expected duration) and feeling of being comfortable shows the significant differences favoring group-B as compared to group-A patients at 5% level of significance. The categories of postoperative vomiting, pain abdomen and wound infection shows the insignificant differences while comparing to 5% level of significance.

Total length of hospital stay in days is reduced by 1-1.5 days in Group-B patients as compared to Group-A patients (Table-2). This increased the patient's turnover and cost of medical care per patient. There was a saving of 1-2 IV drips of 1000ml each, per patient in Group-A as compared to Group-B patients; which reduced the cost of treatment, nursing services load and financial burden over Hospital (Table-3).

**Table No.2: Average Hospital stay**

Name of Department	Average Hospital stay in days in Group-A patients	Average Hospital stay in days in Group-B patients
General surgery	4.5	3
Gynecology & Obstetrics	4	3
Otorhinolaryngology	3.5	2.5
Urology	4	3

**Table No.3: Average Need of postoperative IV drips(1000ml) per patient**

S. No	Name of Department	No. of IV drips used per patient in Group-A	No. of IV drips used per patient in Group-B
1	Otorhinolaryngology	2	Zero
2	General surgery	4	2
3	Gynecology & Obstetrics	3	2
4	Urology	2	1

## DISCUSSION

Results of this study indicate that patients of both sexes and all ages were included. The male to female ratio was 1.3:1 and age range was 5 to 80 with mean age of 34 years. There was no case of pulmonary aspiration in both groups although there was a theoretical risk in group-B patients. This result is similar to other research studies.<sup>3,4,21</sup> Brady et al (2010), after review of randomized controlled trials concluded that those patients who took clear fluid diet until few hours before surgery were at no greater risk of pulmonary aspiration than those who were advised traditional NPO after mid night. Moreover those patients who fasted for the shorter time also had low gastric volume.<sup>22</sup> Notable benefits of lesser fasting in Group-B patients were less feeling of thirst, hunger, nausea and anxiety/stress; feeling of being comfortable and early mobilization of

patient as well as early recovery from operation as compared to group-A patients (Table-1). These results are statistically significant having p-values of less than 0.05. Other benefits noted in Group-B as compared to Group-A patients were shorter hospital stay and less need of IV drips (Table-2,3). These results are similar to other studies across the globe. Brazilian prospective study of 308 patients showed rapid patient's recovery when similar protocol of less fasting was implemented.<sup>23</sup> Even when the gastrointestinal tract is not working, something may be absorbed. The psychological benefit may also be considered, because less fasting and early feeding can enhance the welfare of the patient and may help in the recovery process after surgery. Moreover cost of treatment is reduced as some drips are saved and hospital stay is reduced because patients with early oral intake tend to go home early.<sup>24</sup> Therefore implementation of this protocol can save Billions of rupees. Studies have shown that it is safe to conduct general anesthesia in patients who have ingested 150 ml of water 2 h prior to surgery. Prolonged withholding of oral fluid does not decrease gastric fluid volume and PH. The customary 6-8 hours fasting should be only followed for patients at high risk of aspiration like in diabetes mellitus, GERD etc. as more research is necessary to determine the safety in these patients. The risk of unexpected regurgitation cannot be avoided even by overnight fasting, and anesthesiologists must always be prepared to deal with such complications.<sup>25</sup>

Majority of anesthesiologists advocate 6-4-2 rule of fasting for solids, milk/pulpy juice and clear fluid diet respectively for adults and 6-4-1 rule of fasting for solids, milk and clear fluid diet respectively for small children. In the practice of anesthesia, the presence & quantity of solid food and particulate matter in the stomach is more relevant for the risk of aspiration and not fluids. Reduction of preoperative fasting time also has many physiological benefits such as less lowering of blood pressure on induction and less risk of catabolic state particularly in small children.<sup>26</sup>

## CONCLUSION

Lesser fasting time allowing liquid diet until 2 hours before and after operation under GA/SAB brought numerous benefits to the patients. It was cost effective, reduced stress of operation and promoted early recovery after elective surgery with reduced complications in elective patients. Related Authorities, Hospitals, surgeons and anesthetists are recommended to adopt this new protocol to promote rapid recovery of surgical patients & to reduce overall cost of Health care.

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# Association of Lifestyle Determinants with Coronary Artery Disease

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## ABSTRACT

**Objective:** The present study examined the association of dietary patterns, smoking and physical activity with Coronary artery disease.

**Study Design:** A case-control study

**Place and Duration of Study:** This study was conducted at the Ayub Teaching Hospital, Abbottabad from January 2017 to January 2018.

**Materials and Methods:** The total sample size was 360, of whom 120 were cases and 240 were controls matched for gender and age  $\pm 5$  years. Non-probability convenient sampling technique was followed in sample selection. The data on dietary patterns, smoking and physical activity was collected with the help of a structured questionnaire and analyzed using Statistical Package for the Social Sciences software.

**Results:** For the sample of 360, the mean age was  $58.79 \pm 13.356$  and included 198 males and 162 females. The results showed that decreased number of cigarettes (OR: 0.889; 95% CI: 0.125-6.310), higher fruit consumption frequency (OR: 1.495, 95% CI 0.696-3.214) and physical activity (OR: 1.495, 95% CI 0.696-3.214) play a protective role in patients of CHD, while vegetable intake (OR: 1.181, 95% CI 0.529-2.637) and duration of exercise (OR: 0.933; 95% CI: 0.111-7.820) had insignificant role.

**Conclusion:** There is association of smoking, physical activity and fruit consumption with CAD, however vegetable intake is not associated with CAD.

**Key Words:** Coronary Artery Disease, Smoking, Diet, Physical Activity.

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## INTRODUCTION

Coronary Artery Disease (CAD) is a type of cardiovascular disease (CVD). It is a major cause of disability and death in most developed countries. Although with improved health systems the mortality rate has declined over the past few decades, however it still accounts for one-third of all deaths of people above the age of 35 years.<sup>1</sup>

Coronary artery disease is a result of incomplete or complete occlusion of coronary arteries, the arteries responsible for the oxygenation of the heart itself and meeting its metabolic demands.<sup>2</sup>

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Atherosclerosis is a process that results in the occlusion of coronary arteries. The atherosclerotic damage to the heart can be a direct result of plaque formation in coronary arteries causing gradual narrowing or it can be the sudden obstruction of coronary arteries with a blood clot dispatched from elsewhere.<sup>3</sup> As a result of decreased blood supply to the heart muscle CAD develops and manifests itself in various forms including angina, myocardial infarction, abnormal heart rhythms (arrhythmias) and sudden heart block.<sup>4</sup>

More than 17 million people die of cardiovascular diseases each year and it is expected to further increase up to 23.6 million deaths worldwide by the year 2030. Most of the deaths caused by CVDs can be attributed to CAD. CAD accounted for 7 million deaths worldwide in 2010 alone. The mortality rates of CAD vary worldwide ranging from 35 deaths per year per 100,000 population in South Korea to more than 733 deaths per year per 100,000 population in Ukraine.<sup>5</sup> In the United States alone, CAD caused approximately 1 of every 7 deaths in 2013.<sup>6</sup> According to the data published by the World Health Organization (WHO) in 2014, deaths by coronary artery disease in Pakistan reached 111,367 accounting for 9.87% of total deaths.<sup>7</sup>

The prevalence and incidence rates of CAD vary greatly according to geographical region, sex, and ethnic background. As a result of increased awareness, improved therapy and reduction of risks, the morbidity and mortality rates for CAD have decreased in most

developed countries.<sup>5</sup> Fifteen and a half million people of age above 20 years have been reported to have CAD in the USA.<sup>1</sup> The prevalence rate is 2.3 million people affected from some form of CAD in the UK.<sup>8</sup> England has witnessed a decline of 73% in death rates of CHD between 1974-2013.<sup>9</sup> The story is however different for developing countries as both CAD mortality and the prevalence of CAD risk factors continue to rise rapidly.<sup>10</sup> Pakistan, being a developing country has one of the highest risks of CAD in the world. In a study carried out in Karachi, Pakistan in 2007, CAD was shown to be prevalent in 6.1% of men and 4% of women.<sup>11</sup> It is estimated that one in four adults over the age of 40 (26.9%) suffers from coronary artery disease in Pakistan.<sup>12</sup>

The etiology of CAD is multifactorial. Some of the risk factors of CAD are modifiable and some are non-modifiable. The modifiable risk factors of CAD include smoking, obesity, high blood pressure, elevated serum cholesterol, diabetes, insufficient physical activity and stress. The non-modifiable risk factors include age, sex, family history and genetic factors.<sup>13</sup>

From as early as the 1990s, association between lifestyle determinants and coronary artery disease has been clearly established.<sup>14</sup> Statistics show one third of coronary artery disease deaths are attributable to smoking and exposure to second-hand smoke in the USA.<sup>6</sup> Studies have clearly shown reduction of coronary artery diseases incidence in physically active and fit individuals.<sup>15</sup> The World Health Report 2002 estimated that over 20% of CAD in developed countries is due to lack of physical activity and benefits of exercise indicate it can reduce total mortality by 20% and cardiac mortality by 26%.<sup>16</sup> Obesity is another lifestyle determinant that is considered a global epidemic. It is a chronic metabolic disorder associated with CAD.<sup>17</sup> Possibility of sustained short duration of sleep leading to cardiovascular events has also been documented.<sup>18</sup>

**Table No.1: Association of weekly consumption of meat, chicken products, pulses, fruits and oil contents with CAD**

Dietary Habits	Category		Total
	Case	Control	
Weekly meat and chicken products consumption OR: 1.258 (95% CI: 0.496-3.190)	Up to 3 meals	27	45
	More than 3 meals	93	195
	Total	120	240
Weekly pulses consumption OR: 1.130 (95% CI: 0.490-2.606)	Up to 3 meals	36	66
	More than 3 meals	84	174
	Total	120	240
Weekly consumption of fruits OR: 1.495 (95% CI: 0.696-3.214)	Up to 4 times	69	114
	More than 4 times	51	126
	Total	120	240
Oil content in food OR: 1.476 (95% CI: 0.611-3.569).	High oil content	93	168
	Low oil content	27	72
	Total	120	240

## MATERIALS AND METHODS

This case-control study was conducted in Ayub Teaching Hospital, Abbottabad from January 2017 to January 2018. A sample size of 360 which included 120 cases and 240 controls were selected through non-probability convenient sampling technique. Patients, diagnosed cases of chronic artery disease (CAD), admitted in the Cardiology ward and CCU of ATH was taken as cases. Controls were chosen from Medical and Surgical wards of ATH. The controls were matched for age  $\pm 5$  years, sex, and were included based on no findings of CAD on history and ECG. Two controls for one case were selected for the study.

Informed verbal consent was taken from all the subjects who participated in the study. Purpose of the study was explained to them and was ensured complete confidentiality of their information. A questionnaire was used as a tool for data collection. A structured questionnaire was developed including variables of interest. The questionnaire was pre-tested twice before adopting a final version. The data was collected from 20th January, 2017 to 7th January, 2018.

Data was analyzed using SPSS version 23.0. Quantitative variables were described in terms of mean  $\pm$  standard deviation. Categorical variables were described in terms of frequencies and percentages in cases and controls. Association between categorical variables was determined by applying odds ratio. The 95% confidence interval was calculated to determine the statistical significance of the association.

## RESULTS

The cases and controls were matched for gender and age  $\pm 5$  years. There were a total of 69 (19%) patients who were 22-45 years of age. Six of these were cases and 51 were controls. Patients above the age of 45 years were 291 (81%), which included 102 cases and 189 controls.

The odds ratio was 0.654 (95% CI: 0.236-1.813). 246 (68%) of the total study population was uneducated and included 84 cases and 162 controls. The total number of educated individuals were 114 (32%) of whom 36 were cases and 78 were controls. The odds ratio was 1.123 (95% CI: 0.494-2.557). 42 cases and 57 controls were from urban areas (27.5%), 63 cases and 150 controls were from rural areas (59%) and 15 cases and 33 controls from peri-urban areas (13.5%). Nine cases and 12 controls were government employee (5.8%). 27 cases and 78 controls were self-employed (29.1%). 24 cases and 39 controls were retired (17.5%). Only 3 controls were students (0.9%) and no students among cases. 12 cases and 12 controls had private sector jobs (6.7%) and 48 of the cases and 96 of controls were housewives (40%). 81 cases and 153 controls followed a vegetarian diet pattern (65%) as compared to 39 cases and 87 controls who followed a non-vegetarian diet pattern (35%). The odds ratio was 1.181 (95% CI: 0.529-2.637). Other Results are shown in the Tables.

**Table No.2: Association of smoking status and number of cigarettes per day with CAD**

Smoking		Category		Total
		Case	Control	
Smoking Status OR: 3.476 (95% CI: 1.210-9.986)	Ever smoked	30	21	51
	Non-smokers	90	219	309
	Total	120	240	360
Number of cigarettes per day OR: 0.889 (95% CI 0.125-6.310)	Up to 10 cigarettes	12	9	21
	More than 10 cigarettes	18	12	30
	Total	30	21	51

**Table No.3: Association of physical activity and lifestyle with CAD**

Activity and lifestyle		Category		Total
		Case	Control	
Physical activity status OR: 0.810 (95% CI: 0.264-2.481)	Yes	15	36	51
	No	105	204	309
	Total	120	240	360
Years of daily exercise OR: 0.933 (95% CI: 0.111-7.820)	Less than 10 years	6	15	21
	More than 10 years	9	21	30
	Total	15	36	51
Minutes of daily exercise OR: 5.6 (95% CI .472-66.447)	30 minutes	12	15	27
	More than 30 minutes	3	21	24
	Total	15	36	51

## DISCUSSION

Coronary artery disease has a number of risk factors that play an important role in the disease etiology. Lifestyle determinants including dietary habits, smoking and physical are considered some of the major risk factors for CAD.<sup>13</sup> In an effort to identify the link between lifestyle determinants and CAD in patients admitted to Ayub teaching hospital, a case-control study was carried out with 120 cases and 240 controls. In our study vegetable intake was not associated with CAD. The odds ratio (OR) for vegetable intake turned out to be 1.181 (95% CI: 0.529-2.637) illustrating no statistical association between vegetable intake and CAD. This is in contrast to a meta-analysis of nine cohort studies done by Dauchet et al, which showed the relative risk (RR) of CAD with vegetable intake ranged from 0.79 to 0.97.<sup>19</sup> Similarly in another study carried out in India an inverse relationship between frequency of vegetable intake and CAD was observed (RR: 0.33; 95% CI: 0.17-0.64).<sup>20</sup> The difference in the results is suggestive of the smaller sample in our study.

The risk of the frequency of meat consumption with CAD was analysed in our study and the results showed increasing risk of CAD with decreased meat and chicken products consumption. The result, however was statistically insignificant (OR: 1.258; 95% CI: 0.496-3.190). This is not with the agreement of results of a meta-analysis done by Micha et al, on processed meat consumption which showed increased consumption of meat products increases the risk of CAD (RR: 1.42; 95% CI 1.07-1.89).<sup>21</sup>

Frequency of fruit consumption was another factor studied in our study. The results showed an increased risk of CAD with lower consumption of fruit (OR: 1.495 95% CI: 0.696-3.214). This correlates with a meta-analysis published in 2016 which points out lower risk of CAD with daily fruit consumption (OR: 0.92; 95% CI: 0.90-0.95).<sup>19</sup> Similarly in another study carried out in Shanghai, China the results were in favour of reduced CAD risk with increased fruit intake (RR: 0.62; 95% CI: 0.38-1.02).<sup>22</sup>

Our study results reveal an increased risk of CAD with high oil content in food (OR: 1.476 95% CI 0.611-3.569). This is in contrast to a meta-analysis carried out by Siri-Tarino et al. Their results show no association of saturated fat content with CAD (RR: 1.07, 95% CI: 0.96-1.19).<sup>23</sup> The results of our study could be affected by recall bias. Majority of the patients could not clearly tell the amount of oil in their food. The results can be made more accurate by doing a multi-centre study.

In our study, there was a significant association between cigarette smoking and CAD. The results are applicable to men only as none of the females smoked cigarettes. Smoking turned out to be a significant risk factor for CAD (OR: 3.476; 95% CI: 1.210-9.986). This correlates with another study carried out by Tolstrup et

al, which showed that smoking had a relative risk of 8.5 (95% CI 5-14) among CAD patients aged 40-49 years and 3.1 (95% CI 2.0-4.9) among those aged 70 years or older.<sup>24</sup> The risk of CAD with the number of cigarettes smoked per day was also looked at in our study and the results show lower risk of CAD with less than 10 cigarettes per day as compared to smoking more than 10 cigarettes per day. The result, however, was statistically insignificant (OR: 0.889; 95% CI: 0.125-6.310). This agrees with the study carried out in 2015 which showed a relative risk of 1.5 with 5 cigarettes per day as compared to a relative risk of 2.0 with 20 cigarettes per day.<sup>25</sup>

The third lifestyle determinant factor in our research paper was physical exercise. Physical exercise in our study showed an inverse relationship with CAD events, however the result was statistically insignificant (OR: 0.810, 95% CI 0.264-2.481). This is in agreement with a prospective cohort study carried out in 2015 that showed physical exercise to reduce the risk of CHD by 50% (OR: 0.50; 95% CI: 0.38-0.67).<sup>26</sup> The results could be made more accurate if a larger sample is used.

## CONCLUSION

Smoking is significantly associated with CAD. The number of cigarettes also play a role. Our results show greater risk of CAD with increasing number of cigarettes. The association however is statistically insignificant. Vegetable intake does not play a significant role in causation of CAD disease whereas other dietary factors like meat consumption, high oil content in food and fruit consumption do show an association with CAD. Another factor in our study was physical exercise. Although the results of our study conclude an inverse relationship between physical activity and CAD, the results however, are statistically insignificant.

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# Complications of Endoscopic Examination in Patients at Idris Teaching Hospital Sialkot

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## ABSTRACT

**Objective:** To study Complications Of Endoscopic Examination In Patients At Idris Teaching Hospital Sialkot.

**Study Design:** Experimental and observational study

**Place and Duration of Study:** This study was conducted at the Idris Teaching Hospital Sialkot during Jan 2018 to July 2019.

**Materials and Methods:** This study comprises 1021 patients undergoing endoscopic examination. The demographic data and complications during endoscopic examination were noted down and lab tests were also advised for example hepatitis A, B and C HIV. Written informed consent was also taken from every patient before the start of the endoscopic examination. The Permission of ethical committee was also considered before collection of data and get publishing in the medical journal. The results were analyzed on SPSS version 10.

**Results:** Mean Age was 45.34 years and SD(standard deviation) was 16.23 years. At the age of 10-20years , there were 50(10.18%) male and 51(9.62%) female of endoscopy were included in this study. At the age of 21-30 years there were 101(20.57%) male and 85(16.04%) females. At the age of 31-40 years there were 100(20.36%) male and 75(14.15%) female, At the age of 41-50 years there were 101(20.57%) male and 130(24.52%) female , at the age of 51-60 years there were 25(5.09%)Male and 75(14.15%) female. At the age of 61-70 years there were 75 (15.27%) male and 85(16.04%) female, at the age 70 years and above there were 35(7.12%) Male and 29(5.47%) females patients were included in the study. It was observed that female patients of endoscopy were more prevalence than male patients. There were 17(3.46%) Male and 15(2.83%) female patients were found in bleeding during endoscopic examination , the perforation was found in 07 (1.42%) Male and 06(1.13%) Females. The hepatitis A 15(3.05%) Male and 07(1.32%) Female, the hepatitis B 13(2.64%)Male and 03(0.56%) females, the hepatitis C were 18(3.66%) Male and 13(2.45%) female and HIV 02(0.41%) male and 00(00%) female patients.

**Conclusion:** Endonasal endoscopy without stent is considered as effective, safe and minimally invasive primary procedure for the treatment of nasolacrimal duct obstruction. This procedure has fewer complications and is well tolerated by the patient. In this procedure there is minimum damage to anatomical structures. Mutual efforts by Ophthalmologists and Otorhinologist made endonasal DCR a good alternative to external DCR with high success rate and comparable outcomes. Regular follow up are required to evaluate the process of wound healing and early detection of complications leading to failure of the procedure.

**Key Words:** Complications, Endoscopy, Hepatitis A, B and C, HIV, Demographic data

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## INTRODUCTION

Nasolacrimal duct obstruction most commonly presents with epiphora,<sup>1,2</sup> other symptoms are discharge from the eyes and swelling over the sac area.

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Watering due to nasolacrimal duct obstruction causes much disturbance for the patient but is not a serious problem. It is generally unilateral. Symptoms persist if the condition is not treated and may predispose to chronic or acute dacryocystitis.<sup>3</sup> Conservative treatment like massage over the sac area does not relieve the symptoms. Syringing and probing also does not help but sometimes causes temporary relief of symptoms in patients with incomplete blockage of nasolacrimal duct. Treatment of nasolacrimal duct obstruction is dacryocystorhinostomy.<sup>1,4,5</sup>

As cited by Tan NC et al 2009; Mortimore S et al 1999, Toti in 1904 first described the procedure of external dacryocystorhinostomy.<sup>5,6</sup>

External dacryocystorhinostomy is a gold standard traditional surgical approach to treat nasolacrimal duct obstruction.<sup>3,7</sup> Success rate of other techniques is measured and compared with this method.<sup>3</sup> Most Ophthalmologists

believes that external dacryocystorhinostomy provides highest success rate as compared to other techniques.<sup>7</sup>

As cited by various studies intranasal dacryocystorhinostomy was first described by Caldwell in 1893.<sup>5,6,8,9</sup> Intranasal technique remained limited at that time due to poor visibility of intranasal anatomy. This technique gained popularity after introduction of high resolution fiber-optic endoscopes and rigid endoscopes with different degrees of angulations.<sup>10</sup> As cited by Tan NC et al 2009; Mortimore S et al 1999, McDonogh and Meiring introduced endoscopic transnasal dacryocystorhinostomy in 1989.<sup>5,6</sup>

Various changes in surgical procedure of dacryocystorhinostomy have been introduced to acquire a good surgical success rate.<sup>1</sup> Basic concept of various procedures is to create a fistula between lacrimal sac and nasal cavity for the drainage of tears.<sup>6,8</sup>

Endonasal dacryocystorhinostomy is a surgical technique in which a fistula is created from inside the nasal cavity.<sup>8</sup> It can be performed surgically using drill or ronguer to remove the bone or by laser.<sup>9</sup>

This procedure is now regularly being done at Ziauddin University Hospital, Keamari. Karachi. Our aim was to see the outcome and complications of endoscopic DCR at our center.

## MATERIALS AND METHODS

This study comprises 1021 patients undergoing endoscopic examination. The demographic data and complications during endoscopic examination were noted down and lab tests were also advised for example hepatitis A, B and C HIV. Written informed consent was also taken from every patient before the start of the endoscopic examination. The Permission of ethical committee was also considered before collection of data and get publishing in the medical journal. The results were analyzed on SPSS version 10.

## RESULTS

Mean Age was 45.34 years and SD (standard deviation) was 16.23 years. At the age of 10-20 years, there were 50(10.18%) male and 51(9.62%) female of endoscopy were included in this study. At the age of 21-30 years there were 101(20.57%) male and 85(16.04%) females. At the age of 31-40 years there were 100(20.36%) male and 75(14.15%) female, At the age of 41-50 years there were 101(20.57%) male and 130(24.52%) female, at the age of 51-60 years there were 25(5.09%) male and 75(14.15%) female, At the age of 61-70 years there were 75 (15.27%) male and 85(16.04%) female, at the age 70 years and above there were 35(7.12%) male and 29(5.47%) females patients were included in the study. It was observed that female patients of endoscopy were more prevalence than male patients as shown in table 1.

**Table No. 1: Age and Gender Distribution in Patients undergoing Endoscopic Examination**

Sr.No.	Age	Male	Female
1	10-20	50(10.18%)	51(9.62%)
2	21-30	101(20.57%)	85(16.04%)
3	31-40	100(20.36%)	75(14.15%)
4	41-50	101(20.57%)	130(24.52%)
5	51-60	25(5.09%)	75(14.15%)
6	61-70	75(15.27%)	85(16.04%)
7	70 and above	35(7.12%)	29(5.47%)
Total		491(100%)	530

**Table No. 2: Complications In Patients undergoing Endoscopic Examination**

Sr. No.	Complications	Male	Female
1	Bleeding	17(3.46%)	15(2.83%)
2	Perforation	07(1.42%)	06(1.13%)
3	Hepatitis A	15(3.05%)	07(1.32%)
4	Hepatitis B	13(2.64%)	03(0.56%)
5	Hepatitis C	18(3.66%)	13(2.45%)
6	HIV	02(0.41%)	00(00%)
7			

There were 17(3.46%) Male and 15(2.83%) female patients were found in bleeding during endoscopic examination, the perforation was found in 07 (1.42%) Male and 06(1.13%) Females. The hepatitis A 15(3.05%) Male and 07(1.32%) Female, the hepatitis B 13(2.64%) Male and 03(0.56%) females, the hepatitis C were 18(3.66%) Male and 13(2.45%) female and HIV 02(0.41%) male and 00(00%) female patients as shown in table no 2.

## DISCUSSION

Endoscopy have some advantages compared to external endoscopy. There is no skin incision, minimum tissue injury which is limited to the fistula site, short hospital stay, rapid rehabilitation and patient's preference.<sup>2,8,9,11,12</sup> Endonasal technique requires time to acquire expertise of using endoscope, i.e. steep learning curve and high equipment cost.<sup>11</sup>

Proper pre-operative examination of nasal cavity is important for patient selection for this procedure. Nasal septum deviation causing narrow nasal cavity at the neo-ostium, connective tissue disorder, sarcoidosis, chronic sinus disease, mucocele, previous external endoscopy or other nasal surgery are the pre-operative risk factors.<sup>11</sup> Severe nasal deformity and scarring of nasal mucosa are the basic contraindication for endonasal endoscopy.<sup>11</sup>

In this study There were 17(3.46%) Male and 15(2.83%) female patients were found in bleeding during endoscopic examination, the perforation was found in 07 (1.42%) Male and 06(1.13%) Females. The hepatitis A 15(3.05%) Male and 07(1.32%) Female ,

the hepatitis B 13(2.64%) Male and 03(0.56%) females , the hepatitis C were 18(3.66%) Male and 13(2.45%) female and HIV 02(0.41%) male and 00(00%) female patients.

No intra operative complications were observed in our study. In the literature, bleeding from the nasal cavity occurs if there is extensive damage to the lacrimal sac mucosa or mucosa of the nasal septum<sup>7,10</sup>, Orbital injury, especially when too much of the soft tissue is removed while removing the medial wall of the lacrimal sac<sup>7</sup>, recurrent infection if the bone covering the lower part of lacrimal sac is not removed completely<sup>7</sup> are the complications of endonasal DCR.

Post-operative outcomes like relief of the symptoms of epiphora, patency of ostium opening into the lacrimal sac positive Jone's dye test are indicators of successful surgery.<sup>6,11</sup> By and large endonasal DCR without stent is an effective and safe method to treat nasolacrimal duct obstruction.

## CONCLUSION

Endonasal endoscopy without stent is considered as effective, safe and minimally invasive primary procedure for the treatment of nasolacrimal duct obstruction. This procedure has fewer complications and is well tolerated by the patient. In this procedure there is minimum damage to anatomical structures. Mutual efforts by Ophthalmologists and Otorhinologist made endonasal DCR a good alternative to external DCR with high success rate and comparable outcomes. Regular follow up are required to evaluate the process of wound healing and early detection of complications leading to failure of the procedure.

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

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# Correlation of Age, Gender, Social Economic Status and Area with Laryngeal Carcinoma

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Age, Gender,  
Social Economic  
Status with  
Laryngeal  
Carcinoma

## ABSTRACT

**Objective:** To study the Correlation of age, gender, socio economic status and area with laryngeal carcinoma.

**Study Design:** Experimental Study

**Place and Duration of Study:** This study was conducted at the Idris Teaching Hospital Sialkot Medical College Sialkot from Jan 2016 to Jan 2019.

**Materials and Methods:** This study include 100 patients of laryngeal carcinoma. Their history was taken on designed performa to note down age, gender, socioeconomic status, area, laryngeal carcinoma and lab tests were advised to all of the patients. The study was conducted in Idris Teaching Hospital Sialkot Medical College Sialkot. Written informed consent was also taken from every patient. The permission of Ethical Committee was also considered to conduct this research work and publish in medical research journal. All the patients of laryngeal carcinoma were included in this study

**Results:** There were Complications seen at the age of 45-50 years, there were 5(18.51%) male and 1(33.33%) female patients. At the age of 51-60 years there were 11(40.74%) male and 1(33.33%) female. At the age of 61-70 years there 9(33.33%) Male and 0(0.00%) female patients. At the age of 70-80 years there were 2(7.40%) male and 1(33.33%) female patients. There were complications of laryngeal surgery i.e. hematoma formation was seen in 1(9.1%) patient, Pharyngeocutaneous fistula was seen in 8(72.7%), Stomal stenosis was seen in 1(9.1%) , Pharyngeal stenosis was seen in 1(9.1%) patients.

**Conclusion:** It was observed that there were definite complications during laryngeal surgery in laryngeal carcinoma

**Key Words:** Complications, laryngeal surgery, Carcinoma

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## INTRODUCTION

Like any surgical procedure laryngeal surgery can also face number of complication.

In Addition to complication like those of anesthesia, wound infection, hemorrhage , systemic complications and keloid formation , laryngeal surgery can result into complication related to anatomy and function of the region. These depend on the type of surgical procedure done. Total laryngectomy can result in to stomal stenosis, pharyngeal stenosis, tracheal crusting and formation of mucocutaneous and trachea esophageal fistula<sup>1</sup>.

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In 55 cases local study that included 37 cases (67.3%) total laryngectomies and 7 cases(12.7%) conservation surgeries, 13 patients (23.6%) developed some form of complication. These Complication included stomal stenosis six cases (%). Pharyngeocutaneous fistula 3 cases (%) tracheosophaygeal fistula 1 case (%) peritonitis 1 case (%) pneumothorax 1 case(%) Post operative bleeding 1 case (%).<sup>2</sup>

Partial Laryngeal resection shows complication depending upon type of procedure. They can be classified broadly into general ( related to any major head and neck procedure) and specific(related to specific conservation procedure) specific complication in this group include glottic, insufficiency , aspiration ,poor voice, swelling problems and formation of webs. In literature ratio of complication supraglottic varies from 10% to 50 %.<sup>4,5</sup>

Similarly Complication rate vertical partial laryngectomy is also very variable but generally lower than supraglottic one. It varies from 1.5% to 26%<sup>6</sup>

Rate of complications is usually greater in patients in whom radiation is combined with surgery. Rate of mortality in peri operative period is found in up to 6 % cases. It usually occur due to hemorrhage, cardiac dysfunction , acute pulmonary edema , septicemia and infection of wound.<sup>7-13</sup>

## MATERIALS AND METHODS

This study was conducted at the Idris Teaching Hospital Sialkot Medical College Sialkot from Jan 2016 to Jan 2019. This study include 100 patients of laryngeal carcinoma. Their history was taken on designed performa to note down age, gender, socioeconomic status, area, laryngeal carcinoma and lab tests were advised to all of the patients. The study was conducted in Idris Teaching Hospital Sialkot Medical College Sialkot. Written informed consent was also taken from every patient. The permission of Ethical Committee was also considered to conduct this research work and publish in medical research journal. All the patients of laryngeal carcinoma were included in this study

## RESULTS

There were complications of laryngeal surgery i.e. hematoma formation was seen in 1(9.1%) patient, Pharyngeocutaneous fistula was seen in 8(72.7%), Stomal stenosis was seen in 1(9.1%), Pharyngealstenosis was seen in 1(9.1%) patients. As shown in Table no 2 Laryngeal cancer is basically disease of elderly. In this study largest number of lesions (12/30) occurred in six decade of life ,This accounts for 40% of all the cases as shown in table no 1.Overall age incidence range between 45-80 years in another study the maximum incidence 34.5% was in the fifth decade of life<sup>2</sup>

**Table No. 1: Age and Sex Distribution**

Age Group (Years)	Male	Female	Total	Percentage (%)
45-50	5 (18.51%)	1 (33.33%)	6 (20%)	20
51-60	11 (40.74%)	1 (33.33%)	12 (40%)	40
61-70	9 (33.33%)	0 (0.00 %)	9 (30%)	30
70-80	2 (7.40%)	1 (33.33%)	3 (10%)	10
Total	27	3	30	100

**Table No. 2 : Complication of laryngeal Surgery**

Sr. No.	Complications	Number of patients involved	Percentage (%)
1	Hematoma formation	1	9.1
2	Pharyngeocutaneous fistula	8	72.7
3	Stomal stenosis	1	9.1
4	Pharyngealstenosis	1	9.1
	Total	11	100

Patients having complication =11/30 = 36 %

The world wide maximum figure approximately 40 % occur in 51-60 years of age .It coincides with the findings of present study. Laryngeal cancer has clear cut preponderance for male population among the 30 patients consecutively undergoing laryngeal surgery for treatment of squamous cell carcinoma larynx, 27 patients were found to be male (90%) and remaining 3 female patients (10%). Thus male to female ratio was 9:1 as shown in table no 1.In other study of 55 patients held at Karachi. This ratio was 5.1:1<sup>2</sup> the world wide male to female ratio varies from 5 - 20 : 1.In UK and US this tumor is 5-6 times more common in male than in female .In US ratio has decreased from 12:1 to 5:1 over the last 20 years<sup>3</sup>

## DISCUSSION

General policy to treat laryngeal carcinoma varies from country to country and center to center. Policy in northern Europe and UK is towards radiotherapy in most patients<sup>14,15,16</sup>. Surgery in the form of total laryngectomy is reserved for recurrence .On other hand in north America and Southern Europe there is obvious tendency for conservative laryngeal procedures<sup>10,18,19,20</sup> Among complication there was hematoma formation 1 patient (9.1%). Pharyngeocutaneous fistula In 8 patients (72.7%), Stomal Stenosis in 1 patient (9.1%), pharyngealstenosis in patient (9.1%).There were 11 patients having complication during laryngeal surgery among 100 patients of laryngeal carcinoma. These findings coincides with study of many authors as shown in results.<sup>18-21</sup>.

## CONCLUSION

It was observed that there were definite complications during laryngeal surgery in laryngeal carcinoma.

### Author's Contribution:

Concept & Design of Study: Javed Qureshi  
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Data Analysis: Liaqat Ali  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Variation of BMI in Medical Students of Sialkot

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## ABSTRACT

**Objectives:** To determine the BMI status of undergraduate medical students.

**Study Design:** Descriptive cross sectional study.

**Place and Duration of Study:** This study was conducted at the Department of Gynae & Obstet and Surgery, Sialkot Medical College, Sialkot from June to August 2019.

**Materials and Methods:** Demographic Data, Body weight and height of 1550 students were collected in a survey. Out of 1550 total questionnaires, 78 were discarded. BMI was calculated from the remaining 1472 forms. Underweight, Normal weight, Overweight, and Obesity were defined using WHO international standard BMI cut-offs. Data were entered and cleaned using SPSS statistics 25.0 computer package. Data was presented in the form of graphs and described in numbers and percentages.

**Results:** Among the MBBS students, 69.6% were in the age group 20 to 23 years and 62.4% were females. The mean height of the students was 1.663 meters (SD= .0937). The mean weight of the students was 61.15 kg (SD=13.6825). Overall 59.1% of students were within the normal range (53.9 % male and 62.2% females). 20.5% students were underweight (16.7% male and 22.9% females). 15.1 % students were overweight (20.3% male and 12.0% females). 4.6% of students class I obese (7.8% male and 2.72% female). 0.7 % are class II obese (1.4% male and 0.217 female).

**Conclusion:** Abnormal BMI is a rising problem for male and female medical students. The underweight issue is considerably more common in females and overweight issues are considerably more common in males.

**Key Words:** BMI, medical students, underweight, overweight, obesity

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## INTRODUCTION

Pakistan is the 6th most populous country in the world with a total population of 212,742,631 people<sup>1</sup>. One of the most popular non-communicable diseases is cardiovascular diseases. Other than that, cancer, hypertension, and diabetes are also an important cause of mortality and morbidity. The major modifiable risk factors for these major non-communicable diseases are physical inactivity, tobacco and alcohol use and unhealthy diet<sup>2</sup>.

Being underweight can represent many health concerns to an individual as being overweight can. Underweight status and micronutrient deficiencies also cause decreases in immune and non-immune host defenses and should be classified as underlying causes of death if followed by infectious diseases that are the terminal

associated causes<sup>3</sup>. Medical students are more prone to obesity because of their lifestyle with less physical activity and disordered eating habits and lack of physical activity among medical students causes less energy expenditure than food intake leading to obesity. Less time available for breakfast/launch in college hour due to busy schedule contributes to a frequent habit of drinking tea/coffee/juices which exacerbate the condition. Other contributing factors include increased junk food consumption and a family history of obesity. Body fat is an essential part of the body. It provides an important energy source, acts as a heat insulator and shock absorber, is the source of estradiol in women, and produces numerous hormones such as adiponectin, resistin, and leptin<sup>4</sup>. Too much or too little fat in the body poses problems. Obesity has been found to correlate with the level of body fat<sup>4</sup>. Obesity and its associated morbidities are leading causes of CVD, Type II diabetes, Hypertension, Osteoarthritis, Anesthesia, Risks menstrual abnormalities, as well as some type of cancer including those of colon and breast. BMI, describes relative weight for height, is not gender-specific and is significantly correlated with total body fat content. It is also the most widely accepted means of assessing obesity measured by dividing the weight by height. Among the many indices used to assess obesity, BMI has shown the strongest correlation with

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continuous hypertension in both genders. WHO BMI cut-offs are:

1. BMI of less than 18.5 Underweight
2. BMI 18.5 to 24.9 Normal
3. BMI 25 to 29.9 overweight
4. BMI 30 to 34.9 class I obese
5. BMI 35 to 39.9 class II obese
6. BMI 40 above class III obese

## MATERIALS AND METHODS

A descriptive cross-sectional This study was conducted at the Department of Gynae & Obstet and Surgery, Sialkot Medical College, Sialkot from June to August 2019 and survey was done in three medical colleges of Sialkot with permission from the ethical committee of Sialkot medical college Sialkot and from the ethical committee of Islam Medical and Dental College Sialkot and Khawaja Muhammad Safdar Medical College Sialkot. The study population consisted of all the 1630 MBBS students.

**Inclusion Criteria:** All the regular male and female students were included in the study. Students present on the days of study were included, and efforts were made twice to contact absentees. A total of 1550 students participated in the study.

**Exclusion criteria:** Students who were absent during the days of study were excluded. Data from 78 students were invalid and humorous thus discarded.

A questionnaire was used to collect and record information on age, sex, height in feet or meters, and weight in kilograms, of each subject. Height in feet was later converted into meters. Scales were available for students during each session of data collection in case anybody did not know his/her height or weight. Data were cleaned using SPSS 25.0. BMI was calculated in SPSS using the formula.

weight in KGs/ Height in meter square ( $w/h^2$ ).

WHO BMI cut-offs were used to categorize data.

1. BMI less than 18.5 Underweight
2. BMI 18.5 to 24.9 Normal
3. BMI 25 to 29.9 overweight
4. BMI 30 to 34.9 class I obese
5. BMI 35 to 39.9 class II obese
6. BMI 40 above class III obese

## RESULTS

Table No.1: Age Interval

		Frequ- ency	Percent	Valid Percent	Cumulative Percent
Valid	16 to 19	429	29.1	29.1	29.1
	20 to 23	969	65.8	65.8	95.0
	24 or Above	74	5.0	5.0	100.0
	Total	1472	100.0	100.0	

Out of 1472 total students who participated, 65.8% were in the age group 20-23 years. 29.1 % were in the age group 16 to 19 and the remaining 5% were in 24 or above age group. 553 (37.6%) students were male and 919 (62.4%) were female.

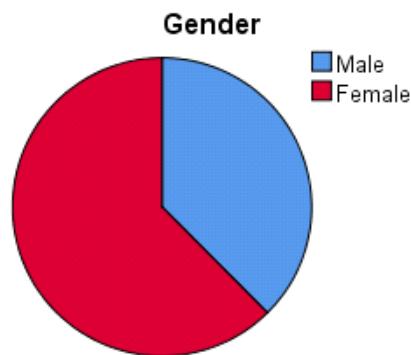


Figure No.1: Gender

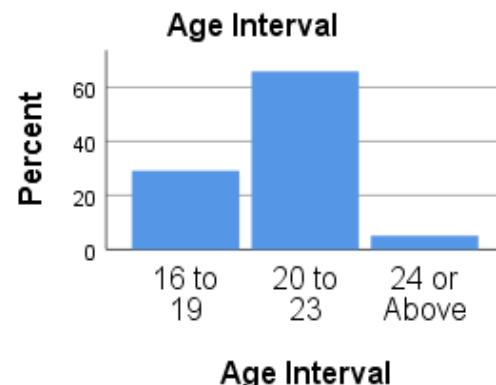
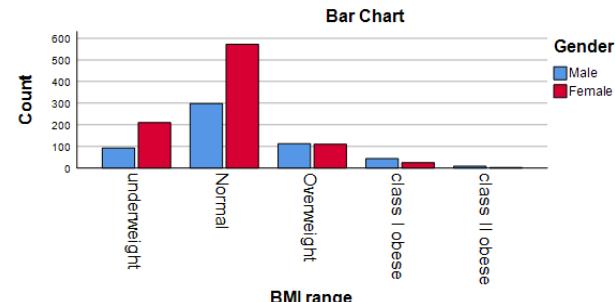


Figure No.2: Age Interval with percentage

The mean BMI is 22.03. Among all the 1472 participants, Minimum BMI is 13.02 and the Maximum BMI is 39.14. Out of total participants, 59.1% (870) were in Normal range, 53.9% (298) male and 62.2% (572) female. 20.5% (302) were underweight, 16.6% (92) male and 22.9% (210) female. 15.1% (222) were overweight, 20.3% (112) male and 12.0% (110) female. Generally obesity is 8%. 4.6% (68) were Class I Obese, 7.8% (43) male and 2.7% (25) female. 0.7% (10) were Class II Obese, 1.4% (8) male and 0.2% (2) female acc. WHO criteria.



Bar Chart: BMI range with count

Table No.2: BMI range \* Gender Cross tabulation

		Gender		Total	
		Male	Female		
BMI range	Underweight	Count	92	210	
		% within Gender	16.6%	22.9%	
	Normal	Count	298	572	
		% within Gender	53.9%	62.2%	
	Overweight	Count	112	110	
		% within Gender	20.3%	12.0%	
	class I obese	Count	43	25	
		% within Gender	7.8%	2.7%	
	class II obese	Count	8	2	
		% within Gender	1.4%	0.2%	
Total		Count	553	919	
		% within Gender	100.0%	100.0%	
				1472	
				100.0%	

## DISCUSSION

Abnormal BMI, whether it is obesity or underweight, causes many non-communicable diseases. The best method till now to assess obesity or underweight is by calculating BMI.<sup>2,3</sup>

In the present study, 60% of the students are in the normal range. Studies in Lahore medical and dental college<sup>5,6</sup> and Islamabad Medical and Dental college<sup>7</sup> showed similar results with 60% of students in the normal range. Another study in Dow medical college showed similar results with 59% of students in normal range<sup>8</sup>. In another study at Khyber university, 51.2 % population had normal BMI<sup>9</sup>. In another study among students of 22 countries, 64.4% had normal BMI<sup>10</sup>. In a study in Haryana, India, 73.1% population had normal BMI. The difference in our study and Khyber university can be attributed to the increased level of physical activity and harsh environment in KPK areas and racial differences. Similarly, the difference with the study in Haryana can be attributed to the cultural and racial differences between the Hindu and Muslim population i.e. non-vegetarian diet of Muslims and the vegetarian diet of Hindus.

In this study, 8% Population is obese (class I + class II + class III). Studies at LMDC, Lahore showed 7% of students obese<sup>6</sup>. A study from Malaysia reported 8% of the population in obese range<sup>11</sup>. In another study among students of 22 different countries<sup>10</sup>, 5.8% were obese. Similarly another study at Ribat University, Khartoum, India<sup>12</sup> reported obesity to be 9%. In other studies such as the study at Islamabad only 2% population were obese<sup>7</sup> while in another study conducted at Dow medical college, only 0.6% population were obese<sup>8</sup>. This can be attributed to a better level of awareness, as can be said about students of Islamabad medical and

dental college and different socioeconomic status of students in government and private sector.

In the present study, 20.5% of students were underweight. In a study from Islamabad Medical and Dental College, 28.9 % of students were underweight<sup>7</sup>. The underweight category has a high variation among different medical colleges. In a study at Dow medical college, 29.9 % of the population was underweight<sup>8</sup>. According to a Malaysian study, 15% of the students were underweight<sup>11</sup>. A similar study in Oman also showed a 15% population to be underweight<sup>13</sup>. In a study among students of 22 different countries 10.8%, students were underweight<sup>10</sup>. A study at LMDC showed a 6% underweight.

It has been seen in almost all the studies that the trend of underweight is more common in females, which require special attention as it can lead to various problems in pregnancy and fertility.<sup>14</sup>

15.1% population is overweight in our study. In a study at 22 different countries<sup>10</sup>, the overweight population is 18.9%. In a study in Malaysia, 12.9% were overweight<sup>11</sup>. In studies at Islamabad Medical and Dental College and LMDC, Lahore<sup>9</sup>, overweight population was 9.4% and 27% respectively. This shows too much variation of the overweight population in different studies. A study in medical students at Ribat University, Khartoum, India, 18% population was found overweight<sup>12s</sup>.

## CONCLUSION

This study suggests that obesity and underweight are both very common in the medical students of Sialkot. Obesity is relatively more common in males and underweight is more common among females. It is therefore suggested that a study should be conducted to find out the major causes of obesity among the medical students of Sialkot and seminars should be conducted for medical students as well as for the general population to increase the awareness of obesity and obesity-related issues.

### Author's Contribution:

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 Final Approval of version: Muhammad Sufyan, Nasreen Hamid

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

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# Prevalence of Helicobactor Pylori Infection in Patients with Dyspepsia

Tahir Ullah<sup>1</sup>, Muhammad Iqbal Qasim<sup>2</sup> and Syed Farasat Ali Shah<sup>2</sup>

## ABSTRACT

**Objective:** The objectives of this study was to determine the frequency of Helicobactor pylori infection in patients presenting with dyspepsia.

**Study Design:** Descriptive cross sectional study.

**Place and Duration of study:** This study was conducted at the King Abdullah Teaching Hospital Mansehra for one year from May 2018 to April 2019.

**Materials and methods:** Total 165 patients including both male and female  $\geq 15$  years with symptoms of dyspepsia for  $\geq 4$  weeks were recruited. All the patients who used proton pump inhibitors in last two weeks or antibiotics in last four weeks were excluded from the study. All patients with decompensated liver cirrhosis, gallstones, hypothyroidism, gastric surgeries and gastrointestinal malignancies were also excluded. After getting informed written consent, detailed history and physical examination, H- pylori stool antigen test was used to determine the frequency of h pylori infection.

**Results:** One hundred and sixty five patients having dyspepsia were included in this study. 37% were male and 63% were female. Mean age of the population was  $41.4 \pm 17.9$  with a minimum age of 15 years and maximum 85 years. The most common complaints of the patients were epigastric pain and fullness. The prevalence of Helicobactor pylori in the population studied was 56.4%. The prevalence of H- pylori was 63.9% in male and 51.9% in female.

**Conclusion:** Prevalence of h pylori is very high, hence need proper investigation and treatment.

**Key Words:** Dyspepsia, Helicobactor pylori, Prevalence, Stool antigen test.

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## INTRODUCTION

Dyspepsia is defined as a group of symptoms localized to the upper abdomen such as pain, discomfort, postprandial fullness, bloating, early satiation, epigastric burning, belching, nausea, and vomiting.<sup>1</sup> Dyspepsia due to identifiable causes such as gastritis, peptic ulcer disease, malignancies, small bowel bacterial overgrowth, pancreaticobiliary disease are called organic dyspepsia while the remaining are classified as functional dyspepsia. Endoscopy is the investigation of choice in dyspeptic patients for categorization of dyspepsia as organic or functional.<sup>2</sup> Among the many causes of dyspepsia H-pylori is the most common and challenging cause of dyspepsia. Marshall and Warren discovered the curved bacterium Helicobacter pylori in the stomach of patients with gastritis and peptic ulcer and were awarded with nobel prize for this great achievement in 2005.<sup>3</sup>

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Data from many research shows that more than half of the world population is infected with h-pylori.<sup>4,5</sup>

The worldwide prevalence of H-pylori varies from as low as 18.9% in Switzerland to as high as 87.7% in Nigeria.<sup>4</sup> The prevalence of helicobactor pylori in pakistan ranges from 25%-74.4% in different studies.<sup>6,7,8</sup> Studies showed a high prevalence of H. pylori in low socioeconomic status, unclean water source, overcrowding and cigarette smoking. Among the many risk factors, these were the most common and significant risk factors for H. pylori infection.<sup>9</sup>

Modes of transmission of H-pylori are oro-oral, orofecal, gastro-oral and iatrogenic(due to endoscopic procedures)<sup>10,11</sup> Gastritis, duodenitis, adenocarcinoma and MALT lymphoma are well established diseases that are associated with h-pylori but the association of other diseases like idiopathic thrombocytopenic purpura and iron deficiency anemia are yet to be established.<sup>12</sup> There are two sets of investigations that is noninvasive and invasive. Among the noninvasive tests, serology (antibody detection) is most commonly used in our population as it is least expensive, easily available and less time consuming but the main drawback is that it can not be used to know active infection and the post treatment success as antibodies can persist for years. Urea breath test is limited by its availability. Nowadays stool antigen test is easily available and can be used for both detection of active infection and post treatment success.<sup>13,14</sup>

The rationale behind doing this study was to determine the prevalence of h-pylori infection in dyspeptic

patients in the population of Mansehra. There are many studies on prevalence of *H-pylori* infection but due to the various methods used for the diagnosis, the actual prevalence of *H-pylori* varies in different studies. Serology is the most commonly used test for research study which can only detect antibodies that can persist for years even after successful eradication. In this study we used the most sensitive and specific test (stool antigen test) to detect the actual prevalence of active *Helicobacter pylori* infection in dyspeptic patients in this population.

## MATERIALS AND METHODS

This descriptive cross sectional study was conducted at King Abdullah Teaching Hospital, Mansehra from May 2018 to April 2019 after approval from hospital ethical and research committee.

One hundred and sixty five patients including both male and female having age  $\geq 15$  years with symptoms of dyspepsia for  $\geq 4$  weeks were recruited (after exclusion of two patients of gastric malignancy on endoscopy). All the patients who used proton pump inhibitors in last two weeks or antibiotics in last four weeks were excluded from the study. All patients with decompensated liver cirrhosis, gallstones, hypothyroidism, gastric surgeries and gastrointestinal malignancies were also excluded. The diagnosis of dyspepsia was based on one or more of the following symptoms for  $\geq 4$  weeks; upper abdominal pain or discomfort, Bloating, early satiety, postprandial fullness, nausea, anorexia, retrosternal burning, regurgitation and belching.

After getting informed written consent all patients were subjected to detailed history, physical examination, routine investigations and stool for *helicobacter pylori* antigen detection. Endoscopy was done only in those patients in whom it was indicated. Endoscopic procedure was performed by a gastroenterologist with Olympus Japan system CV-200 processor, CLV-U40D light source and GIF-XQ200 gastroscope. The data collected was recorded on a predesigned proforma and the patients were managed as per outpatient department protocol.

**Data Analysis Procedure:** Statistical package for social sciences (SPSS) version 19 was used to analyze the data. Mean and standard deviation was calculated for quantitative variables such as age of the patients. Frequencies and percentages were calculated for categorical variables like gender and prevalence of *H-pylori*.

## RESULTS

One hundred and sixty five patients having dyspepsia were selected for this study. There were 61(37%) male and 104(63%) female with a male to female ratio of 1:1.7. The mean age of the whole population was  $41.47 \pm 17.9$  standard deviation with a minimum age of

15 years and maximum 85 years. Among the subjects studied, 49(29.69%) patients were between ages 15-40, 68 between ages 41-65 (41.21%) and 48 (29.09%) were above 65 years.

The most frequent symptoms with which the patients presented were post prandial fullness/pain followed by belching, nausea and early satiety. Fifteen patients underwent esophagogastroduodenoscopy and biopsies were taken for histopathology. Out of these fifteen patients, nine(60%) patients were identified to be having *H-pylori* on histopathological examination.

*H pylori* was positive in 93 (56.4%) of the total population studied. *H pylori* prevalence was stratified among age and gender to look for the effect modifiers.

**Table No.1: Age wise distribution of Patients**

Age(years)	frequency	percentage
15-40	49	29.69
41-65	68	41.21
$\geq 65$	48	29.09

**Table No.2 : Gender wise distribution of Patients**

Gender	frequency	percentage
Male	61	37
female	104	63
total	165	100

**Table No.3: Age wise prevalence of *H pylori***

age	Helicobactor pylori		total
	positive	negative	
15-40	27(16.36%)	22(13.33%)	49(29.69%)
41-65	35(21.21%)	33(20.00%)	68(41.21%)
$\geq 65$	31(18.78%)	17(10.30%)	48(29.08%)
Total	93(56.4%)	72(43.6%)	165(100%)

**Table No.4: Gender wise prevalence of *H pylori***

Gender	Helicobactor pylori		Total
	positive	negative	
Male	39(63.9%)	22(36.1%)	61(37%)
Female	54(51.9%)	50(48.1%)	104(63%)
Total	93(56.4%)	72(43.6%)	165(100%)

## DISCUSSION

*H pylori* is usually acquired during childhood and remains forever without treatment, leading to various conditions such as gastritis, peptic ulcers, metaplasia, dysplasia, adenocarcinoma, MALT lymphoma etc. The association of idiopathic thrombocytopenic purpura (ITP) and iron deficiency anemia with *H pylori* are yet to be confirmed. Many controversies exist regarding who and how to investigate, who and how to treat and how to check for cure. Also in our population people has many misbeliefs regarding management of *H pylori*. In our population *H pylori* diagnosis is usually based on serologic tests which can remain positive for years even after successful eradication. Urea breath tests is not widely available and also very expensive. Stool antigen test is both sensitive and specific but people are

reluctant to collect stool sample. Finally endoscopy is less commonly available, expensive and the association of misbeliefs of causing cancer. Due to all these limitations, the actual prevalence, methods of investigation, treatment and follow up are affected. In our study female patients are more than male which could be due to chance. The prevalence of *H pylori* in this study was 56.4%, 63.9% in male and 51.9% in female. This difference could be due to the reason that female are more conscious about their diseases especially *H pylori* than male. They seek early medical consultation and management. The prevalence of *H pylori* varies from country to country and even in different areas of same country.<sup>15</sup> These differences depends on many factors like socioeconomic status, level of education, sanitation status and the availability of health facilities. The variation in prevalence of *H pylori* in different studies is also due to the different tests used for detection of *H pylori*.<sup>16,17,18</sup>

*H pylori* infection and Non Steroidal Antinflammatory Drugs (NSAIDS) are the most common causes of gastric and duodenal diseases. Studies show high prevalence of peptic ulcer disease among NSAIDS Users infected with *H pylori* (41.7%) as compared to NSAIDS users with no *H pylori* infection (25.9%).<sup>19</sup>

In our study out of fifteen patients who underwent endoscopy nine (60%) were positive on histopathology. The eradication of *Helicobacter pylori* is very difficult due to the side effects of the drugs and the resistance associated with the many drugs used for eradication. The eradication rate of traditional first-line therapy (amoxicillin 1000mg, clarithromycin 500mg and proton pump inhibitor 20mg all twice daily for 10-14 days) have an eradication rate of 64-90%.<sup>20,21</sup>

The resistance of *Helicobacter pylori* to the commonly used drugs is increasing to an enormous level. The resistance to amoxicillin, tetracycline, clarithromycin, levofloxacin and metronidazole are 09%, 15%, 31%, 56% and 78% respectively.<sup>22</sup> Resistance to antibiotics further increases in those in whom eradication therapy fails. Endoscopic biopsies and culture and sensitivity testing may prove successful in such patients.<sup>21</sup>

## CONCLUSION

This study shows high prevalence of *H pylori* in our population. Further large scale studies are required to investigate the burden of disease in the community. This data can be used to devise a strategy for prevention, early diagnosis and eradication of *H pylori* and thus to reduce the complications of *H pylori*.

### Author's Contribution:

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

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# Pattern of Hurt in Victims of Violence in Pakistan

Tanveer Hussain<sup>1</sup>, Azhar Masood Bhatti<sup>2</sup>, Abid Karim<sup>3</sup> and A. Hamid<sup>4</sup>

## ABSTRACT

**Objective:** To study the pattern of hurt in victims of violence in Pakistan

**Study Design:** Retrospective study

**Place and Duration of Study:** This study was conducted at the Department of Forensic Medicine, Fatima Jinnah Medical College, Lahore during March 2017 to March 2019.

**Materials and Methods:** Three Hundred and eight one victims of hurt were included in this study. The patients included in this study were coming in the emergency of Ganja Ram Hospital, Lahore Mayo Hospital, Lahore, Rangers Teaching Hospital, Lahore Forensic Medicine Department Khyber Medical College Peshawar & Emergency Department of Allama Iqbal Memorial Teaching Hospital of Khawaja M. Safdar Medical College Sialkot. The demographic data & pattern of hurt was noted in the design Performa. The permission of ethical committees of the institutes was also consider before collection of data and publishing in the medical journal.

**Results:** At the age of 20 years the victims of hurt were 50 males (16.50%) and 10 female (12.82%). At the age of 21-30 years there were 101(33.33%) male and female 23(29.48%). At the age of 31-40 years there were 75(24.75%) male and 15 (19.23%) female. At the age of 41-50 years there were 35 (11.55%) male and 11(14.10%) female. AT the age of 51-60 there were 27(8.91%) male and 9(11.53%) female. Age above 60 years the male victim of hurt were 15 (5.0%) and 10 (12.82%) female. The victims of Shajjah were 50(16.50%) male and 10 (12.82%) female. The victims of jurr jaifa 90(29.70%) were male and 15(19.23%) female. The victim of Jurr ghair jaffa 75(24.75%) were male and 15(19.23%) were female. The victim of Itlaf e udw were 35(11.55%) and 11(14.10%) female. The victim of Itlaf e saliyat udw were 20(6.60%) and 07(9.0%) female. The victim of 337-L1 were 15(5.0%) male and 10(12.82%) female. The victim of 337-L2 were 07(2.31%) male and 02(2.56%) female. The victims of 337-J were 11(3.63%) and 08(10.25%). The victim of Shahajah Khafifa were 27(54%) male and 3(30%) female. The victim of Shajjah Muhamdiha were 9(18%) male and 2(20%) female. The victim of Shajjah hashima were 7(14%) male and 2(20%) female. The victim of Shajjah Muqalah were 3(6%) were male and 1(10%) were female. The victim of Shajjah Amma were 2(4%) male and 1(10%) female. The victim of Shahajah Damiga were 2(4%) were male and 1(10%) were female. The victims of Jurr Ghair Jaffa were 27(36%) and 42(26.66%) female. The victims of Jurr Ghair jaffa badiya were 15(20%) were male and 3(20%) female. The victims of Jurr Ghair Jaffa Mutlahmah were 14(18.66%) and 3(20%) female. The victims of Jurr Ghair Jaffa hashimah were 13(17.33%) male and 2(13.33%) female. The victims of Jurr Ghair Jaffa Munaqalah were 6(8%) were male and 3(20%) were female.

**Conclusion:** It was concluded that the variety of hurt daily come in the Medical emergency departments of hospital/ Forensic Department of Pakistan.

**Key Words:** Hurt, Causality Department, Mayo Hospital, Khawaja M. Safdar Medical College Sialkot, Forensic Medicine department Khyber Medical college Peshawar.

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## INTRODUCTION

The medicolegal officer (MLO) also called certifier<sup>1</sup> examines a medicolegal case – a case of injury with some criminality before issuing medicolegal certificate

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(MLC). The certificate supports police<sup>2</sup> in fixation of mode and magnitude of the crime. Moreover, the prosecution produces the certifier backed MLC before the court of law as scientific evidence for decision. The inflicted bodily injury leads to surgical morbidity and financial stress in the survivor; Hence deserves mandatory compensation from the offender(s) through Qisas and Diyat Laws.<sup>3,4</sup> The certification of MLC according to the laws initiates the litigation. The MLO identifies type of injury e.g. SHAJJAH (on the basis of location) before assigning a subtype e.g. Shajjah-i-Khafifahn (Section 337-A1) on the basis of depth of injury. The decider awards punishment (imprisonment and penalty) as per depth of the injuries i.e. more the depth – severe the punishment and vice versa. So, due care is expected from the certifier to avoid any bias. In Pakistan, incidence rate of injuries is highest against

road traffic accidents (RTAs) followed by interpersonal violence<sup>5,6</sup> with male dominance. Cases of other histories like sodomy are also noticeable. Specific protocols are opted to determine the nature of injuries<sup>7</sup> for cases of a particular history. However, undetermined injuries are kept under observation (KUO) till opinion of the specialists. Two elements of MLC i.e. time since incidence and gross morphology of the injuries support in determining the originality of the case whether real, suspected or obscure. Previous works<sup>8,9,10</sup> have focused on reporting of Qisas and Diyat laws in MLCs for general population. However, there is no single evidence where injuries in children have particularly been discussed; though children are highly prone to trauma. To fill the gap, present work was framed with the objective to find association of law reporting with different elements in MLC against children. The findings emphasize the importance of rationality between entries and the reported laws to ensure the justified decision for both, sufferer and offender(s). independent sample t test was applied on normal distribution of continuous variable (e.g. age) for comparison of the mean values. However, a p-value ( $\leq 0.05$ ) was regarded as statistically significant in both the tests.

## MATERIALS AND METHODS

This study was conducted at the Department of Forensic Medicine, Fatima Jinnah Medical College, Lahore during March 2017 to March 2019. Three Hundred and eight one victims of hurt were included in this study. The patients included in this study were coming in the emergency of Ganja Ram Hospital, Lahore Mayo Hospital, Lahore, Rangers Teaching Hospital, Lahore Forensic Medicine Department Khyber Medical College Peshawar & Emergency Department of Allama Iqbal Memorial Teaching Hospital of Khawaja M. Safdar Medical College Sialkot. The demographic data & pattern of hurt was noted in the design Performa. The permission of ethical committees of the institutes was also consider before collection of data and publishing in the medical journal.

## RESULTS

**Table No .1 Age & Gender Distributions in the Pattern of Hurt in Emergency Departments**

Sr#	Age(Years)	Male	Female
1	10-20	50(16.50%)	10(12.82%)
2	21-30	101(33.33%)	23(29.48%)
3	31-40	75(24.75%)	15(19.23%)
4	41-50	35(11.55%)	11(14.10%)
5	51-60	27(8.91%)	9(11.53%)
6	Above 60	15(5.0%)	10(12.82%)
	Total	303(100%)	78(100%)

Total No of Victims: 381

At the age of 20 years the victims of hurt were 50 males (16.50%) and 10 female (12.82%). At the age of 21-30 years there were 101(33.33%) male and female 23(29.48%). At the age of 31-40 years there were 75(24.75%) male and 15 (19.23%) female. At the age of 41-50 years there were 35 (11.55%) male and 11(14.10%) female. AT the age of 51-60 there were 27(8.91%) male and 9(11.53%) female. Age above 60 years the male victim of hurt were 15 (5.0%) and 10 (12.82%) female as shown in table no 1.

At the age of 20 years the victims of hurt were 50 males (16.50%) and 10 female (12.82%). At the age of 21-30 years there were 101(33.33%) male and female 23(29.48%). At the age of 31-40 years there were 75(24.75%) male and 15 (19.23%) female . At the age of 41-50 years there were 35 (11.55%) male and 11(14.10%) female. AT the age of 51-60 there were 27(8.91%) male and 9(11.53%) female . Age above 60 years the male victim of hurt were 15 (5.0%) and 10 (12.82%) female as shown in table no 1

**Table No. 2: Distribution of Pattern of Hurt in Emergency Departments**

Sr#	Pattern of Hurt	Male	Female
1	Shajah	50(16.50%)	10(12.82%)
2	Jurh Jaifa	90(29.70%)	15(19.23%)
3	Jurh Gair Jaifa	75(24.75%)	15(19.23%)
4	Talaf eu Udw	35(11.55%)	11(14.10%)
5	Itlaf e Slayiat Udw	20(6.60%)	07(9.0%)
6	337-L1	15(5.0%)	10(12.82%)
7	337-L2	07(2.31%)	02(2.56%)
8	337-J	11(3.63%)	08(10.25%)
	Total	303(100%)	78(100%)

**Table No 3: Distribution of Shajjah**

Sr#	Pattern of Shajjah	Male	Female
1	Shajah Khafifa	27(54%)	3(30%)
2	Shajjah Muhadisha	9(18%)	2(20%)
3	Shajjah Hashima	7(14%)	2(20%)
4	Shajjah Munaqalah	3(6%)	1(10%)
5	Shajjah Amma	2(4%)	1(10%)
6	Shajah Damiga	2(4%)	1(10%)
7	Total	50(100%)	10(100%)

The victims of Shajjah were 50(16.50%) male and 10 (12.82%) female. The victims of jurr jaifa 90(29.70%) were male and 15(19.23%) female. The victim of Jurr ghair jaffa 75(24.75%) were male and 15(19.23%) were female. The victim of Itlaf e udw were 35(11.55%) and 11(14.10%) female. The victim of Itlaf e saliyat udw were 20(6.60%) and 07(9.0%) female . The victim of

337-L1 were 15(5.0%) male and 10(12.82%) female. The victim of 337-L2 were 07(2.31%) male and 02(2.56%) female. The victims of 337-J were 11(3.63%) and 08(10.25%) as shown in table no 2. The victim of Shajah Khafifa were 27(54%) male and 3(30%) female. The victim of Shajjah Muhamida were 9(18%) male and 2(20%) female. The victim of Shajjah hashima were 7(14%) male and 2(20%) female. The victim of Shajjah Muqalah were 3(6%) were male and 1(10%) were female. The victim of Shajjah Amma were 2(4%) male and 1(10%) female. The victim of Shajah Damiga were 2(4%) were male and 1(10%) were female as shown in table no 3.

**Table No. 4: Distribution of Jurr Ghair Jaffa**

Sr#	Pattern of Jurr Ghair Jaffa	Male	Female
1	Jurr Ghair Jaffa badiya	27(36%)	4(26.66%)
2	Jurr Ghair Jaffa damiya	15(20%)	3(20%)
3	Jurr Ghair Jaffa mutlahmah	14(18.66%)	3(20%)
4	Jurr Ghair Jaffa hashimah	13(17.33%)	2(13.33%)
5	Jurr Ghair Jaffa munaqlah	6(8%)	3(20%)
	Total	75(100%)	15(100%)

The victims of Jurr Ghair Jaffa were 27(36%) and 42(26.66%) female. The victims of Jurr Ghair jaffa badiya were 15(20%) were male and 3(20%) female. The victims of Jurr Ghair Jaffa Mutlahmah were 14(18.66%) and 3(20%) female. The victims of Jurr Ghair Jaffa hashimah were 13(17.33%) male and 2(13.33%) female. The victims of Jurr Ghair Jaffa Muqalah were 6(8%) were male and 3(20%) were female as shown in table no 4.

## DISCUSSION

Females are less vulnerable to interpersonal violence-based trauma due to revenge free attitude and conservative life style.<sup>11,12,13,14</sup> Similarly, finding of average age (14 years) in the sufferers tallies with age when children are emotionally unstable<sup>11</sup> and free to move. Reporting of the laws in more than 50% MLCs is a matter of seriousness especially with reference to fighting cases. Still, there are certain cases which are resolved on the spot due to fatalism.<sup>15</sup> Law reporting rate in MLCs seems independent of months. But slight elevation from July through November, marks some underline predisposing factors e.g. weather extreme on issuing rate of MLCs against various kinds of histories. Though, male child sufferers dominate in MLCs but reporting is wound-based and free of gender discrimination<sup>16</sup>. Outcome of significantly higher reporting rate against child victims (aged 10- 20 years; history of fight) in present work indicates rivalry and revenge<sup>17</sup> mediated brutality. The rate of reporting against blunt weapon i.e. 71.6% in history of fight is

close to 59% of a Pakistani research on distribution of medicolegal cases according to weapon used. Blunt weapon is easily accessible in the surrounding of the fight place. However, miscellaneous weapons including fire arm<sup>18</sup> usually cause grievous reportable trauma. Maximum interpersonal violence as the hospital conveying service i.e. Rescue 1122 is quite vigilant set up. However, likelihood of self inflicted injuries still exist and taken as standing medicolegal board experience.<sup>19,20</sup> Usually, MLO emphasizes on wounds (not on fabrication) for reporting the laws set a siding other important elements<sup>21</sup> of the MLC. The victims of Shajjah were 50(16.50%) male and 10 (12.82%) female. The victims of jurr jaifa 90(29.70%) were male and 15(19.23%) female. The victim of Jurr ghair jaffa 75(24.75%) were male and 15(19.23%) were female. The victim of Itlaf e udw were 35(11.55%) and 11(14.10%) female. The victim of Itlaf e saliyat udw were 20(6.60%) and 07(9.0%) female. The victim of 337-L1 were 15(5.0%) male and 10(12.82%) female. The victim of 337-L2 were 07(2.31%) male and 02(2.56%) female.

The victims of 337-J were 11(3.63%) and 08(10.25%) as shown in table no 2.

Indiscriminate attack of the perpetrator and/or lack of safety measures (by victim) results in variety of law qualifying injuries e.g. in RTA or interpersonal violence. Presence of head or face injuries (337-A1 or A2) in fighting is exact endorsement of a work<sup>6</sup> on physical assault. Analysis of the data revealed law reporting in most of the MLC against history of fight with male dominance followed by road traffic accidents females. An integrated program involving target oriented education and awareness on predictors of the injuries is warranted. This will ultimately reduce the surgical morbidity and improve the health and well being of the community. In cases of interpersonal violence, more rate of the reporting against older children (aged 10-18 years) helps parents and law enforcing agencies to seriously think over the hidden factors before resolving them, precisely. Issues like decision about originality (real/fabricated) of the injuries, and KUO (kept under observation) injuries need proper attention for understandable significant entries.

The victim of Shajah Khafifa were 27(54%) male and 3(30%) female. The victim of Shajjah Muhamida were 9(18%) male and 2(20%) female. The victim of Shajjah hashima were 7(14%) male and 2(20%) female. The victim of Shajjah Muqalah were 3(6%) were male and 1(10%) were female. The victim of Shajjah Amma were 2(4%) male and 1(10%) female. The victim of Shajah Damiga were 2(4%) were male and 1(10%) were female.

The victims of Jurr Ghair Jaffa were 27(36%) and 42(26.66%) female. The victims of Jurr Ghair jaffa badiya were 15(20%) were male and 3(20%) female. The victims of Jurr Ghair Jaffa Mutlahmah were 14(18.66%) and 3(20%) female. The victims of Jurr Ghair Jaffa hashimah were 13(17.33%) male and 2(13.33%) female. The victims of Jurr Ghair Jaffa Muqalah were 6(8%) were male and 3(20%) were female. In our study the pattern of hurt coincides with the pattern of hurt of many authors as for example

Iftikhar et al 2012 at Ayub Medical College Abbottabad<sup>22</sup>, who done the work in different cities, provinces of Pakistan. The most of the work contains the victims of violence coming in the emergency departments of the different hospital.

## CONCLUSION

It was concluded that the variety of hurt daily come in the Medical emergency departments of hospital/Forensic Department of Pakistan.

### Author's Contribution:

Concept & Design of Study: Tanveer Hussain  
 Drafting: Azhar Masood Bhatti, Abid Karim  
 Data Analysis: A. Hamid, Abid Karim  
 Revisiting Critically: Tanveer Hussain, Azhar Masood Bhatti  
 Final Approval of version: Tanveer Hussain

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

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# Head and Neck Squamous Cell Carcinoma – A Three Years Experience at Bahawal Victoria Hospital, Bahawalpur

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Head and Neck  
Squamous Cell  
Carcinoma

## ABSTRACT

**Objective:** The aim of this study was to determine the frequency and incidence of head and neck squamous cell carcinoma (HNSCC) in reference to site of lesion reported at Bahawal Victoria Hospital, Southern Punjab, Pakistan.

**Study Design:** Descriptive cross sectional study.

**Place and Duration of Study:** This study was conducted at the Quaid-e-Azam Medical College/ Bahawal Victoria Hospital, Bahawalpur from January 2015 till December 2017.

**Materials and Methods:** It included 126 cases of head and neck squamous cell carcinoma proven by histopathology. Data was retrospectively accessed from the record of Pathology Department. The data was analyzed with help of SPSS version 20.

**Results:** Mean age of patients was  $55.27 \pm 7.29$  years, median age was fifty years. Smoking history was affirmative in 74.32% of patients. Male to female ratio was found to be 1.5:1. Pharynx (49 patients), larynx (43 patients), oral cavity & tongue (24 patients), esophagus (8 patients) and skin (2 patients) were the most common sites involved by squamous cell carcinoma in descending order of frequency. Majority of these neoplasms were categorized as well-differentiated squamous cell carcinomas (n=71, 56.34%).

**Conclusion:** Peak incidence of Squamous cell carcinoma of head and neck region is in the sixth decade of life and is less prevalent in females in comparison to males. Oropharyngeal region turned out to be the most frequent site which was affected by head and neck squamous cell carcinoma followed by larynx.

**Key Words:** Head and Neck Squamous Cell Carcinoma, Oral Cancer, Larynx Cancer, Pharynx Cancer.

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## INTRODUCTION

Head and neck (HN) tumors are the sixth commonest occurring tumors. Squamous cell carcinoma from head and neck region is found to account for almost 80% of the malignancies of head and neck region.

According to record of Cancer Registry and Clinical Data Management Unit at Shoukat Khanum Memorial Cancer Hospital and Research Center, Lahore HNSCC

(head and neck squamous cell carcinoma) is a global concern but more so in the local population of Pakistan, where it is the second most common malignancy. Every year almost 550,000 new cases of HNSCC are registered and it accounts for 380,000 deaths across the globe. There is a male preponderance of the malignancy with male to female ratio of 2:1 to as high as 4:1.<sup>2</sup> Incidence of Head & Neck SCC among males exceeds twenty cases per 100,000 in Europe, Indian Subcontinent, in African Americans residing in United States and Brazil.<sup>3</sup> Squamous cell carcinoma (SCC) of tongue and mouth are frequently observed in Indian subcontinent due to smoking and excessive use of tobacco chewing.<sup>3</sup> Recurrent exposure to carcinogens is supposed to be the major cause of HNSCC.

Cases of HNSCC have been reported to have 6 to 10 mutations in genetic code. Alcohol and tobacco are very strong risk factors<sup>4</sup> whereas bad oral hygiene is also linked to the occurrence of head and neck cancer<sup>8</sup>. Stronger role of HPV is increasingly highlighted in tumors from oro-pharynx in men compared to women in developed countries.<sup>4</sup> Prognosis of HNSCC depends on clinical stage of the disease, regional lymph node involvement and certain specific histopathological features<sup>5</sup>. Patients with head and neck SCC (squamous cell carcinoma) usually come to attention at later stage

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due to multitude of symptoms mimicking benign conditions.<sup>6</sup>

Due to absence of correct data based on epidemiology regarding cancer requires a serious effort to establish cancer data profiles in Pakistan. The most important step required is to lay foundation of National Cancer Registry of Pakistan in order to asses and accurately monitor progression or regression of cancer cases site wise at national level, so that policy makers may direct funds for required appropriate national action against cancer<sup>7</sup>.

## MATERIALS AND METHODS

It is a descriptive cross-sectional investigation carried out at Quaid-e-Azam Medical College/Bahwal Victoria Hospital, Bahawalpur. After taking approval from institutional ethical review committee, data of HNSCC patients was accessed retrospectively from the record of Pathology Department. A total of 126 cases of head and neck SCC (squamous cell carcinoma) proven by histopathology from January 2015 till December 2017 were retrieved. The data was analyzed using SPSS version 20. Age, smoking history, male to female ratio and site of occurrence of SCC was ascertained in head and neck region. Frequencies and percentages were calculated.

## RESULTS

The mean age of cases was  $55.27 \pm 7.29$  years; the median age was fifty years. Smoking history was affirmative in 74.32% of patients. Male to female ratio was found to be 1.5:1. Pharynx (49 patients), larynx (43 patients), oral cavity & tongue (24 patients), esophagus (8 patients) and skin (2 patients) were the most common sites involved by squamous cell carcinoma in descending order of frequency. The details of anatomical regions involved by HNSCC are given in Table. Majority of the neoplasms were categorized as well-differentiated squamous cell carcinomas (n=71, 56.34%).

**Table No.1: Anatomical region involved by Squamous cell carcinoma**

Anatomical Site	Number of Cases (n)	Percentage (%)
Pharynx	49	38.88%
Larynx	43	34.12%
Oral cavity & tongue	24	19.04%
Oesophagus	08	6.34%
Skin	02	1.58%
<b>Total Cases of HNSCC = 126(100%)</b>		

## DISCUSSION

Head and neck cancers are not veryun-common in countries where tobacco use is high.<sup>9</sup> Pakistan is the

second largest consumer of the smokeless tobacco products, a triggering factor for oral cancer.<sup>13</sup> Retrospective study of 126 histologically diagnosed HNSCC cases showed, the mean age of patients was  $55.27 \pm 7.29$  years. A study from Uganda showed mean age 57.7 years, and 80% of the cases presented at a late stage<sup>7</sup>. Studies from Yemen and Sudan had mean ages of 51.3 and 48.78 years.<sup>9,11</sup>

History of smoking and use of tobacco was present in 74% of patients. Alcohol and tobacco are the known risk factors for cancers of oral cavity and oropharynx<sup>7</sup>. Smoking, is linked with an increasing risk of HNSCC, especially SCC of oropharynx.<sup>12</sup>

Patient of HNSCC were more males, and ratio of males to females was 1.5:1, in this study. Male predominance has also been reported in many studies from developed as well as developing countries.<sup>13</sup> In a recent study in United States of America, prevalence of human papilloma virus was markedly high in men in comparison to women, a risk factor for SCC.<sup>4</sup> Similarly prevalence of smoking and smokeless tobacco use was more in males, according to a study conducted in Karachi.<sup>9</sup>

Data of the present study conducted at tertiary care hospital Bahawalpur indicates that majority of the patients of HNSCC had oropharyngeal tumors (58%) with involvement of pharynx in 43 cases while 24 cases had an oral cavity tumor. Larynx was the next frequent site of involvement (34%) followed by oesophagus (6.3%) and skin (1.6%). Nabukenya et al. reported pharynx as the highest involved site (37.3%), followed by the oral cavity (17.6%) and the larynx (17.6%) in the patients of HNSCC.<sup>10</sup> Another study showed that primary site of lesion in males is larynx and in females is oral cavity.<sup>1</sup> A similar study conducted previously in this region also showed larynx to be the most frequent single primary site for HNSCC<sup>15</sup>.

More than half (56%) cases of HNSCC were well differentiated on histopathology in this study. Similar results were found in the previous study with 51% cases of well differentiated type<sup>15</sup>. The majority of patients had moderately-differentiated tumors in a study done in Puerto Ricans<sup>14</sup>.

Pakistan is high risk area for occurrence of tumors of head and neck region. As of latest statistical estimates, oral cavity and lip cancer is most common cancer in males in Pakistan and second most common cancer in females<sup>16-19</sup>. In the absence of national tumor registry, accurate statistical data is not available which is needed for improved primary prevention, diagnostic and treatment facilities.

## CONCLUSION

Squamous cell carcinoma (SCC) of head and neck region has peak incidence in life's sixth decade. It is more common in males in comparison to females.

Oropharyngeal region is the most frequently affected site in head and neck SCC followed by larynx.

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# Histopathological Analysis of Otorhinolaryngologic Diseases – An Institution Based Study

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Histopathological Analysis of Otorhinolaryngologic Diseases

## ABSTRACT

**Objective:** The aim of this study is to analyze the histopathological diagnoses of surgical specimens from otorhinolaryngeal region.

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

**Place and Duration of Study:** This study was conducted at the Pathology Department of Quaid-e-Azam Medical College from January 2016 till December 2018.

**Materials and Methods:** This descriptive cross-sectional study was carried out at the Pathology Department of Quaid-e-Azam Medical College which analyzed three year record from January 2016 till December 2018 of all the histopathologically proven benign, malignant and non-neoplastic lesions from otorhinolaryngeal region. The data was retrieved from the record of biopsies requisitioned by ENT Department of Bahawal Victoria Hospital, Bahawalpur-Pakistan. The data based upon epidemiology was evaluated for gender, exact site of lesion and the histological type of lesion.

**Results:** Out of the total number of 224 cases, 123 turned out to be males and 101 were females. 63.83% (143 patients), 17.85 % (40 patients) and 18.30% (41 patients) of the biopsies were malignant, benign and non-neoplastic respectively, that were sent from ENT wards. The most frequent non-neoplastic lesion diagnosed was nasal polyp in 25 patients representing almost 61 % of the burden of non-neoplastic disease. Whereas 10 patients were diagnosed with squamous papilloma, sharing 25 % of the burden of benign diseases from otorhinolaryngeal region and it was the most common benign lesion. Out of the 143 patients suffering from malignancy, 126 cases were of squamous cell carcinoma, sharing almost 88 % of the burden of malignancies from otorhinolaryngeal region.

**Conclusion:** Neoplastic lesions, most of which were malignant formed the major bulk of disease burden in surgical pathology specimens from otorhinolaryngical region at Bahawal Victoria Hospital, Bahawalpur. Nasal polyp, squamous papilloma and squamous cell carcinoma turned out to be the most common lesions in non-neoplastic, benign and malignant groups respectively.

**Key Words:** Otorhinolaryngologic Diseases, Otorhinolaryngologic Neoplasms, Nasal polyps, Squamous cell papilloma, Inverted papilloma, Squamous cell carcinoma, Nasopharyngeal Carcinoma

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## INTRODUCTION

Diseases of the ear, nose and throat (ENT) account for a large proportion of consultations in urban as well as rural areas. These diseases range from minor medical ailments to severe problems like malignancies.<sup>1</sup>

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Among these diseases, ear problems rank number one followed by those affecting nose and then throat.<sup>2</sup> A number of problems affect the ear which usually compromise life quality, however mortality is rare. Inflammatory disorders along with benign tumors are far more prevalent as compared to cancers. Among inflammatory disorders, polyps of ear are most commonly found after cholesteatomas.<sup>3</sup>

Much diversity is seen in the benign tumors and cancers that affect para-nasal sinuses and the nasal cavity itself. A long list of disorders that affect these structures are basically because of the various tissues of specialized nature present in this area.<sup>4</sup>

Oral cavity benign tumors and cancers are not uncommon. In latter, SCC (squamous cell carcinoma) is the most common malignancy.<sup>5</sup> Diseases of the ear, nose and throat in adults as well as children in Pakistan is a significant health issue.<sup>1</sup>

Detailed clinical examination and advanced radiological investigation aids to make an initial

diagnosis of these diseases but definitive diagnosis of these diseases is not possible without histopathologic confirmation.<sup>6</sup> Limited health resources in developing countries along with the diverse range of disorders that affect ear, nose and throat is quite a challenge for health administrations in the developing world<sup>7</sup>, the story is not different in Pakistan.

Developing data on otorhinolaryngologic diseases will be very helpful in planning and implementation of policy in this specific field.<sup>6</sup> Studies to acquire this data from different regions of Pakistan is mandatory for national policy making to address these health problems in our country. This study aims to contribute towards this goal.

## MATERIALS AND METHODS

It was a descriptive cross-sectional investigation. After due approval from ethical review committee of the institution, a retrospective analysis was done from January 2016 till December 2018 at Pathology Department of Quaid-e-Azam Medical College attached with cases referred from Bahawal Victoria Hospital, Bahawalpur, Pakistan for histological diagnosis. Record of all the histopathologically proven benign, malignant and non-neoplastic lesions from otorhinolaryngeal region was retrieved from the record of biopsies requisitioned by ENT Department.

The data based upon epidemiology was reviewed along with analysis for the exact site involved by the lesion, gender and the histopathological type of lesion. Frequencies and percentages were calculated for individual lesions in non-neoplastic, benign and malignant groups.

## RESULTS

Out of a total of 224 cases, 123 were males and 101 were females. 63.83% (143 patients), 17.85 % (40 patients) and 18.30% (41 patients) of the biopsies were malignant, benign and non-neoplastic respectively, that were sent from ENT wards.

Benign polyp from nasal area was the most common non-neoplastic lesion diagnosed in 25 patients representing almost 61 % of the burden of non-neoplastic disease, followed by aural polyp, tuberculous lymphadenitis, sialadenitis and several other lesions. The details of distribution of non-neoplastic lesions is given in detail in Table No. 1.

Ten patients were diagnosed with squamous papilloma, sharing 25 % of the burden of benign diseases from otorhinolaryngeal region and turned out to be the most common lesion in benign category followed by squamous papilloma, inverted papilloma, angiofibroma, hemangioma, nasopharyngeal fibroma and a few other lesions. The details of distribution of benign lesions is given in Table No. 2.

**Table No. 1: Frequency of Non-neoplastic disorders**

Type of abnormality	Patient number (n)	Percentage (%)
<b>Nasal Polyp</b>	25	60.97%
<b>Aural Polyp</b>	07	17.07%
<b>Tuberculous lymphadenitis</b>	02	4.87%
<b>Sialadenitis</b>	02	4.87%
<b>Others*</b>	05	12.19%
<b>Total non-neoplastic lesions= 41(18.30%)</b>		

\* Other lesions include one case each of dentigous cyst, acute laryngitis, cholesteatoma, tonsillitis and fibroepithelial polyp.

**Table No. 2: Frequency of benign disorders**

Type of abnormality	Patient number (n)	Percentage (%)
<b>Squamous papilloma</b>	10	25%
<b>Inverted papilloma</b>	09	22.5%
<b>Angiofibroma</b>	06	15 %
<b>Hemangioma</b>	05	12.5%
<b>Nasopharyngeal fibroma</b>	02	5%
<b>Others*</b>	08	20%
<b>Total benign lesions= 40 (17.85%)</b>		

\*Other lesions include one case each of adenomatoido-dontogenictumour, cylindroma, hemangioendo-thelioma, hemangiopericytoma, neurofibroma, paraganglioma, lipoma&keratocanthoma

**Table No. 3: Frequency of malignant disorders**

Type of abnormality	Patient number (n)	Percentage (%)
<b>Squamous cell carcinoma</b>	126	88.11 %
<b>Nasopharyngeal carcinoma</b>	07	4.8 %
<b>Transitional cell carcinoma</b>	03	2.09%
<b>Non- Hodgkin's lymphoma</b>	02	1.39%
<b>Others*</b>	05	3.49%
<b>Total malignant lesions= 143 (63.83%)</b>		

\* Other lesions included a case each of adenocarcinoma, adenoid cystic carcinoma (ACC), basal cell carcinoma (BCC), Ewing's sarcoma & Hodgkin's lymphoma.

Out of the 143 patients suffering from malignancy, 73 were males and 70 were females. Squamous cell carcinoma was present in 88% (126 patients) of malignant biopsies. Squamous cell carcinoma was followed by nasopharyngeal carcinoma, transitional cell carcinoma, Non-Hodgkin's lymphoma and some other lesions in descending order of occurrence, the details are highlighted in Table No. 3.

## DISCUSSION

An extensive range of ear, nose and throat disorders come to the attention of Otorhinolaryngologists and surgeons dealing with head and neck tumors.<sup>5</sup> This retrospective data based study of 224 cases of surgery from ENT ward, have predominance of male patients (123) as compared to female (101). Many studies have shown stronger predilection of ENT diseases affecting males.<sup>1,3,7</sup>

Maximum number of the surgical biopsies from ENT ward were neoplastic (81%). Amongst these neoplastic disorders, 83% were malignant while only 17% were benign. A study conducted on prevalence of ear mass showed that malignant lesions were 2/3<sup>rd</sup> of all surgeries done for mass in ear.<sup>7</sup> Similarly neoplastic lesions were found to be common in nasopharyngeal region.<sup>8</sup> Squamous cell carcinoma (SCC) formed the bulk of malignant lesions (88%), followed by nasopharyngeal carcinoma (4.8%). Studies have shown SCC to be the most predominant head and neck tumour.<sup>4,7</sup> SCC of head and neck region constitute 25% of all SCC in the body.<sup>2</sup> In 2012 a study by Baig et al. in Karachi, had found that gutka had exaggerated the incidence of SCC.<sup>9</sup> In another study nasopharyngeal carcinoma was found to be the most frequent tumor of nasopharynx.<sup>10</sup>

According to data, in benign neoplastic lesions squamous papilloma (25%) and inverted papilloma (22%) constitute about 50% of such lesions. In non-epithelial benign neoplastic lesions hemangioma and angiomyxoma form another 25% of benign lesions. Inverted papilloma was the commonest 15.38 % in an investigation by Aperna et al. carried out in India.<sup>3</sup> In another study on the diseases of nasal cavity, squamous papilloma was more frequent followed by hemangioma and then inverted papilloma.<sup>11</sup>

In non-neoplastic lesions nasal polyps were most prevalent 60% followed by aural polyps 17%. Other non-neoplastic lesions were rare. Sino-nasal polyps were found to be most common (70%) of non-neoplastic lesions in many studies.<sup>4,8,11</sup> Nasal polyps are associated with chronic inflammation especially allergic rhinitis and asthma.<sup>12</sup>

It is of utmost value to ascertain otorhinolaryngologic disorders and the related causes for early identification and treatment of these disease entities by relevant health care delivery facilities.<sup>13</sup>

## CONCLUSION

Neoplastic lesions, most of which were malignant formed the major bulk of disease burden in surgical pathology specimens from otorhinolaryngological region at Bahawal Victoria Hospital, Bahawalpur. Nasal polyp, squamous papilloma and squamous cell carcinoma were the most common lesions in non-neoplastic, benign and malignant groups respectively.

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

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# Perception of Oral Health Related Quality of Life (OHRQoL) Among Congenitally Missing Teeth Patients and Acquired Missing Teeth Patients; a Comparative Study

Oral Health  
Related Quality  
of Life

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and Samina Qadir<sup>2</sup>

## ABSTRACT

**Objective:** To determine a comparison of oral health related quality of life (OHRQoL) among congenitally missing teeth patients and acquired missing teeth patients.

**Study Design:** A comparative cross-sectional survey

**Place and Duration of Study:** This study was conducted at the Department of Prosthodontics, de'Montmorency College of Dentistry/Punjab Dental Hospital Lahore from 02.01.2019 to 01.06.2019.

**Materials and Methods:** A total of 82 were included in the study in which 41 with congenitally missing teeth patients and 41 were acquired missing teeth patients. All patients were provided OHIP-14 questionnaire and outcome were documented on 5-point Likert scale. The mean scores of the two groups were recorded and chi square test applied for comparison.

**Results:** The results showed that Oral Health Impact Profile (OHIP) outcome in patients with hypodontia were observed more as compared to the acquired missing teeth.

**Conclusion:** The OHRQoL in congenitally missing teeth was significantly compromised as compared acquired missing teeth patients as the tooth loss increased.

**Key Words:** Hypodontia, Oral Health Impact Profile (OHIP), Oral Health Related Quality of Life (OHRQoL).

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## INTRODUCTION

Loss of tooth is a key indicator of the status of oral health in a population.<sup>1</sup> Edentulism not only compromises eating abilities but also affect speech and appearance.<sup>2</sup> Low level of confidence, loss of weight and inadequate dietary and limited social activities are also affected.<sup>3-5</sup>

Hypodontia is classified as mild state when one to three teeth are not present; moderate condition in which four to six teeth are absent and severe when more than six teeth are missed.<sup>6</sup> The reported incidence of hypodontia fluctuates depending on gender and population.<sup>7</sup> The prevalence of hypodontia in the primary teeth is about 0.5% and in permanent teeth ranging from 3.5-6.5%.<sup>8,9</sup>

Along with tooth loss, patients suffer morphological variation in tooth structure, deficiencies in bone volume and skeletal jaw malrelationships.<sup>4</sup> Hobkirk et al. found that most common patients 'complaint was not satisfied with appearance, in a retrospective survey of 451 subjects.<sup>10</sup>

Oral health related quality of life recognized as a parameter to analyze the outcome in hypodontia patients' daily life and finding possible treatments plans.<sup>11</sup> Oral Health Impact Profile is a common measuring scale applied to assess OHRQoL.<sup>12,13</sup>

There is massive evidence displaying the bad impact of acquired missing teeth on OHRQoL. But the available data on OHRQoL in congenitally missing teeth patients is insufficient.<sup>14</sup>

## MATERIALS AND METHODS

After ethics approval present study was conducted at Prosthodontics and Orthodontics department, Punjab Dental Hospital/de'Mont, Lahore. Eighty two patients were included in the study sample and both groups had 41 patients. Group A had patients with congenital missing teeth and patients with acquired missing teeth in Group B.

Informed consent was taken. They were asked to complete a questionnaire. A self-administered

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questionnaire OHIP-14 applied to find quality of life. Proforma contained fourteen questions. 5-point likert scale was used to make responses and mark. The scores has inverse relationship to rectification in oral health related quality of life. Patients' age was between 14 and 28 years old and not more than six missed teeth either congenitally or acquired that was evaluated by history, clinical examination and radiographic assessment were included in this survey.

#### Statistical Analysis:

Mean and standard deviation for age and OHRQoL were considered. Frequency and percentage were applied for gender. Chi square test was applied for the comparison of OHRQoL scores among two groups. (P-values  $\leq 0.05$ ). OHIP result was stratified for lost dentate ( $\leq 3, > 3$ ) for the prediction of effect modifier.

**Table No.1: Comparison of OHRQoL**

No. of Missing teeth	Missing teeth	total patients	total score	level of significance
1-3 missing teeth	hypodontia	18	13.59 $\pm$ 7.017	0.225 (not significant)
	Acquired missing teeth	20	11.10 $\pm$ 5.119	
4,5 missing teeth	hypodontia	23	22.74 $\pm$ 7.623	0.00 (significant)
	Acquired missing teeth	21	12.20 $\pm$ 5.064	

**Table No.2: Functional limitation**

Responses	Query 1		Query 2	
	Congenital	Acquired	Congenital	Acquired
Not ever	11	19	33	39
Hardly if ever	6	8	4	2
Rarely	15	9	2	0
Sometimes	6	3	2	0
Very common	3	2	0	0
p value	0.18		0.409	

**Table No.3: Physical Pain**

Responses	Query 3		Query 4	
	Congenital	Acquired	Congenital	Acquired
Not ever	18	20	9	12
Hardly if ever	12	11	15	6
Rarely	10	10	10	14
Sometimes	1	0	5	8
Very common	0	0	2	1
p value	0.612		0.068	

**Table No.4: Psychological discomfort**

Responses	Query 5		Query 6	
	Congenital	Acquired	Congenital	Acquired
Not ever	3	4	2	8
Hardly if ever	3	6	6	7
Rarely	8	18	7	12
Sometimes	13	12	7	10
Very common	14	1	19	4
p value	0.001 significant		.002 significant	

## DISCUSSION

There is not enough data regarding oral health related quality of life among early adults and teenagers patients with hypodontia. Fowler et al. in his survey reported that the incidence of hypodontia is not more than 1%.<sup>15</sup>

## RESULTS

In group A, 15 males and 26 females hypodontia patients though 17 males and 24 were females in group B. Subjects with one to three missed teeth, in hypodontia group score was  $13.59 \pm 7.10$  and acquired missing teeth patients was  $11.10 \pm 5.11$ . There is not much variation in both A & B group.

Total OHIP scores in first group was  $22.74 \pm 7.62$  and in second group was  $12.20 \pm 5.06$  if 4-6 missing teeth. This shows an appreciable difference (Table 1). In the other fields there were no discrepancies in patients with congenitally missing teeth and patients with acquired missing teeth (Table 2,3,4). After data analysis it was observed hypodontia patients suffered more with psychological discomfort and psychological as compared to patients with acquired missing teeth.

Therefore, subjects not more than 6 missing teeth considered as mild to moderate hypodontia has been incorporated in the survey.

OHIP is a commonly used question pattern to evaluate the Oral Health Related Quality of Life. Maria et al have already applied OHIP to assess OHRQoL in

patient hypodontia and acquired missing teeth patients.<sup>15</sup> Patients have age range of 14-28 years old were considered in the study so they can easily understand all questions and give accurate responses.

Wong et al revealed an important association among the missing teeth and more score of OHIP.<sup>11</sup> various surveys on hypodontia patients found that it resulted in a major influence on functional and psychological affect on quality of life. Moreover, outcome of our study reported that an unusual difference in both groups in the field of psychological discomfort and disability with more scoring in patients with hypodontia. Because of fact, hypodontia patients faced problem of congenital absence of teeth which might badly impact on their personality, self respect and confidence. Additionally, hypodontia condition mostly association with any syndrome in which the remaining teeth present with abnormal morphology. Wong et al reported almost similar results.

In the present study results showed that the oral health related quality of life in patients with hypodontia was significantly compromised in contrast with the OHRQoL in acquired missed teeth patients as the tooth loss is increased.

## CONCLUSION

It was concluded that the oral health related quality of life in patients with hypodontia was significantly compromised as contrast to the oral health related quality of life acquired missing teeth patients as the number of lost teeth increased.

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# Cardiac Enzymes in Acute Coronary Syndrome

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## ABSTRACT

**Objective:** The present study was conducted on specific population of Mirpur Azad Kashmir to observe the behavior of the MI evaluating various cardiac biomarkers for the detection of ACS in relation to age, gender and risk factors.

**Study Design:** Case control study

**Place and Duration of Study:** This study was conducted at the Indoor Patient Department Kashmir Institute of Cardiology Mirpur, Azad Jammu and Kashmir from June 2013 to July 2014.

**Materials and Methods:** Total 240 patients were recruited in the study. 120 admitted patients of Acute Myocardial Infarction (AMI) in Kashmir Institute of Cardiology were registered as cases. 120 age and sex matched controls were included in the study. Informed written consent was obtained by the participants of study. Detailed medical/surgical history was obtained and recorded.

**Results:** The cardiac enzymes used as biomarkers of myocardial infarction (MI) have been assayed in MI affected and compatible non MI control subjects. The pertinent cardiac enzymes in related to MI included CK-NAC and LDH. The responses of the cardiac enzymes have been analyzed in relation to age.

**Conclusion:** It is concluded in this study that, in all the subjects of study, main cardiac enzymes CKNAC and LDH concentrations were increased in MI patients as compared non-MI subjects. This study also concludes this significant rise of CKNAC in younger group and that of LDH in oldest age group.

**Key Words:** CK-NAC, LDH, Cardiac Enzymes, Acute Coronary Syndrome

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## INTRODUCTION

Coronary artery disease (CAD) is one of the major causes of mortality worldwide. In developing countries, CAD affected population is increasing more rapidly as compared to developed countries. CAD is anticipated to be the leading cause of death in developing countries in near future (Jafaryet al., 2005 & Ali et al., 2009)<sup>1</sup>. Ischemic heart disease (IHD) is the most common cause of mortality in developed world, followed by developing countries in which incidence is increasing rapidly (Munir, 2007)<sup>2</sup>.

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Until recently, diagnosis of AMI was based on the revised World Health Organization (WHO) criteria that require 2 of the following 3 features for diagnosis i.e. signs and symptoms of ischemia, ECG changes consistent with severity/degree of ischemia and elevated enzyme levels usually Creatine Kinase Myocardial Band (CK-MB) (Meier et al., 2002)<sup>3</sup>.

Clinicians face a common and difficult challenge in identifying patients with acute chest pain who are at high risk for developing cardiovascular complications (Johnson et al., 1999)<sup>4</sup>. Around 2-10% cases of AMI remains undiagnosed and are missed. Conversely, a large number of patients admitted with the complaint of chest pain do not turn out to have Acute Coronary Syndrome (ACS). In addition to ACS, other life threatening diseases include pulmonary embolism, aortic dissection and tension Pneumothorax requiring rapid diagnosis and different treatment than ACS (Swap, 2005)<sup>5</sup>.

The modified WHO criterion to differentiate patients of AMI presenting with chest pain from those presenting with other non-cardiac causes in the following way of chest pain/ discomfort for duration of at least 20 minutes; ECG changes consistent with AMI, defined as ST-segment deviation (ST segment depression or elevation  $\geq 0.1$ mV on at least two adjacent leads) or new symmetric T wave inversion  $\geq 0.1$ mV or both and changes in serial plasma or serum, protein markers

(LDH or CTnI) associated with AMI (Apple et al., 1999).<sup>6</sup> Immediately after an acute coronary occlusion, blood flow ceases in the coronary vessels beyond the occlusion except for small amounts of collateral flow from surrounding vessels. The area of muscle that has either zero flow or so little flow that it cannot sustain cardiac muscle function is said to be infarcted, and the condition is known as MI (White, 2009).<sup>7</sup>

Cardiac enzymes are found in heart tissue, serving as catalysts for the heart's biochemical reactions. Key cardiac enzymes are troponin and creatine kinase. Troponin-T is a part of the troponin complex and binds to tropomyosin, interlocking them to form a troponin-tropomyosin complex. Cardiac troponin regulates the cardiac muscle contraction in response to changes in calcium concentration (Layland, 2005).<sup>8</sup>

Creatine kinase (CK), aspartate transferase (AST) and lactate dehydrogenase (LDH) are also biochemical markers for the diagnosis of acute myocardial infarction (Fonteset al., 1999).<sup>9</sup>

In Pakistan, IHD is the 2nd leading cause of death at all ages contributing to 11% of all deaths (Andrieuet al., 2000).<sup>10</sup> The incidence of AMI has been found to prevail in differing age although with greater magnitude in aging (Pfefferet al., 2000 & Morillaset al., 2007).<sup>11</sup> Similarly there is evident difference in the incidence of AMI in the different genders (Merzet al., 2006).<sup>12</sup>

## MATERIALS AND METHODS

This Case control study was conducted at indoor patient department Kashmir Institute of Cardiology Mirpur, Azad Jammu and Kashmir in 12 months.

**Sampling Technique:** Non-probability purposive sampling technique was used.

**population selection and sample size:** Total 240 patients were recruited in the study. 120 admitted patients of Acute Myocardial Infarction (AMI) in Kashmir Institute of Cardiology were registered as cases. The span of study was from June 2013 to July 2014. 120 age and sex matched controls were included in the study. Informed written consent was obtained by the participants of study. Detailed medical/surgical history was obtained and recorded.

### SAMPLE SELECTION

#### Inclusion criteria

- Patients with chest pain suggestive of myocardial ischemia within 12 hours after the onset of symptoms on the basis of ECG changes.
- Persons presenting with non-infarcted states of ischemia, routine, general health check-up were taken as controls.

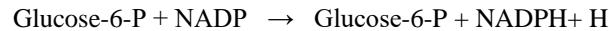
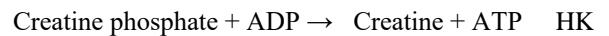
#### Exclusion criteria

- Severe skeletal muscle damage or trauma as CK is deranged in skeletal muscle damage.
- Cardiac resuscitation
- Patients undergone cardiac surgery
- Patients suffering from re-infarction

**Data Collection Procedure:** Serum samples were drawn from one of peripheral vein of arm, and serum was analyzed. Age and sex matched individuals presenting for a routine, general health check-up and diseases like hypertension, diabetes mellitus with ECG not suggestive of myocardial infarction were taken as the control group. Blood specimen were collected from each participant after admission suffering from acute symptoms. Serum levels of CK-NAC, CKMB and LDH was analyzed using chemistry analyzer Micro lab.

**Principle:** Assay method was based on the reverse reaction (ATP formation). Hexokinase and glucose-6phosphate dehydrogenase were used as coupling enzymes. CK catalyzes the conversion of creatine phosphate and ADP to creatine and ATP. The ATP and glucose are converted to ADP and Glucose-6-phosphate by Hexokinase (HK). Glucose-6-phosphate dehydrogenase (G-6-PDH) oxidizes at the glucose-6phosphate and reduces the nicotinamide adenine dinucleotide (NAD). The rate of NADH formation measured at 340 nm is directly proportional to the serum CK activity.

#### CK



**Procedure:** 1.0 ml. of substrate reagent was put into each cuvette and incubated at 37 C for 3 minutes with absorbance of 340nm. 0.05 ml (50  $\mu$ L) of specimen was added into appropriate cuvette. Mixed gently and placed into the temperature controlled cell compartment of the instrument. Immediately timer was started. After 2 minutes, initial absorbance was recorded (A1). Two readings were recorded at 1 minute intervals after A1. Decrease in absorbance per minute

$\Delta A/\text{min.}$  was recorded from the linear path of the assay with greater slope.  $\Delta A/\text{min.}$  was multiplied by the Factor 3376 to calculate U/L of CK.

#### B) Lactate Dehydrogenase

**Principle:** It utilizes the principle of spectrophotometer carried out at 340 nm. In the reaction, the LD catalyzed the reversible oxidation of L-Lactate to Pyruvate with the concurrent reduction of  $\beta$ -Nicotinamide Adenine Dinucleotide (NAD) to  $\beta$ -Nicotinamide Adenine Dinucleotide (reduced form) (NADH). The system monitored the rate of change in absorbance at 340 nm over a fixed-time interval. The rate of change in absorbance was directly proportional to the activity of LD in the sample.



**Procedure:** 0.05ml of Sample of serum was obtained and was mixed with 3 ml of reagent (phosphate buffer Timer was started simultaneously and reading was obtained after 1, 2 and 3 minutes.

Decrease in absorbance per minute  $\Delta A/\text{min.}$  was recorded from the linear path of the assay with greater

slope.  $\Delta A/min.$  was multiplied by the Factor 9683 to calculate U/L of LDH.

**Data Analysis:** Data entry and analysis was done by using SPSS 20. Quantitative variables were presented by using mean  $\pm$  SD. Study variables were analyzed by using frequency table and percentages. Participants were divided into 3 age groups: 21-39, 40-59 and 60 years and above for statistical analysis. Association between study variables in between the groups and within the groups was assessed by applying ANOVA to see the level of CK-NAC and LDH.  $P < 0.005$  was taken as significant.

## RESULTS

The cardiac enzymes used as biomarkers of myocardial infarction (MI) have been assayed in MI affected and compatible non MI control subjects. The pertinent cardiac enzymes in related to MI included CK-NAC and LDH. The responses of the cardiac enzymes have been analyzed in relation to age.

**Cardiac enzymes in relation to myocardial infarction status & non-infarction:** Collectively, in all the subjects of study, mean cardiac enzyme concentrations were increased in MI patients as compared to non MI subjects. CK-NAC was 54% higher ( $p = 0.000$ ) in MI patients, with observed mean  $364.48 \pm 39.11$  as compared to observed mean  $167.10 \pm 3.11$  in non-MI subjects. LDH was 28% higher ( $p = 0.000$ ) in MI patients, with observed mean  $482.96 \pm 27$  as compared to observed mean  $346.70 \pm 6.2$  in non-MI subjects as shown in Table 1.

**Table No.1: Cardiac Enzymes in Cardiovascular Diseases In Relation To MI & non-MI**

	CK-NAC	P	LDH
MI	$364.48 \pm 39.1$	0.00	$482.96 \pm 26.7$
Non-MI	$167.10 \pm 3.11$		$346.70 \pm 6.2$
% difference	54		28

\* Significant p value  $< 0.05$

### AGE-WISE ANALYSIS IN BOTH GENDERS

CK-NAC and LDH were assessed in age groups of 21-39, 40-59, and 60 years and more, in patients of myocardial infarction and unaffected subjects.

### MYOCARDIAL INFARCTED SUBJECTS

#### CREATININE KINASE-NAC:

The mean CK-NAC value was  $596 \pm 120$  U/L in the age group 21-39 years in MI subjects. The concentrations of the enzyme were  $425 \pm 69$  and  $245 \pm 30$  U/L in MI affected 40-59 years and 60 years and above subjects respectively. In the comparisons in the enzyme concentrations  $p$  between different age groups, values were significantly 59% lower ( $P = .044$ ) in 60 years and above as compared to 21-39 years of age group. In the comparisons between 40-59 and 60 year and above groups, the enzyme concentration was 43% lower in the older group ( $P = .067$ ). The difference between these

groups had been non-significant at 5% confidence interval; however, it was statistically significant at 10% confidence interval.

The concentrations of CK-NAC in MI affected subjects were the highest in the younger age groups that was found lower gradually in middle age group and the older age group of the study.

#### LACTATE DEHYDROGENASE:

#### CARDIAC ENZYMES ANALYSES

A) CREATINE KINASE -NAC Pyruvate and reconstituted NADH).

Both were mixed and initial absorbance at 340nm was obtained after 0.5 min.

In the comparison between the groups, the enzyme concentrations between 40-59 years and 60 years and above age were significantly ( $P = .004$ ) different and was about 13% greater in the older than the younger group. The comparisons among the other groups were however non-significant.

The concentrations of CK-NAC in non-MI affected subjects were the highest in the 60 years and above age group and were found gradually lower in the younger as compared to older groups.

#### LACTATE DEHYDROGENASE:

The average concentrations of LDH in non-MI affected subjects were  $312 \pm 3$ ,  $323 \pm 9$  and  $365 \pm 7$  U/L in 21-39, 40-59 and 60 years and above age groups respectively. In 21-39 years of age group the enzyme concentration was lower than both the 40-59 years (3.4%) as well as the older age (14%) group. However, the difference between the middle and the older age groups was significant statistically ( $P = .003$ ).

The enzyme LDH remained in lowest concentration in 21-39 years of age as compared to other groups in non-MI subjects.

### NON- MYOCARDIAL INFARCTED SUBJECTS

#### CREATININE KINASE- NAC:

**Table No.2: Cardiac Enzymes (U/L) in different age groups following M.I.**

Enzymes	Age Group	Concen- tration U/L	F	Signifi- cance
CK- NAC	21-39	$596.30 \pm 120$	4.211	0.017
	40-59	$425.10 \pm 68$		
	60&above	$245.38 \pm 30$		
LDH	21-39	$410.60 \pm 54$	0.334	0.717
	40-59	$487.15 \pm 39$		
	60&above	$492.40 \pm 41$		

**Table No.3: Cardiac Enzymes (U/L) in different age groups in non- M.I.**

LDH	21-39	312±3	6.2	0.003
	40-59	323.76±9	47	
	60& above	365.55±7		

The CK-NAC value was  $146\pm16$  U/L in the group of 21-39 years of age in non-myocardial infarcted (MI) subjects. The concentrations of the enzyme were  $156\pm3$  and  $176\pm4$  U/L in non-MI affected 40-59 years and 60 years and above subjects respectively.

## DISCUSSION

Coronary artery disease is the leading cause of morbidity and mortality. Approximately about 25% of patients presenting with chest pain are diagnosed as suffering from MI (Kumar et al., 2008).<sup>13</sup> In terms of increase in life expectancy, age has been related to increased prevalence rates of coronary artery disease (Yazdanyar, 2009).<sup>14</sup> Onset of coronary artery disease may proceed due to aging with the additional factors, of nutrition, activity, genetics etc. It develops without significant indicators for it and if there appear certain are mixed for multiple disorders. Generally it appears with the episode of MI that has been characterized with the specific responses of cardiac enzymes. Although cardiac enzymes have been assessed for diagnostic purposes otherwise the cardiac enzymes may have specific patterns varying in the different states of subject inflicted with MI. Thus the present had been conducted in the population of Mirpur, AJK in order to analyze the age related changes in cardiac enzymes in subjects with and without MI presenting to Kashmir Institute of Cardiology with the history of chest pain from June 2013 to May 2014. In present study, the mean age of male cases was 51.4 years while it was 56.6 years for females. The female cases were 5.1 year older than males. This observation is in accordance with (Joshi et al., 2007)<sup>15</sup> who reported female cases are 5.6 years older than male cases.

In the present study, CK-MB levels were 45% higher in youngest age group of males with MI as compared to oldest age group. In females with MI, it was observed that CK-MB was highest in middle age group as compared to younger and older age groups.

This finding is not in accordance with (Teryet et al., 2002)<sup>16</sup> who reported 86% rise in CK-MB level in older age group.

This might indicate the severity of involvement of myocardium in MI of the younger age subjects. This observation is of significance and further such studies on this age group may reveal importance results.

It was observed in current study that cardiac enzyme CK-NAC was 64% higher in youngest age males than the oldest males. In females with MI, CK-NAC was 68% higher in 40-59 years age group as compared to youngest age group. (Haseeb et al; 2013)<sup>17</sup> showed that there were no differences in both genders with MI in different age groups. LDH levels were lowest in youngest age group with MI in both genders as compared to other age groups and were insignificant ( $p<0.05$ ). In current study in non-MI affected males and females, CK-NAC, CK-MB and LDH showed statistically significant differences for different age groups.

## CONCLUSION

It is concluded in this study that, in all the subjects of study, main cardiac enzymes CKNAC and LDH concentrations were increased in MI patients as compared non-MI subjects. This study also concludes this significant rise of CKNAC in younger group and that of LDH in oldest age group.

### Author's Contribution:

Concept & Design of Study: Khuram Shazad  
 Drafting: Rashid Mahmood, Abdullah Mashori  
 Data Analysis: Syeda Asya Parveen, Farooq Muanfat  
 Revisiting Critically: Khuram Shazad, Rashid Mahmood  
 Final Approval of version: Khuram Shazad

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

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# Identification of Common Factors Leading to Emergency Cesarean Hysterectomy

Talat Nelofer<sup>1</sup>, Isma Rauf<sup>1</sup> and Yasir Arfat<sup>2</sup>

## ABSTRACT

**Objective:** To determine the common factors leading to emergency cesarean hysterectomy. Emergency cesarean hysterectomy is a serious challenge for a surgeon and for the patient as well. The severity of case demands a skilled and experienced surgeon and procedure should be completed swiftly to avoid lethal consequences. It is necessary to predict potential pregnant women who may suffer from the disease as a preemptive measure. This study aims to access major causes which can lead to Emergency cesarean hysterectomy.

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

**Place and Duration of Study:** This study was conducted at the Department of Obstetrics and Gynecology, Ayub Medical Complex, Abbottabad from March 2011 to March 2012.

**Materials and Methods:** Total 84 qualified subjects underwent a complete obstetrical clinical workup comprising of history, general physical examination, abdominal and pelvic examination, relevant investigations (laboratory tests). All maternal complications were noted and recorded on pre-designed proforma. The study population included all patients who underwent cesarean delivery after 28 weeks gestations and hysterectomy performed either during cesarean delivery or within 24 hours after cesarean delivery. The age limit of patients was between 15-45 years and any gravidity/ parity. The common factors such as previous cesarean delivery, uterine rupture, undiagnosed placenta previa, uterine atony was taken into consideration.

**Results:** The frequency of common factors (Previous cesarean delivery, uterine rupture, Undiagnosed placenta previa, uterine atony) was calculated as: previous cesarean delivery 6.0%, uterine ruptured 32.1%, undiagnosed placenta previa 19.0% and uterine atony 46.4%. The age group mainly affected was 26 years to 35 years in all cases and percentage of affected was; previous cesarean history 3.6%, uterine rupture 20.2%, undiagnosed placenta previa 11.9% and uterine atony was 33.3%.

**Conclusion:** The study concludes that the frequency of leading factors for Emergency cesarean hysterectomy in this setting was uterine atony followed by uterine rupture and most threaten age group was 26 to 35 years.

**Key Words:** Emergency cesarean hysterectomy; Uterine rupture; Uterine atony

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## INTRODUCTION

Obstetrical hysterectomy refers to the surgical removal of the pregnant or recently pregnant uterus. The term includes hysterectomy with the pregnancy in-situ, as well as operations related to the complications of delivery. This life saving obstetric procedure has been in use for more than 100 years. Edward Porro (1876) published the first case report of the procedure<sup>1</sup>.

Emergency cesarean hysterectomy is associated with significant morbidity and mortality worldwide<sup>2-3</sup>.

They are seen more often in developing countries due to decreased availability and lack of uptake of antenatal care services especially in the rural areas<sup>4</sup>. This leads to severe consequences. Moreover, increased number of cesarean deliveries worldwide are resulting in higher incidents of morbidities such as uterine rupture, placenta previa, placenta adherens and other complication in subsequent pregnancies<sup>3,5</sup>. These complications along with cesarean section has posed a risk of postpartum hemorrhage that requires a prompt treatment, blood transfusion and a prolonged hospitalization. Management of postpartum hemorrhage depends various factors, most importantly the cause and severity of the bleeding<sup>6</sup>.

Rupture of the gravid uterus is an obstetric catastrophe, associated with high maternal mortality and morbidity, perinatal mortality, and loss of future fertility as hysterectomy is inevitable in most cases<sup>7</sup>. It is performed within 24 hours after the abdominal delivery<sup>8</sup>. The risk factors associated with emergency cesarean hysterectomy are prior caesarean delivery (76.4%), placenta previa (35.4 %), chorioamnionitis (7.6%) and prior myomectomy (4.2 %). Abnormal placenta adherence is leading indication for emergency

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cesarean hysterectomy in 50.7% followed by uterine atony in 34.7 % and uterine rupture in 16.7 % of the cases<sup>9</sup>.

Emergency obstetric hysterectomy is more common in developing countries because of high incidence of improperly supervised deliveries outside the hospitals. The predominant morbidity is post-operative anaemia and wound sepsis which can increase maternal mortality upto 13.3% and perinatal mortality rate at 73.3%<sup>10</sup>.

The rationale behind this study is to determine the frequency of various factors leading to emergency cesarean hysterectomy. The results of this study can be used as guideline to make policy recommendations to control the risk factor which can lead to emergency cesarean hysterectomy in our local population.

## MATERIALS AND METHODS

This study was conducted in Gynae Obstetrics unit of Ayub Medical Complex, Abbottabad, KP, Pakistan after seeking approval from ethical committee. A descriptive study plan utilized to conduct the study from March 2011 to March 2012. The study was comprised of 84 patients, who underwent emergency cesarean hysterectomy. All these patients went under cesarean section after 28 weeks of gestation and hysterectomy to be performed either during cesarean delivery or within 24 hours after cesarean delivery. The age limit of patients was preferred between 15-45 years. Patient with elective obstetric hysterectomies, placenta previa percreta/accrete diagnosed by ultrasound and chorioamnionitis (pulse >100/min, fever >101°F, uterine tenderness and dirty vaginal discharge) were excluded from the study. All patients were scrutinized for the detection of factors which led to emergency cesarean hysterectomy and included history of previous cesarean delivery, uterine rupture (incomplete or complete) uterine atony and undiagnosed placenta previa.

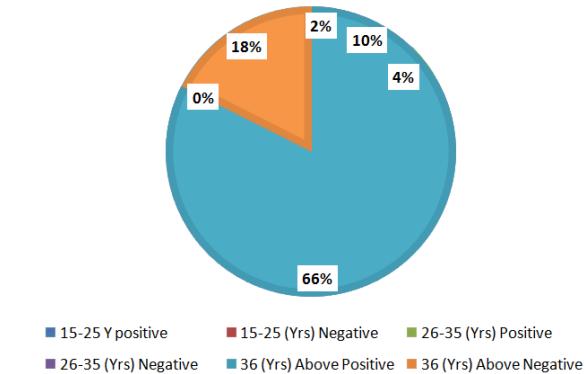
All the cesarean sections were performed by experienced consultant gynecologist. An exclusion criterion was followed to control confounding variables and bias in the study results. All information including name, age, gravidity and parity was recorded in a pre-designed proforma. Data was analyzed by using SPSS version 16.00

## RESULTS

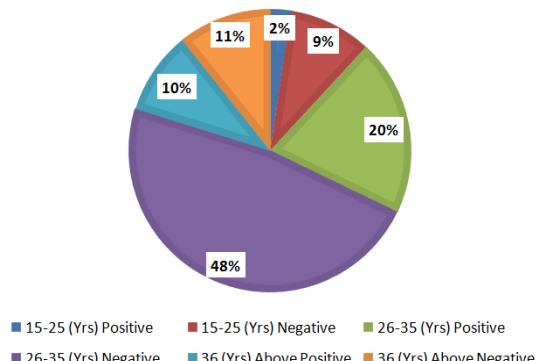
Total 84 patients were included in the study sample, having common factors leading to emergency cesarean hysterectomy. Mean age of the patients was 31.71±4.908, ranging from 20 to 42 years. All the patients were handled in emergency and no elective case was handled.

Out of the total, patients presenting with the history of previous cesarean section were 6.0% Fig. 1. Among the positive cases majority of the cases (3.6%) were from

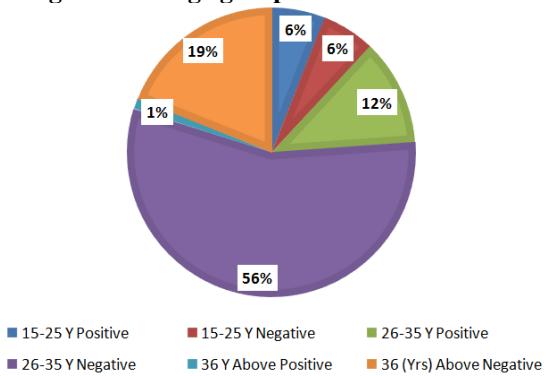
26 to 35 years of age group followed by 15-25 years (2.4%), while there was no case among patients of 36 years above age. Positive cases of uterine rupture were 32.1% Fig. 2. Among the positive cases majority of the cases (20.2%) were from 26 to 35 years of age group followed by 36 years above (9.5%), while only 2.4% were from 15 to 25-year age group.



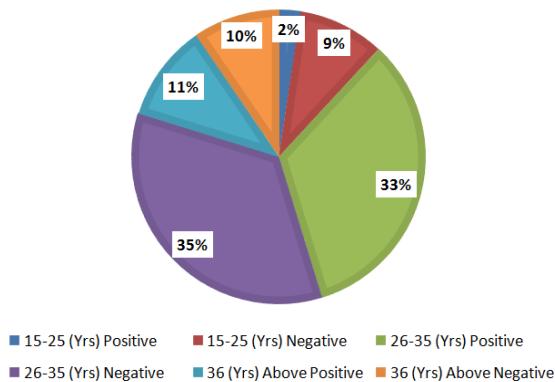
**Figure No. 1:** A graph showing incidents of emergency cesarean hysterectomy in patients having previous cesarean section surgery and distribution among different age groups.



**Figure No. 2:** A graph showing incidents of emergency cesarean hysterectomy in patients suffering from uterine rupture and distribution among different age groups.



**Figure No. 3:** A graph showing incidents of emergency cesarean hysterectomy in patients having undiagnosed placenta previa and distribution among different age groups.



**Figure No. 4: A graph showing incidents of emergency cesarean hysterectomy in patients due to uterine atony and distribution among different age groups.**

There were 19% positive cases related to undiagnosed placenta previa (Fig. 3). Among these 11.9% were from age group 26 to 35 years followed by 15-25 years age group (6%) and 1.2% in 36 years above age group. Among all, uterine atony reported highest number of cases (42.8%) (Fig. 4). In this like other parameters age group 26 to 35 years were more affected (33.3%), while 36 years above showed 10.7 incidents.

## DISCUSSION

There has been a gradual increase in caesarean section rates around the world in the last 25 years, and Pakistan is also experiencing the same. Many researchers are debating for the causes in the increased rate of cesarean sections. Consequently, there are increased morbidities such as uterine rupture, placenta previa, placenta adherences, for cesarean hysterectomy in many studies. One of the common indications for cesarean section is placenta previa & hemorrhage; this also puts patients at the risk of hemorrhage during & after surgery leading to cesarean hysterectomy. In this study uterine atony was the most common indication (42.8%) The other indication in our study was uterine rupture, uterine atony and placental disorders accounting for 89% of cases. Several studies from different regions of Pakistan have reported different frequencies, indications and maternal outcome associated with emergency cesarean hysterectomy<sup>11</sup>.

In this study out of the total, patients presenting with the history of previous cesarean section were only 6.0%. This is almost like study conducted by Iqbal Begum<sup>12</sup>. However, higher frequencies were noted by Giwa-osagia 26% and Thonet 50%<sup>13</sup>.

In our study out of 84 patients 32.1% had uterine rupture. These results are like study conducted in Turkey in which 30.6% of patients had uterine rupture<sup>14</sup>. In our study the complete uterine rupture was found in 22(26.2%) patients from 27 patients of complete and incomplete uterine rupture. The rates of uterine rupture varied from 13 to 32% in different

studies<sup>15-17</sup>. Undiagnosed placenta previa was 16 (19.0%) in this study.

Uterine atony, a more common indication in this study was found in 42.8% patients while the remaining 48(57.1%) patients had no uterine atony.

Frequency distribution of age group regarding previous cesarean history was 15-25 years 2(2.4%), 26-35 years 3(3.6%) and 36 years and above was 0(0.0%) from 5(6.0%) of previous cesarean out of 84 patients.

Distribution of age group regarding uterine rupture was 15-25 years 2(2.4%), 26-35 years 17(20.2%) and 36 years and above was 8(9.5%) from 27(32.1%) of uterine rupture and out of 84 patients. This is comparable to study conducted in Abbottabad in which Frequency distribution of age group with regard to incomplete and complete uterine rupture was 15-25 years 0(0%) incomplete uterine rupture, 26-35 years 3(3.6%) and 36 years and above was 2(2.4%) incomplete uterine rupture from the incomplete uterine rupture of 5(6.0%) while 15-25 years 2(2.4%) complete uterine rupture, 26-35 years 14(16.7%) and 36 years and above was 6(7.1%) complete uterine rupture from the complete uterine rupture of 22(26.2%) from the total 27(32.2%) uterine ruptured cases out of 84 patients. Majority of patients who underwent caesarean hysterectomy were in age group 26-40.

Distribution of age group regarding undiagnosed placenta previa was 15-25 years 5(6.0%), 26-35 years 10(11.9%) and 36 years and above was 1(1.2%) from 16(19.9%) of undiagnosed placenta previa out of 84 patients in our study.

Distribution of age group with regard to uterine atony was 15-25 years 2(2.4%), 26-35 years 28(33.3%) and 36 years and above was 6(10.7%) from the uterine atony of 36(42.8%) while the rest 48(57.1%) were no uterine atony out of 84 patients were found in this study.

## CONCLUSION

It is concluded from the study that uterine atony is a leading cause to conduct emergency cesarean hysterectomy followed by uterine rupture. Moreover, age group also showed a consistent trend of all parameters studied and it was found that 26 to 35 years age group was the most vulnerable to all ailments studied.

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Final Approval of version: Talat Nelofer, Isma Rauf, Yasir Arfat

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

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# Frequency of Factors Involved in Crowns and Fixed Partial Denture Failure

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Crowns and  
Fixed Partial  
Denture Failure

## ABSTRACT

**Objective:** To determine the frequency of Crown and Fixed Partial Denture failure in Patients reported to Rehmat Memorial Hospital.

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

**Place and Duration of Study:** This study was conducted at the Rehmat Memorial Post Graduate Teaching Hospital Women Medical & Dental College, Abbottabad from February 2018 to March 2019.

**Materials and Methods:** Total 112 patients selected with Non-Probability Consecutive sampling technique reported with failure of Crown and Fixed Partial Dentures (FPD).

**Results:** In our study gender distribution of patients was, males were 45 (40.17%) and females were 67(59.82%). The most common factor causing crown failure was periodontal problem (40%) while the least common was aesthetics (2%). While the most important factor causing failure in FPD was caries (35%) and the least was aesthetics (4%). Informed consent was obtained from all patients enrolled. Data was analyzed on SPSS 20 version. Chi-Square test was applied for Statistical significance.

**Conclusion:** The main factor accounted for failure in crowns was periodontal problem, followed by caries, defective margins, cementation failure, loss of retention and poor aesthetics. While the most frequent factor associated with FPD failure was caries, followed by periodontal problems, loss of retention, defective margins, cementation and esthetics failure.

**Key Words:** Fixed partial dentures, Porcelian Fused to metal, Fixed prosthodontics, Crowns.

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## INTRODUCTION

Fixed prosthodontic treatment involves the replacement and restoration of teeth by artificial substitutes that cannot be removed by the patient. Conventional fixed prosthodontic treatment modalities including crown and fixed partial denture are still considered to be effective and performable treatment modalities in the third world countries for the restoration of function esthetics and comfort<sup>1</sup>. As a person who has skilled enough with technology in his hand makes it possible to do more work of a higher quality, But in the hand of one who has not mastered the skills of his profession, that technology merely enables one to do tremendous damage <sup>2</sup>.

Failures of FPD's and crown is a very important question that needs to be answered but the obstacles in the way is the identification of the failure.

To identify the causes of failures related to different factors many classifications have been given in the Past<sup>3</sup>. The increased demand of crowns and FPD's also resulted in an increase in the Frequency of failure associated with such prosthesis<sup>4</sup>. Many classification system have been proposed regarding failures of crowns and FPD's include Tinker classification system 1920, classification of FPD failure by Bennard G.N. Small, Barreto M.T classification system, John F. Johnstan and John J. Manapalill classification system<sup>5</sup>. Crowns and FPD's failure are multiplex and include secondary caries, endodontic complications, defective margins, unacceptable esthetics, cracking and chipping fractures<sup>6</sup>. Detection of the factors leading to FDP failure may guide us in the fabrication of a desirable prosthesis. In recent years, several researchers tried to investigate the factors responsible for FDP failure. Earlier literature has evaluated caries as the leading factor of FDP failure. Krishna Prasad et al concluded in their study that loss of retention accounted for highest number of failures consisting of 27.2% followed by caries (23.3%), periodontal failure (17.5%), aesthetics (7.8%)<sup>5</sup>. According to another study carried out by Alghafees et al, failure accounted for 40.4% of prosthesis in which defective margin (29.8%) was the major factor leading to failure followed by cementation failure (6.38%)<sup>7</sup>. The aim of the present study was to evaluate the factors leading to failure of crown and FPD's fabricated in PFM in the patient reported to prosthodontic department dental section WMC

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Abbottabad, in order to have better understanding of the factor that cause crown and FPD failure and help us to avoid these during treatment..

## MATERIALS AND METHODS

This study was conducted at RMDTH. A total of 112 patients of both genders (Male and Female), referred to prosthodontic department with complaints of crown and FPD's from the time period Feb 2018 to March 2019 were included in the study.

The study was approved by the institution ethical Committee. Study design was descriptive case series with non-probability consecutive sampling.

### Inclusion Criteria:-

- Male and female patients with age ranging b/w 20 to 60 years.
- Patient having no sign of pathology in remaining dentition.
- Patients with Metal-ceramic FPD reporting within three years.

### Exclusion Criteria:-

- Patients with history of trauma and severe systemic disease.
- Drug addicts, uncooperative, unwilling and handicapped patients.
- Patient with all ceramic, metal ceramic, implants, post & core and retained FDP's.

Subjects with crown and FPD failure and fulfilling the inclusion criteria selected randomly from prosthodontic department OPD. The restoration type (Crown & Bridge), years of service and factor causing failure were recorded. Criteria of failure classification, reported by Schwartz et al 1970 were followed. Restorations requiring replacement or repair, associated with soft tissue pathosis, pocket formation, excessive mobility, poor esthetics, restoration fracture, defective margins, cementation failure, recurrent caries reported were considered as failure. Clinical examination was carried

out by two dentists using a mouth mirror, explorer and periodontal probe. If there were more than one factor of failure, the most damaging factor was recorded. Because failure of a single unit in a multi-unit FPD requires the replacement of whole prosthesis, multiunit FPD was considered as a single prosthesis irrespective of their span. Data was collected on a proforma (Annex). The data was analyzed using SPSS 20 program..

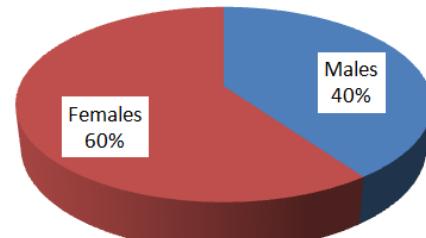
## RESULTS

Total patients included in the study were 112 including, 45 males (40.17%) and females 67 (59.82%) as show Fig. 1

**Table No. 1- Patient included in the study**

**Total No Patient: - (112)**

S.No	Cases included in the study	No Of Patient	Percentage
1.	Males Patients	45	40.17 %
2.	Females Patients	67	59.82 %



**Figure No. 1: Failure Crown & Bridges**

The study showed that out of total 112 patients, 74 (66.07%) cases were reported for crown failure; including 57 (77.21%) endodontically treated teeth and 17(22.97%) non-endodontically treated teeth. The most common factor accounted for crown failure was periodontal problem (40%), Followed by caries (29%), defective margin (15%), cementation failure (9%), loss of retention (5%) and aesthetics (2%).

**Table No 2:- Distribution of Cases of failure:-**

Crown Failure		FPD Failure			
Total (74)	Percentage (66.07 %)	Total (38)	Percentage (33.92 %)	Total	Percentage
Endodontically Treated	Non- Endodontically Treated	Endodontically Treated	Non- Endodontically Treated		
Total (57)	Percentage (77.21 %)	Total (17)	Percentage (22.97 %)	Total (16)	Percentage (42.10 %)
				Total (22)	Percentage (57.89 %)

According to the result, 38(33.92%) cases out of total 112 patients reported for FPD failure. The number of endodontically treated abutments was 16 (42.10%) and non-endodontically treated abutments were 22(57.89%).

The commonest factor associated with FPD failure was caries (35%), followed by periodontal problems (25%), loss of retention (15%), defective margin (13%), cementation failure (8%) and esthetic (4%).

**Table No:-3 Factors accounting for failure:-**

S.No	Factors	Crowns Failure	FPD Failure
1.	Periodontal Problem	40 %	25 %
2.	Caries	29 %	35 %
3.	Defective margins	15 %	13 %
4.	Cementation Failure	9 %	8 %
5.	Loss of Retention	5 %	15 %
6.	Aesthetics	2 %	4 %

## DISCUSSION

Fixed Prosthodontics failures are varied and often complex in cause and effect. When a crown or FPD fails, the primary question is whether the problem can be easily resolved or require extensive rehabilitation and reconstruction. To achieve a favorable long term success with crown and fixed prosthesis, a regular recalls of the patients is necessary to evaluate these restorations and supporting structures. Long term follow-up becomes extremely difficult, in this part of the world where patient recall compliance is poor. Therefore the factors leading to the failure and the length of service of restorations were determined by evaluating the patients when they either presented for the repair or requested replacement of their existing restoration<sup>7</sup>. Result of our study showed that the number of female patients (59.82%) was more than males (40.17%). The most frequent factors associated with the failure of crown was periodontal problem (40%) but in case of FPD the most frequent factor causing complication was caries (35%). A study conducted by SudhirPawar showed that the most common cause of failure was the lack of retention accounting for 45% that can be attributed to many causes like improper preparation of tooth with too much taper of proximal walls, one of the proximal wall being too short and lack of resistance form<sup>8</sup>. In our study, loss of retention accounts for 5% and 15% in crowns and FPD's respectively. In both categories of crown and FPD, aesthetics was found to be the least causative factor scoring 2% and 4% respectively. These results are in contrast with the study carried out by Oginni AO in a Nigerian Dental population, where poor aesthetics was the most common cause of failure. According to study carried out by Alghafees et al defective margins was the primary cause of failure accounting for 29.7%<sup>9</sup>, which is in contrast with our study. However Schwartz et al<sup>10</sup> and Waston et al<sup>11</sup> concluded that caries were the primary cause of failure with the percentage of 36.8% and 22% respectively. The result of these studies was in accordance with our study of FPD failures. Fayyad and Al-Rafee<sup>12</sup> stated that the primary cause of failure in FPD was periodontal disease accounting for 36.6% of failure which is in accordance with our study result of crown failure.

## CONCLUSION

- (1) Failure reported in 45 (40.17%) males and 67 (59.82%) females.
- (2) Failure recorded in 74 (66.07%) crowns and 38 (33.92%) of FPD cases.
- (3) The main factor of failure in crowns was periodontal problem (40%) followed by caries (29%).

defective margins (15%), cementation failure (9%), loss of retention (5%) and poor aesthetics (21%).

(4) the most frequent factor associated with FPD failure was caries (35%), followed by periodontal problem (25%), loss of retention (15%), defective margin (13%), cementation (8%) and esthetics failure (4%).

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

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# Frequency of Perforated Appendicitis Among Patients Subjected to Appendectomy for Acute Appendicitis

Humera Sadaf Bugti, Mehwish Ali, Khushal Khan and Erum Bashir

## ABSTRACT

**Objective:** To determine the frequency of perforated appendicitis among patients subjected to appendectomy for acute appendicitis.

**Study Design:** Cross sectional / descriptive study.

**Place and Duration of Study:** This study was conducted at the Department of Surgery, Bolan Medical College, Quetta from June 2018 to December 2018.

**Materials and Methods:** In this study a total of 195 patients were observed. All patients were subjected to detailed history and examination. Standard pre-operative procedures were adopted. All the surgeries were conducted by single experienced general surgeon fellow of CPSP who was detected presence or absence of perforated appendix. All the above mentioned information including name, age, gender, height, weight, BMI were recorded in the proforma. Exclusion criteria was strictly followed to control effect modifiers and bias in study results.

**Results:** In this study mean age was 30 years with  $SD \pm 12.54$ . Sixty two percent patients were male and 38% patients were female. Nine percent patients had perforated appendicitis while 91% patients didn't had perforated appendicitis.

**Conclusion:** Our study concludes that the frequency of perforated appendicitis was 9% among patients subjected to appendectomy for acute appendicitis.

**Key Words:** Perforated appendicitis, acute, appendicitis.

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## INTRODUCTION

Acute appendicitis is one of the most common emergency conditions in gastroenterology presenting to health care centers with about 250,000 cases in US<sup>1</sup> and 40,000 in England per year<sup>2</sup>. It is the most frequent cause of abdominal pain in all ages and about 10% of abdominal surgeries<sup>3</sup>. A male predominance exist with M:F 1.4:1 respectively<sup>2</sup>.

Appendectomy is the surgical treatment for Appendicitis<sup>4</sup>, an inflammation of the appendix which is one of the most common surgical emergencies with lifetime risk of 12% for men and 25% for women.<sup>5</sup> The very first appendectomy was performed in 1735 by a surgeon of the English army, Amyan. He performed it without anesthesia to remove a perforated appendix.<sup>4,6</sup> The surgical procedure for complicated appendicitis (51%)<sup>7</sup>; which include perforated or gangrenous

appendicitis with or without localized or disseminated peritonitis, is called the complicated appendectomy.<sup>8</sup> Other complicated appendicitis includes empyema, abscess formation and fecal peritonitis.<sup>9</sup> The most common complicated appendicitis is perforation of inflamed appendix (31.3%<sup>5</sup> and 14.9%<sup>10</sup>) with high morbidity and mortality worldwide<sup>5</sup> and occurs between the ages of 10 and 30 years.<sup>11</sup>

Acute appendicular inflammation is associated with obstruction in 50-80% of cases, with mainly obstructive causes, but a significant minority of inflamed appendix has no demonstrable luminal obstruction and the pathogenesis remain unknown and the diameter will together interplay with thickness of the organ to determine the probable site or sites of obstruction of this organ<sup>12</sup>. According to the most favored theory, appendicitis is caused by mechanical obstruction of the appendix lumen, either because of fecal stasis, kinking, peritoneal adhesions or infection induced swelling of the mural lymphoid tissue<sup>13</sup>.

Optimal management of children with perforated appendicitis continues to be a challenging problem. In patients presenting with long-standing symptoms, particularly with mass or abscess, interval appendectomy (interval AP)—antibiotics at diagnosis with operation delayed weeks or months—has frequently been used. The introduction of powerful broad-spectrum antibiotics made the interval pathway a

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more attractive option and has widened its application to larger groups of patients<sup>14</sup>.

The present study is designed to determine the frequency of perforated appendicitis among patients subjected to appendectomy for acute appendicitis. As mentioned earlier, if not operated in time and if remains undiagnosed, the appendix can proceed to further inflammation and ultimately necrosis of the inflamed appendix which adds further gravity to the complications. Moreover, once perforated, the complications rate is even worse due to fecal peritonitis which may be life threatening. This study will provide us the latest and updated information about the local magnitude of perforated appendicitis among patients with acute appendicitis subjected to appendectomy. This updated information will be shared with other health professional and surgeons for up gradation of their knowledge and practice. furthermore this study will also help for future research on perforated appendicitis in patients with acute appendicitis and preventive strategies.

## MATERIALS AND METHODS

Between June 2018 and December @018 a cross section (Descriptive) study was carried out in department of surgery, Bolan Medical College, Quetta, after approval from the ethical committee of the institution 195 patients of either 18-85 undergoing emergency open appendectomy were considered eligible for the study. Patient having diabetes on history or having fasting blood sugar more than 126mg (D) on admission and those on steroid for last month were excluded from study. In addition those patients who underwent interval appendectomy for appendicular mass were excluded as well.

All patients were subjected to detailed history and examination. Standard pre-operative procedures were adopted. All the surgeries were conducted by single experienced general surgeon fellow of CPSR who was detected presence or absence of perforated appendix.

All the information including name, age, gender, height, weight, BMI were recorded in the proforma. Exclusion criteria was strictly followed to control effect modifiers and bias in study results.

The data collected was analyzed in SPSS version 22. Mean  $\pm$  SD were calculated for continuous variable like age, duration of appendicitis, Height, weight, BMI. Frequencies and percentages were calculated for categorical variable like gender and perforated appendix. Perforation was stratified with age, gender, duration of appendicitis, BMI to see the effect modification. Post stratification chi-square test was applied in which P value  $\leq 0.05$  was considered as significant.

## RESULTS

In this study age distribution among 195 patients was analyzed as 14(7%) patients were in age range  $<20$

years, 59(30%) patients were in age range 21-30 years, 62(32%) patients were in age range 31-40 years, 41(21%) patients were in age range 41-50 years and 19(10%) patients were in age range 51-65 years. Mean age was 30 years with SD $\pm$  12.54.

Gender distribution among 195 patients was analyzed as 121(62%) patients were male while 74(38%) patients were female.

Duration of appendicitis among 195 patients was analyzed as 113(58%) patients had appendicitis  $<24$  hours while 82(42%) patients had appendicitis  $>24$  hours. Mean duration of appendicitis was 24 hours with SD  $\pm$  3.95.)

Status of BMI among 195 patients was analyzed as 88(45%) patients had BMI  $<25$  Kg/m<sup>2</sup> while 107(55%) patients had BMI  $>25$  Kg/m<sup>2</sup>. Mean BMI was 25 Kg/m<sup>2</sup> with SD  $\pm$  5.31.

Perforated appendix among 195 patients was analyzed as 18(9%) patients had perforated appendix while 177(91%) patients didn't had perforated appendix.

## DISCUSSION

Acute appendicitis remains a common abdominal emergency throughout the world. The diagnosis of acute appendicitis continues to be difficult due to the variable presentation of the disease and the lack of reliable diagnostic test. Though there are lots of advances in the diagnostic field with the invention of sophisticated investigations diagnosis of acute appendicitis remains an enigma for the attendant surgeon.<sup>15</sup> None of the investigations like USG, CT, NMR can conclusively diagnose appendicitis. Time and again, it has proved that some of the investigations already discussed are costly, time consuming, require more sophisticated equipment and expertise, while some are not feasible and not readily available.<sup>16,17</sup>

So, even today, a thorough clinical examination with basic investigations like WBC count remains cornerstone in the diagnosis of acute appendicitis. With this background many eminent surgeons and physicians have been adopting different scoring systems in order to decrease negative appendectomy. Although there has been some improvement in the diagnosis of acute appendicitis over the past several decades, the percentage of normal appendices reported in various series varies from 8 to 33%.<sup>18,19</sup>

Our study shows that mean age was 30 years with SD $\pm$  12.54. Sixty two percent patients were male and 38% patients were female. Nine percent patients had perforated appendicitis while 91% patients didn't had perforated appendicitis.

Similar results were observed in another study conducted by Manan F et al<sup>20</sup> in which A descriptive case series comprised of 200 patients presented with acute appendicitis were studied for observing frequency of perforated appendicitis. Out of 200 patients (sample size), 16 (8%) cases were diagnosed as perforated

appendicitis, gangrenous were found to be 16 (8%) cases, appendicular mass was recorded in 6 (3%) cases and remaining 162 (81%) cases were found to be acutely inflamed.

In another study conducted by Balogun OS et al<sup>21</sup> had reported that The perforation rate in the study was 28.5%. The peak age of presentation was between 21-30 years. Forty-two (71.1%) of the patients under study were males. Only 3 (5.1%) of the cohorts had history of recurrent abdominal pain. Majority of the patients were in the American Society of Anesthesiologists (ASA) II (44.1%) and III (42.4%) categories. Surgical site infections (SSI) (18.6%), wound dehiscence (15.2%) and pelvic abscess (13.5%) were the most common complications. The Incidence of SSI was found to correlate with male gender, ( $P = 0.041$ ), co-morbidity ( $P = 0.037$ ) and ASA score (0.03) at 95% confidence interval. Routine use of intraperitoneal drain after surgery for perforated appendicitis did not appear to reduce the incidence of pelvic abscess. No mortality in the studied population.

A retrospective study by Njokuet al<sup>22</sup> on 655 appendectomies revealed 29 cases of perforation giving a perforation rate of 4.4%. Adeyanju and Adebiyi<sup>23</sup> reported perforation rate of 13 (7.2%) of 180 appendectomies. Another retrospective study by Edinoet al.<sup>24</sup> on 142 appendectomies reported 33 cases of appendiceal perforation with a perforation rate of 23.2%. Yeboa<sup>25</sup> in Ghana found 249 cases of appendiceal perforation in 638 appendectomies with a perforation rate of 39%. In another study, the perforation rate was 28.5%.<sup>19</sup> This is far higher than observed by some researchers in Nigeria and less than the quoted figure from Ghana. This difference may reflect varying pattern of referral and these studies are retrospective.

## CONCLUSION

Our study concludes that the frequency of perforated appendicitis was 9% among patients subjected to appendectomy for acute appendicitis.

### Author's Contribution:

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 Revisiting Critically: Humera Sadaf Bugti, Mehwish Ali  
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# Etiology and Outcome of Thrombocytopenia in Sick Neonates

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Thrombocytopenia  
in Sick Neonates

## ABSTRACT

**Objective:** Enlist risk factors of thrombocytopenia in sick neonates and determine the outcome in sick neonates with thrombocytopenia in relation to risk factors.

**Study Design:** Descriptive multi center case series study

**Place and Duration of Study:** This study was conducted at the Pediatric Ward Teaching Hospital, D.G.Khan and Pediatric Unit-I, Nishtar Hospital, Multan from June 2019 to November 2019,

**Materials and Methods:** A total of 100 sick neonates with thrombocytopenia were included in the study. Neonates with different risk factors like neonatal sepsis, birth asphyxia, prematurity, RDS, NEC and (jaundice, infant of diabetic mother) were evaluated and were included in the study

**Results:** Among 100 cases with thrombocytopenia (platelets count < 150,000/ul) were included in this study. Out of 100 cases, 35(35%) were found to have early-onset thrombocytopenia and 65 cases (65%) were found to have late-onset thrombocytopenia. 23(67.4%) were with early-onset sepsis and 20 cases (46.5%) were late-onset sepsis. Out of 100 cases, 17(17%) cases were of birth asphyxia, 11 cases were of prematurity with gestational age <37 weeks and birth weight <2.5 kg, 6 cases of prematurity (54.5%) were with hemorrhagic skin manifestation and remaining were with occult mild thrombocytopenia. 20 cases of RDS with thrombocytopenia, 5 cases of NEC with thrombocytopenia and 4 cases with mild thrombocytopenia. The common manifestations in thrombocytopenic cases were petechiae and bruises followed by gastrointestinal hemorrhage.

**Conclusion:** The leading causes of thrombocytopenia in sick neonates are sepsis, asphyxia, prematurity, RDS, NEC. Apart from the platelets counts the bleeding manifestations also depend upon underlying ailments.

**Key Words:** Neonatal Sepsis, Neonatal mortality, Thrombocytopenia and other basic investigations.

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## INTRODUCTION

Platelets are non-nucleated cellular fragments in blood and play an important role in homeostasis<sup>1</sup>. The life span of platelets in 10-14 days. Normal platelet count in a newborn is 150,000-450,000/ul<sup>1,2,3</sup>. Thrombocytopenia is defined as platelet count less than 150,000/ul<sup>1,2</sup>. Thrombocytopenia is classified into mild, moderate and severe form<sup>3,4</sup>. Mild thrombocytopenia (100,00-150,000/ul) is associated with risk of bleeding. Moderate thrombocytopenia (50,000-100,000/ul) can cause spontaneous bleeding but usually doesn't cause

serious bleeding. Severe thrombocytopenia (platelets less than 50,000) can cause spontaneous serious bleeding<sup>3,4</sup> (ertheroblastosis fetalis)<sup>1,3,6,7</sup>. Most episodes are mild to moderate and resolve spontaneously<sup>3</sup>.

Thrombocytopenia presenting after 72 hrs of life is usually secondary to sepsis, necrotizing enterocolitis, hemolytic uremic syndrome, disseminated intravascular coagulation and associated with more severe and prolonged bleeding<sup>1,3,6,7</sup>.

Depending on the stage of the disease, common presentations are<sup>3</sup> pain in 66%, weight loss in 59%, jaundice in 51% and right upper quadrant mass in 40% patients (mostly the tumor is discovered). Thrombocytopenia is seen in 1-2% of healthy term babies but is more common in preterm babies<sup>5</sup>. Ten to twenty percent of babies develop neurodevelopment problems due to intracranial hemorrhage (ICH). Neonatal autoimmune thrombocytopenia occurs in about 10% of the cases and risk of ICH in these babies is 1%.

Neonatal thrombocytopenia presenting in first 72 hrs of life is usually due to placental insufficiency, small for gestational age, acidosis, early-onset neonatal sepsis, congenital infections, autoimmune (idiopathic thrombocytopenic purpura), drugs and iso-immune (neonatal allo-immune). A total of hundred sick neonates with thrombocytopenia admitted with

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different problems were selected. Neonates with different risks factors were evaluated which were of neonatal sepsis, birth asphyxia & prematurity.

Thrombocytopenia is frequent in neonates and not diagnosed due to no manifestations of clinical symptoms<sup>5</sup>. Neonatal thrombocytopenia is a common clinical problem in Neonatal Intensive care unit (NICU). Thrombocytopenia is a significant cause of morbidity and mortality in the sick preterm and full-term babies. Multiple mechanisms can cause or contribute to the development of thrombocytopenia, including decreased platelets production, increased platelets removal from the circulation and sequestration of platelets in spleen<sup>6</sup>. Thrombocytopenia is an important cause of active bleeding in sick neonates. Prognosis of thrombocytopenia depends upon the cause, severity and duration of thrombocytopenia with the overall mortality rate of 40%<sup>6</sup>. Early detection and proper management of thrombocytopenia reduces the frequency of morbidity and mortality. With the help of this study we shall be able to determine the more common and fatal causes of thrombocytopenia in neonates and to target the preventive strategies towards more common and dangerous causes of thrombocytopenia like RDS, NEC and others (jaundice, infant of diabetic mother).

## MATERIALS AND METHODS

This descriptive case series study was conducted for a period of 6 months In both cases mild hrombocytopenia resolved spontaneously without any complications.

The most common manifestations in thrombocytopenic infants were petechiae and bruises followed by gastrointestinal hemorrhages (malena, chocolate color aspirate and mucosal bleeding). Out of 43 cases of sepsis, only 30 cases (69.7%) had bleeding manifestation and 4 had bleeding due to DIC. Out of 17 cases of birth asphyxia, 7 cases (41.1%) had bleeding manifestations. Out of 31 cases of prematurity, 20 cases had RDS and 11 cases (55.0%) of which had bleeding manifestations, two of which due to DIC. Out of 31 cases of prematurity, 11 cases had mild to moderate thrombocytopenia, 6 cases (54.5%) had common cause of thrombocytopenia (43%). On the basis of clinical symptoms, signs and various laboratory tests, 43 cases out of 100 were found to have sepsis with thrombocytopenia. Sepsis was divided into early-onset sepsis (age <7 days) and late-onset sepsis (age>7 days). Out of 100 cases, 2 cases of Rh incompatibility were studied. They developed mild thrombocytopenia after exchange transfusion. Mild thrombocytopenia detected in 2 cases of infant of diabetic mother admitted in NICU hadsk in manifestation (petechial hemorrhage).

## RESULTS

A total 100 cases of sick neonates with thrombocytopenia were studied. Early-onset thrombo-

cytopenia was seen in 35% of sick neonates presenting with different risk factors during first 72 hours of life (<3 days of life). Late-onset thrombocytopenia was seen in 65% of the sick neonates who developed thrombocytopenia after 72 hours of life (>3 days of life), as shown in Table-I.

Out of 100 cases 32 sick neonates (32%) were with mild thrombocytopenia, 46 sick neonates (46%) were with moderate thrombocytopenia and 22 sick neonates (22%) were with severe thrombocytopenia as shown in table 2. At the time of admission out of 100 sick neonates, 35 sick neonates had age of <3 days and 65 sick neonates had age of >3 days, minimum age was 1 day and maximum age was 25 days (mean age  $7.22 \pm 3.51$ ). Both gender were included in the study, 58 were males and 42 were females. Minimum weight was 1.2 kg and maximum weight was 4.50 kg. Mean weight was  $2.46 \pm 0.84$  kg.

The neonatal sepsis was the most common risk factor in this region.

All cases of necrotizing enterocolitis had bleeding manifestations either due to thrombocytopenia or due to DIC, the exact mechanism is not clear. Thus out of 100 patients with thrombocytopenia, 59 patients (59%) had bleeding manifestations, whereas 41 patients (41%) had occult thrombocytopenia with no clinical manifestations.

**Table No. I: Onset of thrombocytopenia (n= 100)**

Onset of thrombocytopenia	No of cases	% age
Early on set thrombo-cytopenia Age>3 days	35	35%
Late onset thrombocytopenia	65	65%

**Table No.2: Severity of thrombocytopenia (N=100)**

Platelets count	No of cases	Percentage
Mild	32	32%
Moderate	46	46%
Severe	22	22%

**Table No.3: Risk Factor of Thrombocytopenia (N=100)**

Risk Factors	No. of cases	Percentage
Sepsis	43	43%
Birth asphyxia	17	17%
RDS	20	20%
NEC	05	05%
Preterm	11	11%
IDM	02	02%
Jaundice	02	02%
Total	100	100%

RDS= respiratory distress syndrome NEC= Necrotizing Enterocolitis

IDM= Infant of diabetic mother.

A total number of 100 sick neonates with thrombocytopenia, 35 sick neonates were with early-

onset and 65 sick neonates with late-onset thrombocytopenia. Out of 100 cases, 68 neonates (68%) survived. The recovered neonates were clinically and vitally stable, taking and tolerating orally and platelets count  $> 150,000/\mu\text{l}$ . A total of 30 cases with different risk factors with thrombocytopenia recovered.

**Table No.4: Onset of sepsis in neonates (N=43)**

Onset	No.of cases	Pt with sepsis	Percentage
Early sepsis	43	23	53.5%
Late sepsis	43	20	46.5%

**Table No.5: Mortality rate with sepsis(N=43)**

Onset	No.of cases	Pt with sepsis	Percentage
Early sepsis	23	10	43.4%
Late sepsis	20	07	35.0%

**Table No. 6: Hemorrhagic Manifestation in Thrombo-Cytopenia INFANTS (N=100)**

Risk of factor	No.of cases	Hem	%age
SEPSIS	43	30	69.76%
ASPHYXIA	17	07	41.17%
RDS	20	11	55.00%
NEC	05	05	100.0%
PRETERM	11	06	54.54%
IDM	02	00	00%
JAUNDICE	02	00	00%

## DISCUSSION

In Pakistan, the neonatal mortality is 40 per thousand live births. Neonatal thrombocytopenia is an important contributor in infant mortality rate. Neonatal thrombocytopenia is life threatening condition and is associated with predisposing risk factors like sepsis, birth asphyxia, RDS, NEC and prematurity and contributes in increasing the frequency of thrombocytopenic sick neonates than the neonates without thrombocytopenia. Thrombocytopenia developed in 22-35% of all neonates admitted to NICU and 50% of those who required intensive care. Early diagnosis and appropriate use of antimicrobial therapy (in sepsis, NEC) with other supportive measures and platelet infusion can reverse this situation. Even a slight delay in the treatment may cause high morbidity and mortality.

In literature, similar studies as of my have been reported with variable incidence of thrombocytopenia. In a prospective study of 807 by Castle and colleagues, 22% incidence of thrombocytopenia has been reported<sup>13</sup>. In another study, the incidence was founded to 20-40% of all the admissions to NICU. According to D-George, the incidence of thrombocytopenia ranges as high as 1% or more for a healthy term infant to 22% of the newborns admitted to NICU. In my study, the neonatal sepsis was the most common cause of

thrombocytopenia. Out of 100 cases, 43 cases with sepsis, 17 cases with birth asphyxia, 20 cases with RDS, 5 cases with NEC, 11 cases of prematurity and 2 cases of jaundice and IDM of each having mild, moderate to severe thrombocytopenia. These result are comparable with the study conducted by Tahir Masood Ahmad and colleagues at Jinnah Hospital, Lahore from September 1997 to February 1998<sup>5</sup>. The platelet counts were found to be low in 40.78% of the total cases of sepsis. These figures are quite comparable to a study conducted in NICU of Jinnah hospital, Lahore in 1998 on the usefulness of laboratory predictors in early diagnosis of neonatal sepsis. In this study the thrombocytopenia was found in 50% of the cases of sepsis. While another study showed the incidence of thrombocytopenia to be 62.5% in proved cases of sepsis. This shows that infection is the leading cause of thrombocytopenia in infants and children. In most of the cases, the thrombocytopenia is attributed to either megakaryocytic suppression, increased peripheral consumption or due to destruction such as aggregation, lysis and DIC.

Neonatal asphyxia has also an association with thrombocytopenia. In asphyxia, the widespread damage to the vascular endothelium and increased utilization of the platelets are the likely explanations of thrombocytopenia. However, according to Castle and his colleagues, the precise pathogenic mechanism for thrombocytopenia of sick neonates in the newborn period remains unclear. In my study, preterms (11%) with no other complications had mild thrombocytopenia. Gladder and Buchanan in 1976 suggested that the platelets counts in term and preterm infants are the same as in older children having a range of 150,000-400,000/mm. In my study, the majority of patients with prematurity had complications like respiratory distress syndrome and necrotizing enterocolitis, with moderate to severe thrombocytopenia. Exchange transfusion to prevent kernicterus in hyperbilirubinemic states is also seen as the cause of thrombocytopenia. This complication was also documented in a study of 203 exchange transfusions performed, in 143 infants the complications after the exchange transfusion were bradycardia, apnea, thrombocytopenia, hypoglycemia and hyponatremia. In a study conducted by Castle V and Andrew M et al observed the severity of thrombocytopenia in infants, and found out that there was mild thrombocytopenia in 42%, moderate in 38% and severe in 20%<sup>8</sup>. In my study approximately same results are observed (mild 32%, moderate 46% and severe 22%).

Considering the manifestations of thrombocytopenia in our study, most of the cases with low platelet count had petechiae and bruises and some of the infants had GIT hemorrhage. It has been seen that hemorrhagic problems do not occur in all the cases of

thrombocytopenia. Regarding the outcome in relation to the risk factors causing thrombocytopenia in sick neonates, no data is available in term of improved/recovered. Several studies show that mortality is more in thrombocytopenic sick neonates than non-thrombocytopenic sick neonates. Outcome in relation to risk factors also depends on the severity of the disease and age of the sick neonates. Sepsis is leading cause of morbidity and mortality among other risk factors. The exact cause of death is not clear either infant died due to the disease, its complications or due to thrombocytopenia.

## CONCLUSION

Thrombocytopenia is not an uncommon finding in the sick neonates under various circumstances. The leading cause of thrombocytopenia in sick neonates is bacterial septicemia. Low platelet counts can occur in any condition leading to hypoxia, acidosis, tissue necrosis and endothelial injury as it happens in respiratory distress syndrome, perinatal asphyxia and necrotizing enterocolitis.

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# Prevalence of Common Bile Duct Stones on Endoscopic Retrograde Cholangiopancreatography in Gallstone Pancreatitis with Deranged Liver Function

ERCP in Gall Stone Pancreatitis

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## ABSTRACT

**Objective:** To determine the frequency of CBD stone on ERCP in gall stone pancreatitis with deranged liver function. If decrease frequency of CBD stone found then recommendations can be made to reduce the unnecessary ERCP and its procedure related complications like perforation and hemorrhage.

**Study Design:** Single center, non-probability consecutive, cross sectional study

**Place and Duration of Study:** This study was conducted at the Department of Gastroenterology, Liaquat National Hospital & Medical College, Karachi from May to November 2016.

**Materials and Methods:** Total 227 patients with deranged liver function test, serum amylase level of greater than 300 U/l, upper abdominal pain and gallstones on the trans-abdominal ultrasonography, were included. All patients were undergone ERCP. Descriptive statistics of the data was computed.

**Results:** There were 149 male and 78 female patients. Overall, raised total bilirubin was 62.6%, raised alkaline phosphate was 33.5%, and raised gamma GT was 40.5% patients. CBD stone in ERCP was found in 26.0% patients. Significant association of raised total bilirubin, raised alkaline phosphate, raised gamma GT, and serum amylase with CBD stone in ERCP was observed.

**Conclusion:** Patients with gallstone pancreatitis and deranged liver function test had increased risk of CBD stones. ERCP is the gold-standard for evaluation of morphological changes in the pancreas.

**Key Words:** Common Bile Duct Stones, ERCP, Gallstone Pancreatitis, Deranged Liver Function

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## INTRODUCTION

In adult population, the percentage of occurrence of gallstones ranges from 6%-10%<sup>1</sup>. It has been indicated that 3%-14.7% of patients with gallstones are found to be with concurrent common bile duct (CBD) stones<sup>2</sup>. For the management of gallstones "Gold Standard" is laparoscopic cholecystectomy (LC) but no agreement for treatment is there of CBD stones. In the age of open surgery, here the treatment is straight-forward; there is greater probability for the high mortality and morbidity if open cholecystectomy is to be conducted with open CBD exploration. With the arrival of minimal invasive and noninvasive techniques, choice of pre-operative ERCP tailed by LC arose as acceptable treatment.

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Main drawbacks of ERCP are that it is the procedure which is performed in two stages and is there are life threatening complications in it i.e. bleeding, pancreatitis and duodenal perforation<sup>2,3</sup>.

It has been reported that more than 230,000 patients were provided the treatment for acute pancreatitis at hospitals of the United States in 2005<sup>4</sup>. Recent literature indicates an growth in the occurrence of acute pancreatitis, and at some places, higher rate of occurrence have been projected substantially in the comparison of occurrence that are previously reported, whereas, case-fatalities have remained unchanging since the period of 1970<sup>5</sup>. Growth in the occurrence of acute pancreatitis may be caused because of increasing occurrence of obesity, a risk factor for the growth of gallstones and gallstone pancreatitis<sup>6</sup>.

Heavy financial load on the health care system and noteworthy physiologic stress on the patient is conferred by the acute pancreatitis. It is indicated by the research that the average cost of the hospitalization for acute pancreatitis was estimated to be \$9870<sup>7</sup>. It has been also indicated that acute pancreatitis has been made responsible in United States for \$ 2.2 billion as the expenditure on healthcare per year. The mean

duration of patients to stay at the hospital having acute pancreatitis is around 5 to 6 days<sup>5,8</sup>.

The part of liver in the body is to perform the various function i.e. biochemical, excretory and synthetic functions etc. global functions of liver can be detected by the single biochemical test. Series of tests are often employed by all of the laboratories in order to detect and manage the diseases of liver these tests are known as the "Liver function tests"<sup>9</sup>.

## MATERIALS AND METHODS

This single center, non probability consecutive, cross sectional study was conducted from 31<sup>st</sup> May 2016 to 30<sup>th</sup> November 2016. Study population in the inclusion criteria was either gender with age of 18 to 65 years, who were presented with gallstone pancreatitis with deranged liver function test of duration 1 to 7 days at Liaquat National Hospital and Medical College, Karachi. Acute gallstone pancreatitis` diagnosis was grounded on the existence of pain in upper abdomen, a serum amylase level of >300 U/l (25-100 U/l), and gallstones on the transabdominal ultrasonography, deranged LFTs (as mentioned in operational definitions) on admission were included in the study. Patient was undergone ERCP & was used as a therapeutic and diagnostic tool as well. Informed written consent was taken before enrolment. Exclusion criteria was followed strictly to avoid confounding variables.

**Statistical analysis:** Data analysis was carried out in the statistical package for social sciences (SPSS) version 17. Frequencies and percentages were computed for categorical variables like gender, CBD stones, raised total bilirubin, raised alkaline phosphate and raised Gamma GT. Values were presented as mean standard deviation for continuous variables like age, duration of gallstone pancreatitis, and serum amylase. Effect modifier like age, gender, serum amylase, raised total bilirubin, raised alkaline phosphate raised Gamma GT and duration of Gall stone pancreatitis were controlled through stratification. For post stratification Chi-Square test was applied. Confidence interval was kept to be 95% and the level of significance was kept to be 5%.

## RESULTS

Total 227 patients of either gender, age 18 to 65 years with gallstone pancreatitis and deranged liver function test of duration 1 to 7 days were included in the study to determine the frequency of CBD stones detected on ERCP. Descriptive statistics were calculated. Stratification was done to see the effect of modifiers on outcome. Post stratification chi square test was applied considering  $p \leq 0.05$  as significant.

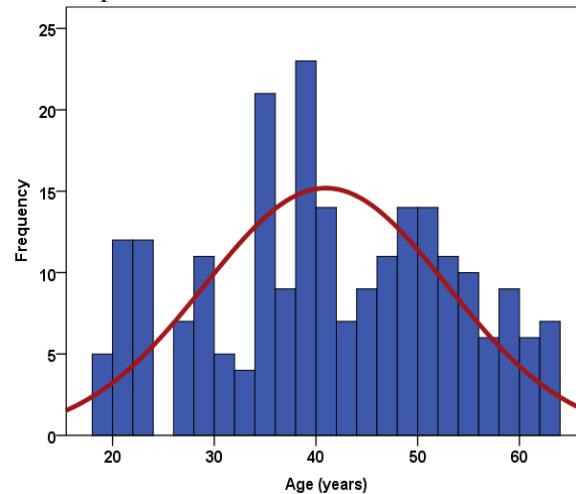
There were 149 male and 78 female patients. The frequency distribution is presented in Table-2.

The mean age of study subjects was  $40.96 \pm 11.92$  years, mean serum amylase was  $1012.97 \pm 251.81$  U/l & the mean duration of gall stone pancreatitis was  $2.58 \pm 0.85$  days. The distribution of age is presented in Graph-1. The descriptive statistics of age, serum amylase & duration of gall stone pancreatitis is presented in Table-1.

The results showed that in all 227 patients, raised total bilirubin was found in 62.6% patients, raised alkaline phosphate was found in 33.5% patients, and raised gamma GT detected about 40.5% among the patients, as shown in table-2.

The final outcome i.e. CBD stone in ERCP was found about 26.0% among the patients, as shown in Table-2. The descriptive statistics of age, serum amylase, and duration of gall stone pancreatitis according to the CBD in ERCP were calculated. The results of descriptive statistics are presented in Table-3.

The results showed that significant association of serum amylase ( $P=0.002$ ) with CBD stone in ERCP was observed. No significant association of age, gender and duration of gall stone pancreatitis was observed with CBD stone in ERCP. In table-3 and table-4 the detail of results is present.



**Graph No.1: Histogram presenting distribution of age (years) (n=227)**

**Table No.1: Descriptive statistics of age, serum amylase, duration (days) of gall stone pancreatitis (n=227)**

	Age (years)	Serum amylase (U/l)	Duration of gallstone pancreatitis(days)
Mean $\pm$ SD	$40.96 \pm 11.92$	$1012.97 \pm 251.81$	$2.58 \pm 0.85$
95%CI (LB – UB)	39.41 – 42.52	980.04 – 1045.91	2.47 – 2.69
Median (IQR)	40.00 (17)	1047.00 (189)	3.00 (1)
Range	44	1762	5
Minimum	19	473	1
Maximum	63	2235	6

**Table No.2: Frequency distribution of gender, overall raised total bilirubin, overall raised alkaline phosphate, overall raised gamma GT, CBD stones on ERCP (n=227)**

Gender	Frequency (n=227)	Percentage (%)	
Male	149	65.6%	
Female	78	34.4%	
Total	227	100%	
Variable	Yes	No	Total
Over all raised total bilirubin	142(62.6%)	85(37.4%)	227(100%)
Over all raised alkaline phosphate	76(33.5%)	151(66.5%)	227(100%)
Over all raised gamma GT	92(40.5%)	135(59.5%)	227(100%)
CBD stones on ERCP	59(26%)	168(74%)	227(100%)

**Table No.3: Descriptive statistics of age, serum amylase, duration of gall stone pancreatitis according to CBD stone in ERCP (n=227)**

	Age		Serum amylase		Duration of gallstone pancreatitis	
	YES (n=59)	NO (n=168)	YES (n=59)	NO (n=168)	YES (n=59)	NO (n=168)
Mean $\pm$ SD	43.83 $\pm$ 13.09	39.96 $\pm$ 11.35	1123.95 $\pm$ 295.67	974.00 $\pm$ 222.64	2.60 $\pm$ 0.85	2.60 $\pm$ 0.85
95% CI (LB – UB)	40.42 – 47.24	38.23 – 41.69	1046.90 – 1201.00	940.00 – 1007.91	2.47 – 2.73	2.47 – 2.73
Median (IQR)	46.00 (19)	39.00 (17)	1080.00 (112)	1036.00 (200)	3.00 (1)	3.00 (1)
Range	44	44	1597	1627	5	5
Minimum	19	19	638	473	1	1
Maximum	63	63	2235	2100	6	6

**Table No.4: Frequency and association of CBD stone in ERCP according to gender (n=227)**

	CBD IN ERCP			P-value
	YES (n=59)	NO (n=168)	TOTAL	
Male (n=149)	35	114	149	0.235**
Female (n=78)	24	54	78	
TOTAL	59	168	227	

## DISCUSSION

It's known from centuries that the pancreatitis can be caused by gallstones by the blockage of ampulla of vater. The biliary pancreatitis resulted because of gallstones temporary obstruction, then they passed freely into the duodenum. The more problematic suffering for patients will be there because of gallstone

pancreatitis, whom having persistent ampullary or bile duct stone. The harshness of biliary pancreatitis and risk of cholangitis could be decreased by removal of persistent stones.<sup>10</sup> the study from Saudi Arabia has underlined gallstone as 68.5% for causing acute pancreatitis.<sup>11</sup> whereas the occurrence of pancreatitis in USA is reported about 40% in all cases.<sup>12</sup>

The removal of any CBD stone is considered as practicing treatment for gallstone pancreatitis which is followed by cholecystectomy which resist further occurrence of acute gallstone pancreatitis. If surgery delayed in case of patients recovering from the initial attack of gallstones pancreatitis would have higher risk for next attack up to 30-fold in general population.<sup>13</sup> while having index admission in hospital the performance of cholecystectomy should be considered standard of care.<sup>14</sup> the biliary duct assessment and clearance should be remained as a subject of conversation between clinicians before assessing cholecystectomy. The tools for bile duct should be adapted or optional for its evaluation and clearance before cholecystectomy are serial LET, MRCP, EUS, repetitive or selected preoperative ERCP and intraoperative cholangiogram (IOC).<sup>12, 15</sup> the bile duct stone is most commonly found among the most of patient which is included normally in the history of gallstone pancreatitis.<sup>16</sup>

In Al-Qahtaniet al study<sup>17</sup> the selection of patients done for preoperative ERCP assist by using tool like LFT. A study has shown which was conducted by a team of surgeons that the early unbalanced LETS results in an acceptable indication for the ERCP intervention prior to laparoscopic cholecystectomy.

LFT was used as the tool for assessment for the selection of patients for preoperative ERCP, in the research conducted by Al-Qahtaniet al<sup>17</sup>. Initial unbalanced LFTs were considered by some surgical teams as an acceptable marker for ERCP interference former to laparoscopic cholecystectomy. Patients of group A were submitted to ERCP grounded on the day of their admission unbalanced LFTs. In only eight patients, endoscopic retrograde cholangiopancreatography was therapeutic (stone n=5, sludge n=3,); whereas, six patients (5%) had complications associated with ERCP. Where ERCP was late until repeat LFTs in the patients of group B, outcomes were available, only eight patients (5%) who continued to have unbalanced LFTs were referred to ERCP and in all patients it was therapeutic (stone n=5, sludge n=3).

There was no problems associated with ERCP in the patients. Whereas, 3 patients on whom preoperative ERCP was not conducted, were presented later with complications associated with recurring stone within the period of two years. Therefore, this research has indicated that by the use of LFT as an average in the selection of preoperative ERCP was significantly decreased the complications and number of unnecessary

ERCP. Furthermore, it indicates that by omission of ERCP in those patients whose LFT quickly enhanced towards normal, the long term complication risk due to missed stone is slight. In our surgical department, the marker for preoperative ERCP grounded on initial unbalanced LFTs is no longer exercised<sup>17</sup>.

It has been demonstrated by intraoperative cholangiogram that the unsuspected CBD stones' occurrence ranges from 2.8-5.8% in those patients having imaging and normal preoperative LFT<sup>18</sup>. It has been concluded by Shayan et al. that occurrence of stones of bile duct in those patients who are improving from mild to moderate acute gallstone pancreatitis with imaging and normal preoperative LFT is not found to be significantly higher (7.6%) in the comparison of those patients experiencing laparoscopic cholecystectomy for symptomatic cholelithiasis<sup>12</sup>. Quite similar rate of stone of bile duct, in the patients who are experiencing cholecystectomy for symptomatic cholelithiasis or gallstone pancreatitis has been described as well<sup>19</sup>.

In a research, the missed stone occurrence in patients having normalized preoperative LFTs was found to be low (2%). In the research conducted by Ito et al.<sup>20</sup>, the occurrence of recurring acute pancreatitis because of retained CBD stones in those patients who did not experience preoperative ERCP or IOC during surgery was found to be 8%.

In the investigation which was conducted by Al-Qahtaniet al only 3 patients (2%) without preoperative ERCP developed events of bilio-pancreas because of missed CBD stones.

The rate of complication of ERCP with ES as reported in another study was 4.95% with the rate of mortality is equal to 0.12%<sup>21</sup>. Whereas, no mortality was found in this study. Therefore, a repetitive preoperative ERCP in patients could be safely skipped who were improving from biliary pancreatitis if their initial unbalanced liver functions returned near to normal or normal in the period of three to four days from the beginning of disease. The tenacity of CBD stones in acute gallstone pancreatitis did not contribute to continuing or pancreatic inflammation worsening<sup>21,22</sup>. A research conducted by Al-Qahtani et al,<sup>17</sup>, in which all patients with continuous greater LFT after the duration of 72 hours that experienced ERCP were indicated to suffer from either stones or sludge. Local of systemic complications were developed by none of them.

In case of ERCP indications of these patients the use of advanced tools could be helpful. The rate in conversion of open surgery would be increased by routine IOC because of limited experience in survey of laparoscopic CBD. Moreover, the unimportant CBD exploration could be leaded by wrong positive IOC. The re-evaluation of bilio-pancreatic symptoms which developed in patients afterward will be done by MRCP or ERCP even after a normal IOC. The improvement

from moderate gallstone pancreatitis in case of patients done easily in cholecystectomy without IOC.

## CONCLUSION

Patients with gallstone pancreatitis and deranged liver function test had increased risk of CBD stones. ERCP is the gold-standard for evaluation of morphological changes in the pancreas.

### Author's Contribution:

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

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# Dose of Dexamethasone for the Prevention of Post-Tonsillectomy, Nausea and Vomiting: Does it work?

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## ABSTRACT

**Objective:** To compare the post-tonsillectomy nausea and vomiting with and without a single intra-operative intravenous dose of dexamethasone 0.5mg/kg.

**Study Design:** Randomized controlled trial

**Place and Duration of Study:** This study was conducted at the Department of ENT, Sir Ganga Ram Hospital Lahore from August 2018 to August 2019.

**Materials and Methods:** One hundred and forty patients were equally divided into two groups. Group I was treated with dexamethasone 0.5mg/kg and Group II was treated without dexamethasone. Complete laboratory examination was done. Tonsillectomy was performed by sharp dissection snare technique in all the patients by the same surgeon. Post-operatively 8-hourly Amoxicillin/clavulanic acid 15mg/kg orally, paracetamol 15 mg/kg and povidone iodine mouth wash were given to all the patients.

**Results:** The mean age in Group I was  $12.37 \pm 5.84$  and in Group II it was  $10.82 \pm 4.37$  year. There were 34 (48.6%) males in group I and 36 (51.4%) males in group II, while females were 36 (51.4%) in group I and 34 (48.6%) in group II. Postoperative nausea and vomiting was observed in 5 patients (7.1%) of group I and 19 patients (27.1%) of group II ( $p=0.002$ ). Mean duration of disease was  $3.87 \pm 1.21$  and  $2.96 \pm 0.98$  year in group I and II, respectively (Table-4). Mean BMI in group I was  $17.96 \pm 2.68$  and in group II  $17.47 \pm 0.98$  ( $\text{kg}/\text{m}^2$ ).

**Conclusion:** Single intravenous dose of dexamethasone 0.5mg/kg intra-operatively is safe and effective for the prevention of post-operative complications such as nausea and vomiting in patients undergoing tonsillectomy.

**Key words:** Tonsillectomy, Dexamethasone, Nausea, Vomiting

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## INTRODUCTION

Tonsillectomy is one of the most commonly performed surgical procedures throughout the world.<sup>1</sup> Tonsillectomy is also the most common ENT surgery performed under general anaesthesia. Nausea, vomiting, pain and bleeding are the most commonly occurred complications after tonsillectomy.<sup>2</sup>

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Most of the patients undergoing tonsillectomy are children and the frequent incidence of severe pain and vomiting in the early postoperative period can delay oral intake and lead to increased risk of dehydration. In this high-risk group, therefore, some form of prophylactic therapy is recommended. Glucocorticoids, such as dexamethasone and methylprednisolone, have anti-inflammatory and antiemetic properties with dexamethasone being commonly used.<sup>3</sup>

Tonsillectomy is performed almost exclusively as a day case operation in eligible patients in many institutions.<sup>4</sup> While nausea and vomiting is considered a minor postoperative complication, it can have serious implications in short-stay and day-care operations such as tonsillectomy. PONV can be very distressing, leading to bleeding, malnutrition, electrolytes and acid-base imbalance. Persistent retching and vomiting may affect the outcome of various surgical procedures and may increase the risk of vomiting induced pulmonary aspiration. It also increases the stay in the post-anaesthesia care unit (PACU), delays the discharge and results in increased hospital admission rate. Postoperative nausea and vomiting (PONV) may occur in 40% to 73% of patients.<sup>5</sup> Another study showed that

nearly 50% of children experience postoperative nausea or vomiting without antiemetic prophylaxis.<sup>4,6</sup> Postoperative nausea and vomiting are directly associated with many of severe problems such as trigeminal nerve stimulation, irritation of gastrointestinal tract, diathermy use, opiate administration during anaesthesia and obesity.<sup>7</sup>

More studies show that at least one third of PONV patients experience a diminished quality of life over the first 5 days of recovery.<sup>8</sup> Parents whose children experience pain and nausea after surgery frequently say that PONV is the most troubling symptom, suggesting that PONV causes more discomfort and anxiety than pain in some patients. With prophylaxis and Proper treatment, incidence of PONV and pain can be reduced.<sup>9</sup> Dexamethasone has been used in various operations to reduce postoperative pain and PONV.

Dexamethasone has recently been used as prophylaxis for postoperative nausea and vomiting in children undergoing tonsillectomy.<sup>10</sup> The exact mechanism of action of dexamethasone is not understood, but its antiemetic activity is believed to be due to the antagonism of prostaglandins effects.<sup>11</sup> It is demonstrated by many of studies that use of single intravenous dose of dexamethasone may helps to reduce the incidence rate of post-operative nausea and vomiting in children undergoing tonsillectomy.<sup>12</sup>

A wide variation in the reported incidence of nausea and vomiting in patients after tonsillectomy in different geographical areas was observed. The geographic origin of the patients could be an important factor in determining the incidence of nausea and vomiting in tonsillectomy patients as well as their response to prophylaxis. This study is designed to examine the efficacy of single intravenous dose of dexamethasone for prevention of post tonsillectomy nausea and vomiting at our setting.

## MATERIALS AND METHODS

This randomized controlled trial study was carried out at Department of ENT; Sir Ganga Ram Hospital Lahore from 23<sup>rd</sup> August 2018 to 22<sup>nd</sup> August 2019. A total of 140 patients (70 patients in each group) were taken. Group I treated with dexamethasone 0.5mg/kg and Group II was treated without dexamethasone. Patients age between 6-30 years, both genders male and female, chronic tonsillitis and enlarged tonsils causing difficulty in swallowing, breathing or speech were included. Those patients with history of upper respiratory tract infection within last three weeks, history of taking steroids or anti-emetics 24 hours preoperatively and known contraindication to steroids were excluded. Patients were informed about inclusion in study, medicine to be given, benefits and risks involved. Complete laboratory examination was done in all the patients such as CBC, bleeding time, clotting time, PT, APTT and hepatitis screening. Patients in group I

received dexamethasone 0.5mg/kg diluted in 5 ml normal saline while patients in group II received nothing. The standard anaesthesia protocol was followed in all the patients. Single dose (0.5mg/kg) of dexamethasone was administered after the induction of anaesthesia in group I patients. Tonsillectomy was performed by sharp dissection snare technique in all the patients by the same surgeon. Post-operatively 8-hourly Amoxicillin/ clavulanic acid 15mg/kg orally, paracetamol 15 mg/kg and povidone iodine mouth wash were given to all the patients. Patients were monitored for postoperative nausea, vomiting and the need for rescue anti-emetics during first 24 hours in the ward. Nausea was assessed on verbal rating scale from zero to 10 and was labelled if score was  $\geq 5$ . One or more episodes of vomiting in 24 hours was confirmatory. Presence of either nausea or vomiting was regarded as PONV. The collected data was analyzed by using SPSS version 20. Chi-square test was applied to compare the difference of post-operative nausea and vomiting with p-value  $<.05$  was taken as significant.

## RESULTS

Mean age of the patients was  $12.37 \pm 5.84$  and  $10.82 \pm 4.37$  year in group I and group II, respectively. There were 34 (48.6%) males in group I and 36 (51.4%) males in group II, while females were 36 (51.4%) in group I and 34 (48.6%) in group II (Table 1).

**Table No.1: Demographic information of the patients**

Variable	Group I		Group II	
	No.	%	No.	%
<b>Age (years)</b>				
< 20	62	88.6	68	97.2
21-30	8	11.4	2	02.8
<b>Gender</b>				
Male	34	48.6	36	51.4
Female	36	51.4	34	48.6

**Table No.2: Frequency of PONV in both groups**

PONV	Group I		Group II	
	No.	%	No.	%
Yes	05	07.1	19	27.1
No	65	92.9	51	72.9

Chi square=9.856 P value=0.002

**Table No.3: Distribution of patients by duration of disease**

Duration of disease(year)	Group I		Group II	
	No.	%	No.	%
$\leq 5$	63	90.0	70	100.0
> 5	07	10.0	-	-
<b>Mean<math>\pm</math>SD</b>		<b>3.87<math>\pm</math>1.21</b>	<b>2.96<math>\pm</math>0.98</b>	

Postoperative nausea and vomiting was observed in 5 patients (7.1%) of group I and 19 patients (27.1%) of group II (p=0.002)(Table 2). Mean duration of disease

was  $3.87 \pm 1.21$  and  $2.96 \pm 0.98$  year in group I and B, respectively (Table 3). Mean BMI in group I was  $17.96 \pm 2.68$  and in group II  $17.47 \pm 0.98$  ( $\text{kg}/\text{m}^2$ ) (Table 4).

**Table No.4: BMI wise distribution**

BMI ( $\text{kg}/\text{m}^2$ )	Group I		Group II	
	No.	%	No.	%
$\leq 20$	54	77.2	60	85.7
$> 20.1$	16	22.8	10	14.3
Mean $\pm$ SD	<b><math>17.96 \pm 2.68</math></b>		<b><math>17.47 \pm 0.98</math></b>	

## DISCUSSION

Post operative nausea and vomiting (PONV) is a common complication of tonsillectomy in the postoperative period and is observed in 15% to 80% of patients following tonsillectomy.<sup>13,14</sup> Postoperative pain and vomiting can contribute to dehydration, and together these three symptoms are responsible for 70% of unplanned hospital returns. Managing these effects is the key to tonsillectomy's overall success.<sup>14</sup> Several studies have suggested that steroids can have beneficial effects on post-tonsillectomy nausea and vomiting due to their anti-emetic and anti-inflammatory properties.

Intravenous (IV) corticosteroids have been shown to be effective in reducing vomiting and improving postoperative analgesia and dietary restart at 24 hours. The most commonly used steroid for this purpose is dexamethasone (DEX) which is cheap and without major side-effects.<sup>15,16</sup>

In our study, postoperative nausea and vomiting was observed in 7.1% patients who received a single intravenous dose of dexamethasone (Group A) and 27.1% patients who did not receive dexamethasone (Group B) ( $p=0.002$ ). These results are in line with a local study by Khan et al<sup>2</sup> who reported post operative nausea and vomiting in 10% of patients using 0.5mg/kg dexamethasone for tonsillectomy and 46% of patients without dexamethasone ( $p= 0.006$ , 0.014 for nausea and vomiting respectively). Similarly Hashmi et al<sup>5</sup> reported PONV in 16% and 46% respectively in patients who received a single dose of dexamethasone (0.5mg/kg) and who did not receive dexamethasone ( $p < 0.05$ ).

Internationally our results are comparable to those reported by Czarnetzki<sup>13</sup> who reported PONV in 12% and 44% respectively in patients who received dexamethasone 0.5 mg/kg and who did not receive dexamethasone ( $p=0.001$ ). Similarly Hermans et al<sup>16</sup> reported PONV in 22% patients who received single intravenous dose of dexamethasone (0.5mg/kg) and in 49% patients who did not receive dexamethasone ( $p=0.001$ ).

Locally Muhammad et al<sup>17</sup> reported that PONV was experienced by 26% patients receiving dexamethasone and 62% patients who did not receive dexamethasone

( $p=0.02$ ). Although these figures are higher than ours but still in line with our results.

In our study patients experiencing PONV in both groups are significantly less than a study by Pappas et al who showed decrease in frequency of PONV from 88% to 48% using dexamethasone for tonsillectomy ( $p<0.05$ ).<sup>18</sup> This difference in numbers could be due to the fact that we used cold dissection method whereas Pappas et al used electro-dissection technique for tonsillectomy. It has been reported in literature that electro-dissection technique for tonsillectomy is associated with higher incidence of PONV as compared to cold dissection technique.<sup>19</sup>

On the other hand no significant difference was found in the frequency of nausea and vomiting across groups receiving or not receiving dexamethasone in two studies by Malde et al<sup>20</sup> and Stewary et al.<sup>21</sup> This difference in results probably resulted from the fact that relatively lower doses of dexamethasone were used in these two studies.

## CONCLUSION

Tonsillectomy is the most performing surgical treatment and post-operative complications such as nausea and vomiting are the most frequent complication which can cause serious morbidity. We concluded that single intravenous dose of dexamethasone 0.5mg/kg intra-operatively is safe and effective for the prevention of post-operative complications such as nausea and vomiting in patients undergoing tonsillectomy.

### Author's Contribution:

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Original Article

# Cystic Hygroma in Children: Comparison Between Sclerosing Treatment With Bleomycin Vs Surgical Resection

Mohammad Dawood Khan<sup>1</sup>, Habib ullah Mandokhai<sup>2</sup> and Asmat Ullah Kaker<sup>2</sup>

Sclerotherapy With  
Bleomycin Versus  
Surgical Resection in  
Children in Cystic  
Hygroma

## ABSTRACT

**Objective:** To compare the outcome of sclerotherapy with bleomycin versus surgical resection in children in cystic hygroma.

**Study Design:** Comparative/Observational

**Place and Duration:** This study was conducted at the Department of Paediatric Surgery, Bolan Medical Complex Hospital Quetta from 1<sup>st</sup> January 2019 to 30<sup>th</sup> June 2019.

**Materials and Methods:** Forty patients of both genders with ages 1 month to 15 years presented with cystic hygroma were included in this study. Patients detailed demographic were recorded after written consent from parents/guardians. Patients were divided in to two groups' i.e. Group A consist of 20 patients and received sclerotherapy with intra-lesional bleomycin and Group B consist of 20 patients received surgical excision. Outcomes were analyzed at post-procedure 3 and 6 months post-procedure and compare the findings between both groups.

**Results:** There were significant difference observed between both groups regarding age, gender and site of lymphangioma p-value >0.05. In Group A 15 (75%) patients showed excellent results, 3 (15%) patients showed good results and 2 (10%) showed poor results. In Group B 9 pts (65%) showed excellent results, 5 (20%) showed good results and 6(15%) showed poor results. At final follow-up there were 2 patients with recurrence in Group A while in Group B 5 (10%) patients had recurrence,

**Conclusion:** Sclerosing treatment with bleomycin is safe and effective treatment modality with no recurrence as compared to surgical resection.

**Keywords:** Cystic hygroma, Sclerotherapy, Bleomycin, Surgery, Recurrence

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## INTRODUCTION

Lymphangiomas are benign hamartomatous lymphatic tumors, also referred to as congenital deformities of the lymphatic structures. The most common and frequent type of lymphangioma is cystic hygroma which may compose of one or more macrocystic lesions with reduced communication to the lymphatic channels.<sup>1</sup> They are slow growing tumors and may manifest in any part of the body or anywhere in the soft tissues.

The most commonly affected sites are the head and neck, and also the mediastinum and axilla[2]. These tumors most often occur in children, although they may occur in adults as well.

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They are also often evident at birth in 65% and may present by two years of age in 80-90% of the cases. The reported incidence of lymphangiomas is 1.5 to 2.8 per 1000, and it is not specific to any gender or race.<sup>2</sup> Inflammation and cosmetic defects are the baseline symptoms. In the neck area, they may lead to compression symptoms when they compress important surrounding structures and may cause respiratory problems, dysphagia, and compression of nerves.<sup>3</sup> There are different modes of treatment for cystic hygromas. These therapies include radiotherapy, incision and drainage, and surgical excision (which is the mainstay of therapy).<sup>2,4-6</sup> However, these procedures have variable findings which investigators find unsatisfactory. In many patients, a complete surgical resection is often not possible because of the nature of the lesion which encircles the crucial neurovascular system and also infiltrates across tissue planes.<sup>2</sup> Post-surgical recurrence of tumors and injury to nerves are commonly observed complications, in addition to other issues such as disfigurement, and dreadful scar formation.<sup>1,2</sup>

In recent times, intralesional sclerotherapy has become increasingly accepted as an effective method for the treatment of the children with lymphangiomas.<sup>1,2,4</sup> It involves the use of a sclerosing agent which irritates the endothelial lining of the lymphangioma leading to

swelling, involution, and fibrosis. In the past, boiling water, 50% dextrose water, hypertonic saline, or absolute alcohol have been used with results that have not been very encouraging.<sup>2</sup> Many centers are beginning to use sclerosing agents like Bleomycin, acetic acid, OK-432, and Doxycycline as first-line therapy with satisfactory results.<sup>1,3,7,8</sup> Unlike surgical excision, this modality of treatment is particularly useful for lesions enveloping vital structures.<sup>8</sup> The present study was conducted to compare the effectiveness and safety of sclerotherapy and surgical excision in children with cystic hygroma.

## MATERIALS AND METHODS

This observational study was conducted at Bolan Medical Complex Hospital Quetta from 1<sup>st</sup> January 2019 to 30<sup>th</sup> June 2019. A total 40 patients of both genders with ages 1 month to 15 years presented with cystic hygroma were included in this study. Patients detailed demographic including age, sex, and site of lymphangioma were recorded after taking written consent from parents/guardians. Patients with recurrence, already on sclerotherapy and ages above 15 years were excluded from this study. All the patients were divided in to two groups' i.e. Group A consist of 20 patients and received sclerotherapy intra-lesionally bleomycin with a dose of 0.5mg/kg of body weight and number of session 1 to 4 per patients. Patients were admitted for 24 hours after each session. Maximum 4 sessions was given to patients monthly. Group B consist of 20 patients received surgical excision of cystic hygroma. Post-procedural complications were recorded. Outcomes in term of excellent (Complete resolution), good (>50% resolution) and poor (<50% resolution) results were examined. Recurrence rate was examined at final follow-up. Follow-up was taken at 3 and 6 months post-procedure. Ultrasonography and X-ray was done pre and post-operatively to analyze the outcomes. Data was analyzed by SPSS 24.0. Chi-square and student t' test was used to compare the outcomes between both groups. P-value <0.05 was considered as statistically significant.

## RESULTS

There were 11 (55%) male and 9 (45%) were females in Group A and in Group B 12 (60%) patients were males and 8 (40%) patients were females. In group A majority 75% of patients were ages <5 years and 25% patients had ages above 5 years. In Group B 80% patients were ages  $\leq$  5 years and 20% patients had ages above 5 years. According to the site of lymphangioma, in Group A 60% patients had neck, 15% had axilla, 15% had face and 10% had trunk site and in Group B 55% patients had neck, 20% had axilla, 15% had face and 10% patients had trunk lymphangioma. There was no significant difference observed regarding age, sex and

site of lymphangioma between both groups with p-value >0.05 (Table 1).

In Group A patients 1 (5%) patients had received two sessions of bleomycin, 4 (20%) had received three sessions and 15 (75%) had received 4 doses of bleomycin (Table 2). According to the post-procedural complications we found no patient had wound infection in Group A patients while in Group B 2 (10%) patients had developed wound infection and 8 (10%) patients had recurrence.

**Table No.1: Baseline details of all the patients**

Variable	Group A (n=20)	Group B (n=20)	P-value
<b>Gender</b>			
Male	11 (55%)	12 (60%)	>0.05
Female	9 (45%)	8 (40%)	
<b>Age (years)</b>			
<5	15 (75%)	16 (80%)	>0.05
>5	5 (25%)	4 (20%)	
<b>Site of lymphangioma</b>			
Neck	12 (60%)	11 (55%)	>0.05
Axilla	3 (15%)	4 (20%)	
Face	3 (15%)	3 (15%)	
Trunk	2 (10%)	2 (10%)	

**Table No.2: Session-wise distribution in patients receive bleomycin**

Variables	No.	%
One Session	-	-
Two Sessions	1	5.0
Three Sessions	4	20.0
Four Sessions	15	75.0

**Table No.3: Post-operative complications between both groups**

Complication	Group A (n=20)	Group B (n=20)	P-value
<b>Wound Infection</b>			
Yes	-	2 (10%)	>0.001
No	20 (100%)	18 (90%)	
<b>Recurrence</b>			
Yes	-	8 (10%)	>0.001
No	20 (100%)	18 (90%)	

**Table No.4: Final outcomes between both groups**

Variables	Group A (n=20)	Group B (n=20)	P-value
Excellent	15 (75%)	9 (45%)	>0.05
Good	3 (15%)	5 (25%)	>0.05
Poor	2 (10%)	6 (30)	>0.05

There was a significant difference between both groups ( $p=<0.001$ ). According to the resolution we found significant difference between both groups in term of complete resolution with p-value >0.05. In Group A 15 (75%) patients showed excellent results, 3 (15%) patients showed good results and 2 (10%) showed poor

results. In Group B 9(65%) showed excellent results, 5 (20%) showed good results and 6 (15%) showed poor results (Table 4).

## DISCUSSION

Cystic hygroma is one of the critical disorder among children and the incidence rate is quite high in children with ages up to 5 years. Many of treatment modalities such as sclerotherapy with bleomycin and OK-432 and the surgical excision have been applied for this benign disorder. In these modalities sclerotherapy technique is considered as much safer and effective than surgical management due to high rate of wound infection and recurrence rate.<sup>9,10</sup> The present study was conducted aimed to examine the outcomes of sclerotherapy with bleomycin and surgical excision in children with cystic hygroma. In this regard 40 patients of both genders were enrolled and divided in to two groups. We found that male patients were high in numbers in both groups A and B 55% and 60% as compared to females 45% and 40%. In group A majority 75% of patients were ages <5 years and 25% patients had ages above 5 years. In Group B 80% patients were ages  $\leq$  5 years and 20% patients had ages above 5 years. A study conducted by Mustafa et al<sup>11</sup> regarding outcomes of intralesional bleomycin for cystic hygroma in children, in which they reported that male patients was high in numbers 66.7% as compared to females and the mean age of patients was  $2.36 \pm 2.8$  years.

In present study according to the site of lymphangioma, in Group A 60% patients had neck. 15% had axilla, 15% had face and 10% had trunk site and in Group B 55% patients had neck, 20% had axilla, 15% had face and 10% patients had trunk lymphangioma. There was no significant difference observed regarding age, sex and site of lymphangioma between both groups with p-value  $>0.05$ . A study by Fiaz et al<sup>12</sup> reported that neck was the commonest site of lymphangioma found in 63.3% followed by axilla, face and trunk 13.3%, 13.3% and 10%.

In the present study we found that patients who were received sclerotherapy, 1 (5%) patients had received two sessions of bleomycin, 4 (20%) had received three sessions and 15 (75%) had received 4 doses of bleomycin. These results were similar to many of other studies in which mostly patients were received 3 to 4 session of bleomycin for complete resolution.<sup>13,14</sup>

According to the post-procedural complications, we found no patient had wound infection in Group A patients while in Group B 2 (10%) patients had developed wound infection and 5 (10%) patients had recurrence in group B . while in group A 2 patients have recurrence .There was a significant difference between both groups ( $p=<0.001$ ). These results were similar to many of previous studies in which surgical excision had high rate of wound infection 5 to 20% and recurrence rate 10 to 30% as compared to

sclerotherapy.<sup>15,16</sup> We observed that surgical excision needs much per-operative care as compared to sclerotherapy.

This study showed that significant difference between both groups in term of complete resolution with p-value  $>0.05$ . In Group A 15 (75%) patients showed excellent results, 3 (15%) patients showed good results and 2 (10%) showed poor results. In Group B 09 (65%) showed excellent results, 04(20%) showed good results and 06 (15%) showed poor results. These results were comparable to several previous studies.<sup>17-20</sup>

## CONCLUSION

Sclerosing treatment with bleomycin for cystic hygroma in children is safe and effective treatment modality with no recurrence and wound infection as compared to surgical resection. Also we observe significant difference between both groups in term of complete resolution, good and poor resolution.

### Author's Contribution:

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# Determine the Prevalence and Outcomes of Hypoglycemia in Children with Severe Acute Malnutrition

Rukhsana Habib, Attaullah Bizenjo, Saima Rayaz and Mohammad Hanif

Hypoglycemia in Children with Acute Malnutrition

## ABSTRACT

**Objective:** To examine the incidence rate and outcomes of hypoglycemia in children presented with severe acute malnutrition.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the Department of Paediatric Medicine Unit 4, Bolan Medical Complex Hospital Quetta from June 2019 to November 2019.

**Materials and Methods:** Two hundred and five patients of both genders presented with severe acute malnutrition were included. Patients detailed demographic including age, sex and socio-economic status were recorded. Serum glucose level was examined in all the patients. Prevalence of hypoglycemia was recorded. Outcome in term of mortality was examined.

**Results:** One hundred and twenty (58.64%) patients were males and 85 (41.36%) patients were females. Majority of patients 132 (64.39%) were ages <1 years. Hypoglycemia was found in 40 (19.51%) patients. 32 (15.61%) patients were died among all the patients. Out of 40 hypoglycemic patients 24 (60%) were died and in normoglycemic 8/165 (4.85%) patients were died.

**Conclusion:** The frequency of hypoglycemia was high in children with severe acute malnutrition. Mortality rate was high in hypoglycemic patients as compared to normoglycemic children.

**Key Words:** Severe Acute Malnutrition, Hypoglycemia, Mortality

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## INTRODUCTION

Malnutrition includes both under nutrition and over nutrition.<sup>1</sup> Under-nutrition is preventable cause of morbidity and mortality among children aged below five years.<sup>2</sup> Moreover severe malnutrition is one of the reasons of hospital admissions in economically poor.<sup>3,4</sup> Diarrhea is the second most common life threatening condition worldwide among all infectious diseases in children younger than 5 years.<sup>5</sup> Diarrhea and malnutrition are inter-related. Hypoglycemia is usually associated with severe malnutrition and persistent diarrhea.<sup>6,7</sup> Decreased stores of glycogen, increased peripheral utilization of glucose, and intestinal malabsorption have all been associated with hypoglycemia.<sup>8</sup>

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In children, hypoglycemia resulting from impaired glucogenesis is associated with mortality from infectious diarrhoea regardless of their nutritional status. The major long term sequelae of severe prolonged hypoglycemia are neurological damage resulting in mental retardation, cognitive impairment, neurological deficit and recurrent seizure activity.<sup>9,10</sup> Incidence of hypoglycemia varies with the definition, population, method and timing of feeding, and the type of glucose assay.<sup>11</sup> The age is also helpful in assessing the probable diagnosis of hypoglycemia. The incidence is highest in the immediate post neonatal period.<sup>12</sup>

## MATERIALS AND METHODS

This observational study was conducted at Department of Paediatric Medicine Unit 4 Bolan Medical Complex Hospital Quetta from 1<sup>st</sup> June 2019 to 30<sup>th</sup> November 2019. A total of 205 patients of both genders presented with severe acute malnutrition according to the WHO criteria of severe acute malnutrition. Patients detailed demographic including age, sex and socio-economic status were recorded. Patients with congenital heart disease, renal failure patients, cerebral palsy patients and patients with ages above 2 years were excluded. Blood sample was obtained from all the patients to examine the serum glucose level. Hypoglycemia was defined as serum glucose level <54mg/dl. Complete examination was done. Frequency of hypoglycemia was

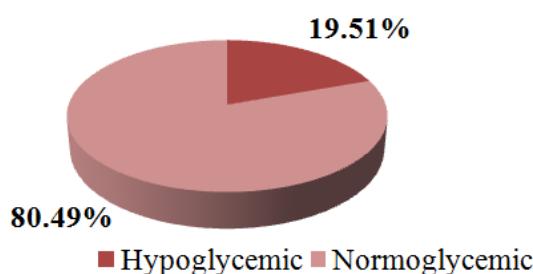
recorded. Outcomes in term of mortality associated to hypoglycemia were examined. Data was analyzed by SPSS 24. Chi-square and student t' test was applied to compare the mortality between hypoglycemic and normoglycemic patients. P-value <0.05 was considered as significant.

## RESULTS

One hundred and twenty (58.64%) patients were males and 85 (41.36%) patients were females. Majority of patients 132 (64.39%) were ages <1 year while 73 (35.61%) patients had ages above 1 year. 128 (62.44%) patients had low-socioeconomic status while remaining 77 (37.56%) patients had middle socio-economic status. 175 (85.37%) patients were marasmic while 30 (14.63%) patients were khwashikor (Table 1). From all the patients 40 (19.51%) patients were hypoglycemic while 165 (80.49%) patients were normoglycemic (Fig. 1).

**Table No.1: Baseline characteristics of all the patients**

Variable	No.	%
<b>Gender</b>		
Male	120	58.64
Female	85	41.36
<b>Age (years)</b>		
<1r	132	64.39
>1	73	35.61
<b>Socioeconomic status</b>		
Low	128	62.44
Middle	77	37.56
<b>Type of SAM</b>		
Marasmus	175	85.37
Khawashikor	30	14.63



**Figure No. 1: Frequency of hypoglycemia**

Among 175 marasmic patients 33 (18.86%) patients had hypoglycemia and among 30 khwashikor patients 7 (23.33%) patients had hypoglycemia (Table 2). The overall mortality observed in 32 (15.61%) patients. Out of 40 hypoglycemic patients 24 (60%) were died and in normoglycemic 8/165 (4.85%) patients were died. We found a significant difference in term of mortality between hypoglycemic and normoglycemic patients p-value <0.001 (Table 3).

**Table No. 2: Frequency of hypoglycemia according to the bilateral pedal edema**

Hypoglycemia	With edema (n=30)	Without edema (n=175)	P-value
Yes	7 (23.33%)	33 (18.86%)	
No	23 (76.67%)	142 (81.14%)	0.046

**Table No.3: Mortality between hypoglycemic and normoglycemic patients**

Mortality	With edema (n=30)	Without edema (n=175)	P-value
Yes	24 (60%)	8 (4.85%)	
No	16 (40%)	157 (95.15%)	<0.0001

## DISCUSSION

Severe acute malnutrition is one of the most common pediatric disorders in developing countries and it accounted 5 to 50% of mortality among children with ages less than 5 years.<sup>13,14</sup> Worldwide children with severe acute malnutrition had high rate of morbidity and mortality. Hypoglycemia is one of the common complications in severe acute malnutrition patients and directly associated with high rate of morbidity and mortality.<sup>15,16</sup> The present study was conducted to examine the prevalence of hypoglycemia and mortality associated to hypoglycemia in children with severe acute malnutrition. In present study 120 (58.64%) patients were males and 85 (41.36%) patients were females. Majority of patients 132 (64.39%) were ages <1 year while 73 (35.61%) patients had ages above 1 year. These results were similar to many of previous studies in which male patients were high in numbers 55 to 70% as compared to females and mostly patients with severe acute malnutrition were ages less than 12 months.<sup>17,18</sup>

In the present study 175 (85.37%) patients were marasmic while 30 (14.63%) patients were khwashikor. These results were similar to the study conducted by Khan et al<sup>19</sup> regarding frequency of hypoglycemia in severe acute malnutrition children and they reported 83.67% patients were without edema and 16.33% patients were with bilateral pedal edema.

We found that 40 (19.51%) patients were hypoglycemic while 165 (80.49%) patients were normoglycemic. Khan et al<sup>19</sup> reported frequency of hypoglycemia in severe acute malnutrition patients was 8.2%. Another study conducted by Tahseen et al<sup>20</sup> reported that 30.4% patients were hypoglycemic among 184 severe acute malnutrition patients. A study conducted by Meena et al<sup>21</sup> reported the prevalence of hypoglycemia was 11.11%.

This study showed that overall mortality observed in 32 (15.61%) patients. Out of 40 hypoglycemic patients 24 (60%) were died and in normoglycemic 8/165 (4.85%) patients were died. We found a significant difference in term of mortality between hypoglycemic and normoglycemic patients. These results were similar to the study by Tahseen et al<sup>20</sup> reported that 41 (67.21%) out of 56 children from hypoglycemic group while 20 (15.6%) out 128 children from normoglycemic group expired. The mortality was significantly more in hypoglycemic children. (P=0.000). Our study results regarding outcomes of hypoglycemia were similar to some other previous studies in which mortality rate in hypoglycemic patients was high 40-70% as compared to normoglycemic patients.<sup>22-24</sup>

## CONCLUSION

Severe acute malnutrition is one of the commonest disorders in infants and children less than 24 months with high morbidity and mortality rate. We concluded that the frequency of hypoglycemia was high in children with severe acute malnutrition. Mortality rate was high in hypoglycemic patients as compared to normoglycemic children.

### Author's Contribution:

Concept & Design of Study: Rukhsana Habib  
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 Revisiting Critically: Rukhsana Habib, Attaullah Bizenjo  
 Final Approval of version: Rukhsana Habib

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

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# Serum Uric Acid in Systemic Hypertension Patients and its association with Systolic and Diastolic Blood Pressure

Uric Acid in Systemic Hypertension

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## ABSTRACT

**Objective:** Evaluating the Serum Uric acid (SUA) in Systemic Hypertension Patients and its association with Systolic (SBP) and Diastolic Blood Pressure (DBP).

**Study Design:** Cross sectional study

**Place and Duration of Study:** Department of Medicine, Isra University Hospital from April 2017 – February 2018.

**Materials and Methods:** A sample of 100 diagnosed cases of essential systemic hypertension and 100 controls were selected according to the inclusion and exclusion criteria. Venepuncture was done to collect 2 ml venous blood. The blood samples were centrifuged. Sera were used for the uric acid estimation. Volunteers were asked to give consent in written. A pre- structure performa was used for data collection. Data was analyzed on statistical software (SPSS v 22.0, IBM, Incorporation, USA) at confidence interval of 95% ( $P \leq 0.05$ ).

**Results:** Mean  $\pm$  SD age was found  $50.32 \pm 4.13$  and  $50.25 \pm 4.20$  years in control and cases respectively ( $p=0.95$ ). Male population was predominant in present study. Serum uric acid in control and cases was found as  $4.42 \pm 1.10$  and  $5.28 \pm 1.04$  respectively ( $P=0.0001$ ). Pearson's correlation shows positive association of Serum Uric acid with systolic BP ( $r= 0.575^{**}$ ,  $p=0.0001$ ), Diastolic BP ( $r= 0.561^{**}$ ,  $p=0.0001$ ) and Body weight ( $r= 0.132$ ,  $p=0.063$ ).

**Conclusion:** The present study reports raised serum uric acid levels in systemic hypertension. Serum Uric acid shows a definite positive correlation with systolic and diastolic blood pressure.

**Key Words:** Uric acid, Systemic Hypertension, Systolic BP, Diastolic BP

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## INTRODUCTION

Systemic hypertension is a major health problem of modern society. It is a risk factor for heart failure, myocardial infarction, brain stroke, renal hypertensive disease, and peripheral arterial disease.<sup>1</sup> World prevalence of systemic hypertension is estimated as 1 billion people are suffering from it. Approximately death toll of 7.1 million has been attributed to the systemic hypertension.

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World Health Organization (WHO) reported that suboptimal rise in systolic blood pressure (BP) of  $>115$  mm Hg accounts for 49% of ischemic cardiac disease and 62% of cerebrovascular disease. There is little variation by gender. 30% of subjects remain undiagnosed and 40% are drug non-compliant. Approximately 60% hypertensive subjects have no proper control of systemic hypertension.<sup>1, 2</sup> Raised serum uric acid, termed hyperuricemia, are common in systemic hypertension, but also in the pre-hypertension patients. Association of serum uric acid and risk of systemic hypertension has been consistent and continuous in previous studies. An elevated serum uric acid level is common among prehypertension patients with microalbuminuria.<sup>1, 2</sup> Previous studies<sup>3, 4</sup> reported the elevated serum uric acid is a positive risk factor the development of systemic hypertension. Approximately 25–50% of Systemic hypertension subjects show hyperuricemia.<sup>4</sup> Hyperuricemia puts the subjects at increased risk for cardiovascular mortality, particularly in female subjects.<sup>3, 4</sup> Despite reports on the issue of hyperuricemia in systemic hypertension, many authorities do not honor serum uric acid to be a true cardiovascular risk factor.<sup>1, 4</sup> Hyperuricemia has been established as risk factor for systemic hypertension, dyslipidemia, obesity, and kidney hypertensive disease and insulin resistance. Several studies had reported

elevated serum uric acid as an independent risk factor for cardiovascular disease. And the risk is reduced after serum uric acid levels are reduced. The underlying mechanisms of how uric acid increases the risk of cardiovascular disease remain ambiguous and needs further research.<sup>3,4</sup> Emerging data shows prevalence of elevated serum uric acid is found not only in the developed countries but also among the populations of low and middle-income countries.<sup>5</sup> Many factors have been implicated in causing the hyperuricemia, and life style factors are most important among them. Obesity, sedentary life, overeating, increased meat intake, drugs and alcohol intake have been independent predictors of hyperuricemia.<sup>6</sup> Previous studies<sup>4-9</sup> from China, Japan, India, Pakistan and Iraq have reported positive association of serum uric acid, systemic hypertension and obesity. The present study was conducted to estimate serum uric acid in systemic hypertension and its correlation with systolic and diastolic blood pressure among the Pakistani adults.

## MATERIALS AND METHODS

The present study was hospital based cross sectional analytical study was conducted at the Department of Medicine, Isra University Hospital from April 2017 – February 2018. A sample of 100 diagnosed cases of essential systemic hypertension and 100 age and gender matched control (normal healthy adults) were selected. Inclusion and exclusion criteria were strictly obeyed for study protocol. Sample size was calculated by Rao-software. Patients of in- patient and out- patient departments were included. Inclusion criteria were; diagnosed cases of Essential systemic hypertension (JNC- VII criteria), age 40- 60 years, and both gender. Exclusion criteria were; age <40 or >60, secondary hypertension, diabetes mellitus, Ischemic Heart Disease (IHD), daily meat intakes, alcoholics, thiazide drug intake, chronic kidney disease, and pregnancy. Ethical approval was taken from the institute. Volunteers were informed about the aims of study. Cases and control were informed that they can withdraw the study protocol without telling the reason and this will not affect their future drug therapy. Volunteers were interviewed for getting confidence and adherence for the study. Clinical history was taken to fulfill the exclusion and inclusion criteria. Cases and controls were examined by a medical officer, followed by consultant. Blood pressure was measured as per criteria of JNC-VII by a mercury sphygmomanometer. Ante cubital fossa was sterilized by alcohol swab. A disposable syringe was used for blood sample collection. A tourniquet was applied above the cubital fossa to make the vein prominent. Venepuncture collected 2 ml venous blood was centrifuged for 15 minutes (x3000 rpm) to get sera separated. Sera were taken into sterilized Eppendorf tubes and stored at -20°C. Sera were used for the uric acid estimation.

Volunteers were asked to give consent in written. A printed consent form was used for this purpose. Confidentiality of data of cases and control was strictly maintained. A pre- structure performa was used for data collection. Data was analyzed on statistical software (SPSS v 22.0, IBM, Incorporation, USA). Student's t test and Chi ( $\chi^2$ ) square test were used for the analysis of continuous and categorical variables respectively. Correlation of serum uric acid with systolic and diastolic blood pressure was analyze by Pearson's correlation Bivariate method. Significant results were taken at confidence interval of 95% ( $P \leq 0.05$ ).

## RESULTS

Mean  $\pm$  SD age was found  $50.32 \pm 4.13$  and  $50.25 \pm 4.20$  years in control and cases respectively ( $p=0.95$ ) (table I). Male population was predominant in present study. Table II shows 79% and 75% were male in control and cases respectively ( $\chi^2=0.175$ ,  $P=0.67$ ). Body weight, Body mass index (BMI), Systolic and Diastolic BP, serum uric acid and creatinine are shown in table I. Serum uric acid in control and cases was found as  $4.42 \pm 1.10$  and  $5.28 \pm 1.04$  respectively ( $P=0.0001$ ). Normal ( $<25 \text{ kg/m}^2$ ), overweight ( $<25 - 29.9 \text{ kg/m}^2$ ) and Obesity ( $\geq 30 \text{ kg/m}^2$ ) in control and cases are shown in table 3.

**Table No.I: Characteristics of study subjects**

Parameter	Controls (n=100)	Cases (n=100)	P- value
Age (years)	$50.32 \pm 4.13$	$50.25 \pm 4.20$	0.95
Body weight (kg)	$69.20 \pm 16.61$	$73.35 \pm 16.65$	0.087
BMI (kg/m <sup>2</sup> )	$27.53 \pm 3.30$	$28.48 \pm 3.61$	0.053
Systolic BP (mmHg)	$121.55 \pm 7.70$	$148.10 \pm 18.89$	0.0001
Diastolic BP (mmHg)	$68.90 \pm 6.33$	$87.55 \pm 13.78$	0.0001
Uric acid (mg/dl)	$4.42 \pm 1.10$	$5.28 \pm 1.04$	0.0001
Creatinine (mg/dl)	$0.92 \pm 0.17$	$0.90 \pm 0.18$	0.332

**Table No.2: Gender distribution of study subjects**

Gender	Controls (n=100)	Cases (n=100)	$\chi^2$ - value	P- value
Male	79%	75%	0.175	0.67
Female	21%	25%		

Pearson's correlation shows positive association of Serum Uric acid with systolic BP ( $r= 0.575^{**}$ ,  $p=0.0001$ ), Diastolic BP ( $r=0.561^{**}$ ,  $p=0.0001$ ) and

Body weight ( $r= 0.132$ ,  $p=0.063$ ) (Table 4). Positive correlation of serum uric acid with Systolic BP ( $y = 9.747x + 87.498$ ,  $R^2 = 0.3304$ ) and Diastolic BP ( $y = 6.897x + 44.736$ ,  $R^2 = 0.3147$ ) is shown in scatter plots 1 and 2.

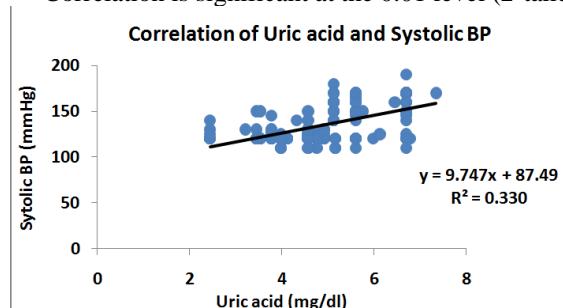
**Table No.3: Body mass index (kg/m<sup>2</sup>) in study population**

BMI	Controls (n=100)	Cases (n=100)	P-value
Normal (<25 kg/m <sup>2</sup> )	42%	32%	0.21
Overweight (<25 - 29.9 kg/m <sup>2</sup> )	41%	44%	
Obesity ( $\geq 30$ kg/m <sup>2</sup> )	17%	24%	

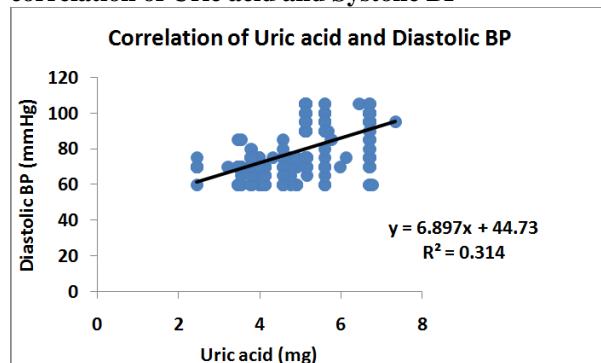
**Table No.4: Correlation co-efficient of Serum Uric Acid**

Variable	r-value	P-value
Systolic BP	0.575 **	0.0001
Diastolic BP	0.561 **	0.0001
Body weight	0.132	0.063

\*\* Correlation is significant at the 0.01 level (2-tailed)



**Graph No.1: Scatter plot showing positive linear correlation of Uric acid and Systolic BP**



**Graph No.2: Scatter plot showing positive linear correlation of Uric acid and Diastolic BP**

## DISCUSSION

The present is the first study reporting on the serum uric acid level in Systemic hypertension and its association with Systolic and Diastolic blood pressure from a tertiary care hospital of Sindh. The present study was hospital based cross sectional analytical study. The study included 100 control and 100 systemic

hypertension cases. Control and cases were age, gender, body weight and BMI matched. The mean  $\pm$  SD age was found  $50.32 \pm 4.13$  and  $50.25 \pm 4.20$  years in control and cases respectively ( $p=0.95$ ) (table I). The findings are supported by previous studies.<sup>10-12</sup> The findings are also in agreement with other previous studies of Divyen et al,<sup>13</sup> Habib et al,<sup>14</sup> Lee et al.<sup>15</sup> Divyen et al<sup>13</sup> reported common age of 40-60 years. While Lee et al<sup>15</sup> reported majority of cases belonged to age of 40-50 years. However, Habib et al<sup>14</sup> has reported minimum age of 20 years that contradicts with the present study. Male population was predominant in present study. Table II shows 79% and 75% were male in control and cases respectively ( $X^2=0.175$ ,  $P=0.67$ ). Male dominancy has been reported by Divyen et al<sup>13</sup> and Lee et al.<sup>15</sup> In the present study, the serum uric acid in control and cases was found as  $4.42 \pm 1.10$  and  $5.28 \pm 1.04$  respectively ( $P=0.0001$ ). The findings are in agreement with previous studies.<sup>13-15</sup> Divyen et al<sup>13</sup> reported the serum uric acid in cases and control were  $6.18 \pm 1.79$  mg/dl and  $5.60 \pm 1.83$  mg/dl respectively ( $p<0.05$ ). Habib et al<sup>14</sup> reported serum uric acid was higher in systemic hypertension patients compared to control in Pakistani adult population. Habib et al<sup>14</sup> reported mean uric acid of  $316.87 \mu\text{mol/L}$  and  $273.24 \mu\text{mol/L}$  in cases and control respectively. The findings are consistent with present study. Shrivastav et al<sup>16</sup> conducted a hospital based case control study and reported serum uric acid was high in systemic hypertension. This previous study reported serum uric acid  $4.91 \pm 0.88$  mg/dl,  $5.89 \pm 0.97$  and  $6.56 \pm 0.64$  mg/dl in control, pre-hypertensive and hypertensive subjects. Neki et al<sup>17</sup> reported serum uric acid in hypertensive and control was quite different. Serum uric acid in systemic hypertension patients was  $5.8$  mg/dl compared to  $4.4$  mg/dl in control ( $P<0.05$ ). The findings are consistent with the present study. In Divyen study<sup>13</sup>, the serum uric acid in Stage I and II systemic hypertension was  $4.99 \pm 1.29$  and  $6.64 \pm 1.75$  mg/dl respectively ( $p<0.05$ ). Vakil et al<sup>18</sup> analyzed the relationship of Systemic hypertension severity, obesity and uric acid and reported uric acid levels were elevated in systemic hypertension and more so in systemic hypertension with obesity ( $p<0.05$ ). Neki et al<sup>17</sup> reported serum uric acid was raised in patients of systemic hypertension. Mean uric acid in stage 1 and 2 hypertension was noted as  $5.37$  mg/dl and  $6.39$  mg/dl. In the present study, serum uric acid was analyzed in systemic hypertension and especial reference to its correlation with systolic and diastolic BP. We report serum uric acid was high in systemic hypertension patients and it showed positive correlation with systolic and diastolic BP. Pearson's correlation shows positive association of Serum Uric acid with systolic BP ( $r= 0.575 **$ ,  $p=0.0001$ ), Diastolic BP ( $r= 0.561 **$ ,  $p=0.0001$ ) and Body weight ( $r= 0.132$ ,  $p=0.063$ ) (Table IV). These findings are supported by Lee et al<sup>15</sup> and Vakil et al.<sup>18</sup> Lee et al<sup>15</sup> analyzed the association between

hyperuricemia and systemic hypertension and reported positive association with OR (odds ratio) of 1.25 in <40 years male and 2.6 in <40 years female. Similarly, the Vakil A et al<sup>18</sup> reported definitive positive correlation of serum uric acid and systemic hypertension. They reported the Serum uric acid was found directly proportional to the severity and duration of systemic hypertension. The evidence based findings of present study in light of above literature, it is concluded that the serum uric acid has close relationship with the systemic hypertension.

## CONCLUSION

The present study observed raised serum uric acid levels among systemic hypertension that shows a definite positive correlation with systolic and diastolic blood pressure. Based on the evidence based findings of present study the raised uric acid is a risk factor for developing systemic hypertension. Proper measures to reduce the serum uric acid levels may help prevent and retard the systemic hypertension related complications.

### Author's Contribution:

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

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# Fetal Outcomes of Preeclampsia

Asma Irfan, Irfan Afzal Mughal, Amna Faruqi, Saima Latif Qureshi and  
Tooba Zafar

Outcomes of  
Preeclampsia

## ABSTRACT

**Objective:** To evaluate different factors which effect preeclampsia and fetal outcomes in this condition.

**Study Design:** Case control study

**Place and Duration of Study:** This study was conducted at the Holy Family Hospital and Rawalpindi General Hospital Islamabad from January 2017 to November 2019.

**Materials and Methods:** One hundred and sixty pregnant women were included. Out of those, 110 were preeclamptic who developed hypertension and protein urea after 20<sup>th</sup> week of gestation. The remaining fifty pregnant women who had normal blood pressure during the whole tenure of their pregnancy were taken as the control group.

**Results:** Majority (40.9%) of cases, who developed preeclampsia were younger (16-20 year) women, and this frequency gradually decreased with advancing age. Only (18.14%) of pregnant women beyond 31-35+ years of age developed preeclampsia. Moreover, weight of baby at the time of delivery was significantly lower among cases as compared to controls. In the present study there were 89% live births, 10% still births due to growth retardation and 1% cases of still birth due to fetal distress in preeclamptic patients. As a consequence of severe hypertension during pregnancy, a maximum number of still births (22.2%) were observed in primigravida patients of age group 16-20 which were due to growth retardation.

**Conclusion:** Preeclampsia is a worsening clinical condition and if not monitored carefully may result in complications of pregnancy, thus affecting the baby.

**Key words:** Preeclampsia, Pregnancy, fetal outcome

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## INTRODUCTION

Of all complications of pregnancy, preeclampsia accounts for 5%.<sup>1</sup> It is the main cause of death of both mother and fetus.<sup>2</sup> It is reported that 50,000 women die annually worldwide from preeclampsia. This condition is commonly seen in first pregnancies in one out of ten women.<sup>3</sup>

The incidence of Preeclampsia is double of normotensive pregnancies and it is responsible for 35-300 deaths per 1000 births. It is rare in developed countries, its incidence being one in every 2,000 deliveries. The progression of preeclampsia to eclampsia accounts for more than 50,000 maternal deaths annually around the globe and its incidence is 20 times more in developing countries.<sup>4</sup>

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In a study in Pakistan, frequency of fetal loss was 82.75% in preeclampsia pregnancies, while 7.14% mothers died of eclampsia.<sup>5</sup> In preeclamptic women the infant mortality rate is much higher<sup>5</sup>. The common cause of intrauterine death and prematurity in infants results from placental abruption or uteroplacental vascular insufficiency.<sup>7</sup> When the mother is suffering from preexisting hypertension, the perinatal outcomes are worse in preeclampsia. The severity of increasing maternal blood pressure is found to be proportional to the increased incidence of growth retardation in infants of preeclamptic mothers.<sup>8</sup>

These findings emphasize the need for prevention of eclampsia by identifying cases of preeclampsia from the community at the earliest possible stage, providing them with vigilant antenatal care, performing maternal stabilization before and during transfer to the specialized unit as well as, intensive care monitoring at the hospital. In order to improve maternal and fetal outcome, good antenatal practices, education and awareness policies, provision of better health facilities and their utilization is mandatory.

## MATERIALS AND METHODS

This case control study was conducted in the Obstetric Department of Holy Family Hospital and Rawalpindi General Hospital Rawalpindi Holy Family Hospital and

Rawalpindi General Hospital Islamabad from 1<sup>st</sup> January 2017 to 30<sup>th</sup> November 2019 on 110 preeclamptic patients visiting the out-patient department, admitted in the obstetric wards (pre-delivery and post-delivery) and from the labour room. The cases were followed up at paediatric department regarding the fate of delivered babies.

All pregnant women who signed the consent to participate in the study & with normal blood pressure level or with a family history of hypertension and preeclampsia were included. Women who had hypertension before 20<sup>th</sup> week of gestation & those women who had gestational diabetes or other major diseases were excluded. For the description of different criteria the control and preeclamptic patients were distributed according to age. These groups were 16-20 yrs, 21-25 yrs, 26-30 yrs, and 31-35+ yrs. The control group in age bracket of 16-20 years comprised of ten normal pregnant women and cases were forty-five preeclamptics. The age group 21-25 the consisted of twenty pregnant females in the control group and twenty-nine preeclamptics. In the age group of 26-30 years, the control comprised of ten pregnant females and sixteen preeclamptics, while in the oldestage group 31-35+ years ten pregnant females were controls and twenty preeclamptics were cases. Record of systolic and diastolic blood pressure (mmHg) was maintained at four weeks interval starting from twentieth week of gestation, onwards till thirty-two weeks and then at weekly interval till delivery Arterial blood pressure was measured by sphygmomanometer and the technique was standardized to get consistent results.

The data was recorded by making a proforma which included age, parity and medical history (molar pregnancy, renal disease, diabetes mellitus, connective tissue disease). Prior history of hypertension and family history of preeclampsia was ruled out. Record of complications in the mother such as abruptio placenta, renal insufficiency, HELLP syndrome i.e. (hemolysis-elevated liver enzymes-low platelet count), eclampsia, cerebral hemorrhage, or death was noted. The weeks of gestation at which the patient delivered was important as it was directly related with the maturity of the baby, and the condition of the cervix was noted by Bishop Scoring. Induction was necessary in cases of poor bishops score and for this purpose artificial rupture of membranes, syntocinon I/V infusion or prostaglandin vaginal pessary was used. In cases of failed induction or fetal distress caesarean sections were performed. Apgar score was recorded for newborns, after one minute and again after five minutes. Weights of the babies were noted in gramsby digital weight machine. Live births or deaths of the fetuses were also noted. Distressed babies were admitted in the extensive care unit, so regular monitoring of the babies was done to assess fetal outcome. In case of expiry of the babies, the duration of survival and causes of expiry were noted. Mean and

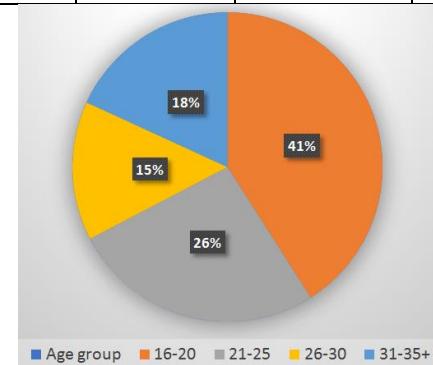
standard deviation were calculated for quantitative data. Student's t-test was used to study significance for comparison of control and preeclamptic group. A  $p<0.05$  was taken as statistically significant.

## RESULTS

The total number of patients who developed preeclampsia was 110, out of 1105 cases (9.95% incidence). The distribution of preeclamptic patients depicted that majority of patients (40.9%) were in the age group of 16-20 yrs (mean age  $18.4\pm0.20$  yrs). The age group 21-25 consisted of 26.3% of patients with preeclampsia (mean age  $22\pm0.17$  yrs),while 14.5% patients were in the age group 26-30 (mean age  $25.6\pm0.15$  yrs) and age group 31-35<sup>+</sup> years comprised 18.1% preeclamptic patients (mean age  $34.6\pm0.71$  years) [Fig. 1].

**Table No.1: Weight of baby at birth of control and preeclamptic patients of different age groups**

Age (Years)	Weight of babies (grams)	Mean $\pm$ SE	P value
<b>16 – 20</b>			
Control (n=10)	2421.0-3628.0	$3250.0\pm256$	P<0.001
P.E (n=45)	1714.0-3056.0	$2720.0\pm285$	
<b>21-25</b>			
Control (n=20)	2267.0-3845.0	$3320.0\pm378$	P<0.001
P.E (n=29)	2114.0-3100.0	$2960.0\pm205$	
<b>26-30</b>			
Control (n=10)	2721.0-3628.0	$3120.0\pm490$	P<0.001
P.E (n=16)	2314.0-3195.0	$2996.0\pm315$	
<b>30-35<sup>+</sup></b>			
Control (n=10)	2721.0-3528.0	$3152.0\pm482$	P<0.001
P.E (n=20)	2254.0-2956.0	$2898.0\pm368$	



**Figure No. 1: Frequency of preeclamptic patients of different age groups**

Out of 110 patients, 68(61.8%) were primigravidae who had conceived for the first time. A total of 26 patients (23.6%) were second gravida and 16 patients (14.5%) were multigravidae. The weight record of the baby at the time of birth for control and preeclamptic patients of various age groups is given in Table 1.

**Table No.2: Birth weight less than 2500gms of babies born to control and preeclamptic patients of different age groups**

Age (years)	Weight of babies N (%)	Mean $\pm$ SE
<b>16-20</b>		
Control (n=10)	2 (20%)	2497 $\pm$ 0
P.E (n=45)	14 (31.1%)	2376 $\pm$ 267
<b>21-25</b>		
Control (n=20)	4 (20%)	2495 $\pm$ 310
P.E (n=29)	6 (20.6%)	2387 $\pm$ 325
<b>26-30</b>		
Control (n=10)	-	-
P.E (n=16)	3 (18.75%)	2410 $\pm$ 411
<b>31-35*</b>		
Control (n=10)	-	-
P.E (n=20)	5 (25%)	2494 $\pm$

\*P<0.05

**Table No.3: APGAR score at 1 min and 5 min in babies born to control and preeclamptic patients of different age groups**

Age (years)	APGAR Score 1 Minute	APGAR Score 5 Minutes		
<b>16-20</b>				
Control (n=10)	7.0-10.0	8.2 $\pm$ 0.12	8.0-10.0	9.70 $\pm$ 0.15
P.E (n=45)	3.0-8.0	6.3 $\pm$ 0.03***	4.0-10.0	8.4 $\pm$ 0.08***
<b>21-25</b>				
Control (n=20)	6.0-9.0	7.5 $\pm$ 0.05	8.0-10.0	9.8 $\pm$ 0.09
P.E (n=29)	4.0-7.0	5.8 $\pm$ 0.06***	6.0-10.0	8.5 $\pm$ 0.07***
<b>26-30</b>				
Control (n=10)	4.0-8.0	7.2 $\pm$ 0.14	7.0-10.0	8.6 $\pm$ 0.13
P.E (n=16)	4.0-8.0	6.6 $\pm$ 0.12	6.0-10.0	7.9 $\pm$ 0.11***
<b>31-35*</b>				
Control (n=10)	4.0-8.0	6.8 $\pm$ 0.15	6.0-10.0	8.9 $\pm$ 0.19
P.E (n=20)	3.0-8.0	6.7 $\pm$ 0.10	3.0-10.0	7.9 $\pm$ 0.21**

\*P<0.05      \*\*P<0.01

\*\*\*P<0.001

In the age group 16-20 years there was significant decrease in the mean values of weight of babies born to preeclamptic patients (P<0.001). The weight of the baby at birth of less than 2500gms of control and preeclamptic patients is given in Table 2. The maximum number of babies with decreased weight were born to the age group 16-20 years. In the new born Apgar score (A-appearance, P-pulse rate, G-grimace, A-activity-respiratory rate) was noted after one and five minutes. The Apgar score at 1 min and 5 min of control and preeclamptic patients of different age groups is given in Table 3. The values were found to be better after 5 min as compared to 1 min in both controls and preeclamptic patients.

## DISCUSSION

The incidence of preeclampsia in this study was 9.95% in Islamabad. The incidence in Chinese (9.0%)<sup>9</sup> and the English population (10.5%) was found to be similar.<sup>10</sup> However, in the South African population a higher incidence of preeclampsia (15.7%) was reported.<sup>11</sup> Our study indicated that majority (40.9%) of preeclampsia cases developed in younger (16-20 yrs) pregnant women. This incidence gradually decreased with advancing age of women and as low as 18.14% was observed in pregnant women beyond 31-35<sup>+</sup> years of age. Similar results have been reported in South African young primigravidae (<20 years) who have increased incidence of preeclampsia.<sup>11</sup> Another analysis of 62239 singleton deliveries in the Cape Peninsula Maternity and neonatal service region in 1979-81 showed that primigravidae have approximately double the incidence of preeclampsia, hypertension and proteinuric hypertension.<sup>12</sup>

In the present study, weight of baby at the time of delivery was significantly lower in cases as compared to controls. Similar findings were given by different studies which recorded lower birth weights of babies born to preeclamptic mothers.<sup>13-19</sup> The incidence of low birth weight amongst newborns was highest in the youngest age group. Another study showed similar results<sup>14</sup>. In the present study in preeclamptic patients there were 89% live births, 10% still births due to growth retardation and 1% due to fetal distress. In age group 16-20 years in primigravida patients' maximum number of stillbirths occurred due to growth retardation as a consequence of severe hypertension in pregnant mothers. 3.4% of stillbirths occurred in age group 21-25, and 5% in age group 31-35<sup>+</sup> due to growth retardation. The perinatal death rate in preeclampsia depends upon whether the eclampsia occurred antenatal or in labour and it varies from 213/1000<sup>16</sup> to 136/1000<sup>17</sup> and 50/1000 births.<sup>18</sup> In Pakistan the perinatal mortality due to preeclampsia in Holy Family Hospital Rawalpindi was recorded as 8.34%<sup>19</sup> while in Quetta it was 82.75%.<sup>5</sup> Hypertensive disorders of pregnancy (HDP) tend to recur from one pregnancy to the next.<sup>20</sup>

Preeclampsia has been found to be the most common obstetric complication after renal transplant and is associated with prematurity of fetus.<sup>21</sup>

## CONCLUSION

Preeclampsia occurs after twentieth week of gestation in all age groups and it is accompanied by low hemoglobin and a low platelet count. Low birth weight prevalence was found to be highest amongst newborns of younger age females and 11% stillbirths occurred due to growth retardation and fetal distress.

### Author's Contribution:

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 Final Approval of version: Asma Irfan

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

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# Role of Modified Biophysical Profile in Predicting Fetal Outcome in High Risk Pregnancies

Biophysical Profile in Fetal Outcomes with High Risk Pregnancy

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## ABSTRACT

**Objective:** To determine the role of modified biophysical profile in predicting fetal outcomes in women with high risk pregnancy.

**Study Design:** Prospective study

**Place and Duration of Study:** Department of Obstetrics & Gynaecology, Avicenna Medical College and Hospital, Lahore from 1<sup>st</sup> January to 31<sup>st</sup> December Dec 2018

**Materials and Methods:** One hundred and ten women with high risk pregnancy, gestation age >32 weeks attending antenatal outpatient clinic were included. Patients detailed demographic were recorded after informed consent. All the patients were examined by modified biophysical profile (combine non-stress test and amniotic fluid index). Fetal outcomes such as meconium stained liquor, Apgar score <7 at 5 minutes, admission to NICU and neonatal mortality were examined.

**Results:** The mean age of pregnant women was  $25.32 \pm 5.25$  years and mean gestational age was  $36.02 \pm 0.85$  weeks. Non-stress test and amniotic fluid index was normal in 70 (63.64%) patients and was abnormal in 13 (11.82%) women. Normal non-stress test and abnormal amniotic fluid index was 10 (9.10%) in women while abnormal non-stress test and normal amniotic fluid index was 17 (15.45%) in women. Meconium stained liquor found in 29 (26.36%), Apgar score <7 found in 22 (20%), neonatal intensive care admission in 35 (31.82%) and neonatal mortality found in 7 (6.36%). There was a significant association observed regarding amniotic fluid index, non-stress test and abnormal biophysical profile with meconium stained liquor, Apgar score <7, neonatal intensive care admission and neonatal mortality with p-value <0.05.

**Conclusion:** Modified biophysical profile is effective and useful tool in predicting adverse fetal outcomes

**Key Words:** Modified biophysical profile, Fetal outcome, High risk pregnancy, Amniotic fluid index

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## INTRODUCTION

Motherhood is one of the most important landmarks in the life of a woman. Making this experience harmless and free of complications is the goal of any obstetrician. However, nearly 830 women still die every day from preventable causes related to pregnancy and childbirth.<sup>1</sup> Globally, perinatal mortality rate is 47 per thousand.

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In South Asian countries, like India nearly 25 per thousand perinatal mortality occurs.<sup>2</sup> The chance of complications during pregnancy is dependent upon environmental and circumstantial factors. Based on an interaction of individual and environmental characteristics, certain pregnancies are termed as high risk pregnancies, due to a indicating a potentially increased risk of adverse events during the pregnancy. Technically, a high-risk pregnancy refers to anything that puts the mother, fetus, or neonate at increased risk for morbidity or mortality during pregnancy or childbirth.<sup>3-5</sup>

High risk pregnancies are complicated by pre-eclampsia, eclampsia, anemia, oligohydroamnios, etc. The management of this includes a thorough monitoring and timely intervention in order to avert any adverse outcome. The unfavorable outcome could theoretically be pre-empted by well-timed induction of labour and delivery of a healthy infant. Using a proper surveillance system, the unfavorable outcome during labour could be averted.<sup>6-8</sup>

Common methods for fetal surveillance include fetal movement counting /fetal kick count, non-stress test (NST), biophysical profile, modified biophysical profile

(NST and amniotic fluid volume estimation) and contraction stress test and umbilical artery Doppler study Biophysical profile/Modified biophysical profile uses the combination of non-stress test and sonographic evaluation of amniotic fluid. It has a high specificity and high negative predictive value and has been shown to be an effective decision /diagnostic tool.<sup>9</sup>

The fetal biophysical profile is one of the most widely accepted tests for the evaluation of fetal well-being in high risk cases. It includes 5 parameters- fetal tone, breathing movements, gross body movements, amniotic fluid volume, and non stress test. Hence it's more time consuming, cumbersome and expensive. It needs two phase testing by ultrasound and external fetal heart rate monitoring by cardiotocograph Doppler monitor to record fetal heart rate. The complete biophysical scoring is cumbersome, time consuming and expensive.<sup>10-12</sup>

## MATERIALS AND METHODS

This prospective study was conducted at Department of Obstetrics & Gynaecology, Avicenna Medical College and Hospital, Lahore from 1<sup>st</sup> January to 31<sup>st</sup> December Dec 2018. A total of 110 women with high risk pregnancies (preeclampsia, anemia, history of previous still birth, clinically suspected IUGR and with decrease fetal movement), gestation age >32 weeks attending antenatal outpatient clinic were included. Women with preterm deliveries, fetuses with congenital anomalies, intrauterine deaths, multifetal pregnancies and those with no consent were excluded. Patients detailed demographic including age; sex and body mass index (BMI) were recorded. Modified biophysical profile (combine NST and AFI) was obtained for all the patients. Non-stress test was considered as reactive when two or more fetal heart rate acceleration was recorded during 20 minutes and NST was non-reactive when (fetal movement was not occurred during 20 minutes) no acceleration and reduced base line variability was noted during 20 minutes. Amniotic fluid index <7 by ultrasound scanning was considered abnormal. Fetal outcomes such as meconium stained liquor, Apgar score <7 at 5 minutes, admission to NICU and neonatal mortality were examined. Data was analyzed by SPSS 24. Chi-square test and student t' test was applied. P-value <0.05 was considered as significant.

## RESULTS

The mean age of pregnant women was 25.32±5.25 years and mean gestational age was 36.02±0.85 weeks. Mean BMI was 23.96±3.8. Non-stress test and AFI normal in 70 (63.64%) patients, NST and AFI abnormal in 13 (11.82%) patients, NST normal AFI abnormal found in 10 (9.10%) and NST abnormal AFI normal in 17 (15.45%) patients (Table 1). According to the fetal outcomes, meconium stained liquor found in 29

(26.36%), Apgar score <7 found in 22 (20%), NICU admission in 35 (31.82%) and neonatal mortality found in 7 (6.36%) [Table 2].

According to the association of modified biophysical profile with meconium stained liquor we found, when both parameters were normal 4 (5.71%) patients had meconium stained liquor, when both parameters were abnormal 13 (100%) cases had MSL, when NST normal and AFI abnormal then we found 2 (20%) cases with MSL and when NST abnormal and AFI normal then MSL in 10 (58.82%) cases (Table 3).

According to the association of modified biophysical profile with Apgar score <7 at 5 minutes we found, when both parameters were normal 3 (4.29%) cases, when both parameters were abnormal 10 (76.92%) cases, when NST normal and AFI abnormal then we found 2 (20%) cases with MSL and when NST abnormal and AFI normal then MSL in 7 (41.17%) cases (Table 4).

According to the association of modified biophysical profile (MBPP) with NICU admission we found, when both parameters were normal 10 (14.29%) neonates needs admission to NICU, when both parameters were abnormal 13 (100%) cases needs NICU admission, when NST normal and AFI abnormal then we found 4 (40%) cases need NICU admission and when NST abnormal and AFI normal then 8 (47.06%) cases needs admission to NICU (Table 5).

**Table No.1: Baseline characteristics of all the patients**

Variable	No.	%
Age (years)	25.32±5.25	
Gestation age (weeks)	36.02±0.85	
Mean BMI	23.96±3.8	
NST and AFI normal	70	63.64
NST and AFI abnormal	13	11.82
NST normal AFI abnormal	10	9.10
NST abnormal AFI normal	17	15.45

**Table No.2: Findings of fetal outcomes**

Fetal outcome	No.	%
MSL	29	26.36
Apgar score <7 at 5 minutes	22	20
NICU admission	35	31.82
Neonatal Mortality	6	5.45

**Table No.3: Association of BPP with MSL**

Characteristics	MSL (n=29)	%
NST and AFI normal (n=70)	4	5.71
NST and AFI abnormal (n=13)	13	100
NST normal AFI abnormal (n=10)	2	20
NST abnormal AFI normal (n=17)	10	58.82

P-value 0.001

According to the association of modified biophysical profile with neonatal mortality we found, when both parameters were normal no case with mortality, when both parameters were abnormal 4 (30.77%) cases (were died) cases had perinatal mortality, when NST normal and AFI abnormal then we found no neonate with mortality and when NST abnormal and AFI normal then 2 (11.76%) neonates were died (Table 6).

**Table No.4: Association of MBPP with Apgar score <7 at 5 minutes**

Characteristics	Apgar<7 (n=22)	%
NST and AFI normal (n=70)	3	4.29
NST and AFI abnormal (n=13)	10	76.92
NST normal AFI abnormal (n=10)	2	20
NST abnormal AFI normal (n=17)	7	41.17

P-value 0.001

**Table No.5: Association of MBPP with NICU Admission**

Variable	NICU (n=35)	%
NST and AFI normal (n=70)	10	14.29
NST and AFI abnormal (n=13)	13	100
NST normal AFI abnormal (n=10)	4	40
NST abnormal AFI normal (n=17)	8	47.06

P-value 0.001

**Table No.6: Association of MBPP with Neonatal Mortality**

Variable	Died (n=6)	%
NST and AFI normal (n=70)	-	-
NST and AFI abnormal (n=13)	4	30.77
NST normal AFI abnormal (n=10)	-	-
NST abnormal AFI normal (n=17)	2	11.76

P-value 0.001

## DISCUSSION

High risk pregnancies are directly associated with high rate of maternal and neonatal morbidity and mortality. Modified biophysical profile considered a useful method for predicting adverse fetal outcomes. Many of studies demonstrated that modified biophysical profile method was very useful and effective for predicting fetal outcomes in high risk pregnancies and is very helpful in decreasing the rate of adverse fetal outcomes.<sup>13,14</sup> Present study was conducted to examine the role of modified biophysical profile (combine NST and AFI) in predicting fetal outcomes in women with high risk pregnancies. We found that mean age of

patients was  $25.32 \pm 5.25$  years and mean gestational age was  $36.02 \pm 0.85$  weeks. Mean BMI was  $23.96 \pm 3.8$ . These results were similar to some previous studies in which mostly patients were ages 20 to 30 years with gestation age  $>34$  weeks.<sup>15,16</sup>

In present study, we found NST and AFI normal in 70 (63.64%) patients, NST and AFI abnormal in 13 (11.82%) patients, NST normal AFI abnormal found in 10 (9.10%) and NST abnormal AFI normal in 17 (15.45%) patients. A study conducted by Arya et al<sup>17</sup> reported both parameters were normal in 68% patients, both parameters were abnormal in 9% patients, NST normal and AFI abnormal in 8% patients and NST abnormal and AFI normal in 15% patients.

In our study, according to the fetal outcomes, meconium stained liquor found in 29 (26.36%), Apgar score  $<7$  found in 22 (20%), NICU admission in 35 (31.82%) and neonatal mortality found in 7 (6.36%). A study conducted by Agrawal<sup>18</sup> reported that 32.8% patients had AFI  $<8$ , 41.6% patients had non-reactive NST and abnormal biophysical profile was found in 49.6%. A study by Borade JS et al<sup>19</sup> reported that 67 babies with normal MBPP, 19 (28.7%) babies had perinatal morbidity while 21 (61.7%) out of 33 babies with abnormal MBPP had some perinatal morbidity ( $P < 0.01$ ).

In present study we found a significant association of modified biophysical profile with meconium stained liquor ( $p=0.001$ ), Apgar score  $<7$  at 5 minutes, NICU admission and with mortality P-value 0.001. We found when both parameters NST and AFI was abnormal there was a high rate of adverse fetal outcomes in term of morbidity and mortality. These results showed similar to many of previous studies in which modified biophysical profile showed significant association with adverse fetal outcomes such as meconium stained liquor, NICU admission and neonatal mortality.<sup>20,21</sup> Arya and Thapa<sup>17</sup> reported that when both parameters were normal morbidity found in 39% cases and when both parameters were abnormal out of 9 women 100% had morbidity and 55.5% were died. In their study 8 patients had NST normal and AFI abnormal in which morbidity found in 3 patients and none of mortality was observed and when NST abnormal and AFI normal there were 15 women and in which 60% had morbidity and 26.6% had mortality.

## CONCLUSION

High risk pregnancies resulted high rate of maternal and neonatal morbidity and mortality. Prediction of adverse fetal outcomes is very necessary for the better management of high risk pregnancies. We concluded that modified biophysical profile is effective and useful modality in predicting adverse fetal outcomes. We found a significant association of modified biophysical score with meconium stained liquor, Apgar score  $<7$  at 5 minutes, NICU admission and neonatal mortality.

**Author's Contribution:**

Concept & Design of Study:	Nadia Zahid
Drafting:	Kokab Zia, Rubina Shahzad
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# Protective Effects of Phoenix Dactylifera on Monosodium Glutamate Induced Histomorphological Changes in Hepatocytes of Adult Male Albino Rats: A Light Microscopic Study

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## ABSTRACT

**Objective:** To observe the possible protective role of Ajwa date fruit extract on monosodium glutamate induced histomorphological changes in liver of adult male rats.

**Study Design:** Experimental randomized controlled trial study

**Place and Duration of Study:** This study was conducted at the Department of Anatomy, Peshawar Medical College, Peshawar from July 2018 to December 2018.

**Materials and Methods:** This study was carried out on 24 adult male albino rats. The rats were randomly divided into 4 groups, A, B, C1 and C2, containing 06 rats in each group. **Group A** served as control. **Group B** received MSG 2g/kg/day prepared in distilled water; **Group C1** was given MSG 2g/kg and ADFE 1g/kg and **Group C2** was given MSG 2g/kg and ADFE 2g/kg by oral gavage once daily for 21 days. Rats were sacrificed on 22nd day. Liver from each rat was dissected out and examined microscopically.

**Results:** Histological examinations revealed, statistically highly significant (0.001) decrease in the number and increase in diameter of hepatocytes in toxic MSG group as compared to control group. These changes were protected in group C1 and C2, who received monosodium glutamate plus Ajwa date fruit extract.

**Conclusion:** Ajwa date fruit extract has protective effects on monosodium glutamate induced liver toxicity.

**Key Words:** Monosodium glutamate, Ajwa date fruit extract, hepatocytes and histomorphological changes

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## INTRODUCTION

Taste and flavor are important to enjoy food; hence food additives are needed worldwide.<sup>1</sup> Food additive has been used for the promotion of, coloring, flavoring and to increase the useful shelf-life of food for decades.<sup>2</sup> Flavoring systems plays important nutritional role in savory food industry, especially in tasteless foods, by giving the required appeal.<sup>3</sup>

Monosodium glutamate (MSG) specifically used as flavor enhancer is very well-known food additive throughout the world specially in Chinese foods. It has been used since 1907 as flavor enhancer.<sup>4</sup>

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Effects of Ajwa Dates in Liver Toxicity

## MATERIALS AND METHODS

This experimental randomized controlled trial study was conducted in the Department of Anatomy, Peshawar Medical College, Peshawar from 1<sup>st</sup> July 2018 to 31<sup>st</sup> December 2018. A total of 24 male albino Wistar rats were used. The rats were divided randomly into four groups, A, B, C1 and C2. Group A served as a control group, while group B, C1 and C2 were experimental groups, having six rats in each group. All rats were examined completely before starting the experiment. After labelling the cages the rats were placed in their respective cages, under standard condition, at room temperature (18°C-26°C) for 28 days. The rats were kept in light and dark cycle of twelve hours. All the animals received doses by oral gavage once daily in the morning at 8 am for 21 consecutive days. **Group A:** The animals in this group were given distilled water, **Group B:** The animals in this group received MSG 2g/kg/day prepared in distilled water, **Group C1:** The animals in this group received MSG 2g/kg/day and ADFE 1g/kg/day and **Group C2:** Each animal in this group was given MSG 2g/kg/day and ADFE 2g/kg/day.

The rats were sacrificed by heavy dose of ether anesthesia on 22<sup>nd</sup> day. After euthanizing, the rat was

placed on the dissecting board. The paws of animal were fixed to dissection board by using thumb pins. The body cavity was opened by using forceps and scissors and incision was made in midline from chin to pubis. Skin flaps were opened and pinned to dissection board. Liver was dissected out from the body and put in a separate properly labelled jar containing 10% neutral buffered formalin (NBF), for further processing. The number and diameter of hepatocytes was noted after staining with hematoxylin and eosin (H and E).

The data was analyzed by analysis of variance (ANOVA) using Statistical Package of Social Sciences (SPSS) version 25. The quantitative variables were described by Mean  $\pm$  S.D. The p-value  $<0.05$  is considered to be statistically significant.

## RESULTS

The number of hepatocytes/HPF was lower in group B may be due to increase in their volume as compared to other groups. Number of hepatocytes /HPF during experiment ranged between 395-420, 328-340, 368-385 and 400-430 in groups A, B, C<sub>1</sub> and C<sub>2</sub> respectively; the mean number of hepatocytes /HPF during the experiment was 410 $\pm$ 9.14, 333.16 $\pm$ 4.21, 375.16 $\pm$ 6.46 and 413.66 $\pm$ 11.60 in groups A, B, C<sub>1</sub> and C<sub>2</sub> respectively (Table 1).

Post hoc Tukey test was applied for multiple comparisons, which presented that the number of hepatocytes/HPF in groups B was lower significantly in comparison to remaining groups, while number of hepatocytes/HPF in group C<sub>1</sub> was significantly lower as compare to group A and C<sub>2</sub>. However, there was no difference significantly in the number of hepatocytes /HPF in groups A and C<sub>2</sub> (Table 2).

Diameters of hepatocytes during experiment ranged between 20.89-22.11, 26.34-28.32, 21.16-22.69 and 22.89-23.87 $\mu$ m. The mean percentage diameters of hepatocytes ( $\mu$ m) during the experiment were 21.47 $\pm$ 0.42, 27.14 $\pm$ 0.67, 22.07 $\pm$ 0.53 and 23.42 $\pm$ 0.32  $\mu$ m in groups A, B, C<sub>1</sub> and C<sub>2</sub> respectively (Table 3).

To compare the groups, post hoc Tukey test was applied, showed that diameters of hepatocytes ( $\mu$ m) in groups B were significantly larger as compared to other groups, while diameters of hepatocytes ( $\mu$ m) in groups C<sub>2</sub> were significantly lower as compared to groups B and C<sub>1</sub>. There was no difference significantly in the diameters of hepatocytes /HPF in groups A and C<sub>2</sub> (Table 4).

**Table No. 1: One-way ANOVA showing the mean and standard deviation of number of hepatocytes/HPF among the groups**

Variable	Group A (n=6)	Group B (n=6)	Group C <sub>1</sub> (n=6)	Group C <sub>2</sub> (n=6)	P value
Number of hepatocytes/HPF	410 $\pm$ 9.14	333.16 $\pm$ 4.21	375.16 $\pm$ 6.46	413.66 $\pm$ 11.60	0.001*

\*P value 0.001 (Highly significant)

**Table No.2: Pair wise comparison of number of hepatocytes /HPF among the groups**

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.
A	B	76.83333*	4.81144	.000
	C <sub>1</sub>	34.83333*	4.81144	.000
	C <sub>2</sub>	-3.66667	4.81144	.870
B	C <sub>1</sub>	-42.00000*	4.81144	.000
	C <sub>2</sub>	-80.50000*	4.81144	.000
C <sub>1</sub>	C <sub>2</sub>	-38.50000*	4.81144	.000

\*P value  $\leq$  0.001 (Highly significant)

**Table No.3: One-way ANOVA showing the mean and standard deviation of diameters of hepatocytes among the groups**

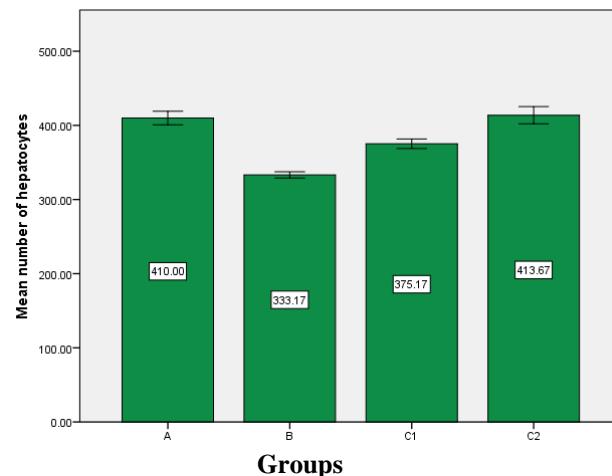
Variable	Group A (n=6)	Group B (n=6)	Group C <sub>1</sub> (n=6)	Group C <sub>2</sub> (n=6)	P value
Diameter of hepatocytes ( $\mu$ m)	21.47 $\pm$ 0.42	27.14 $\pm$ 0.67	23.42 $\pm$ 0.32	22.07 $\pm$ 0.53	0.001*

\*P value  $\leq$  0.001 is highly significant statistically

**Table No.4: Pair wise comparison of diameters of hepatocytes among the groups**

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.
A	B	-5.66500*	.29160	.000
	C <sub>1</sub>	-.59500	.29160	.207
	C <sub>2</sub>	-1.94500*	.29160	.000
B	C <sub>1</sub>	5.07000*	.29160	.000
	C <sub>2</sub>	3.72000*	.29160	.000
C <sub>1</sub>	C <sub>2</sub>	-1.35000*	.29160	.001

\*P value  $\leq$  0.001 is highly significant statistically

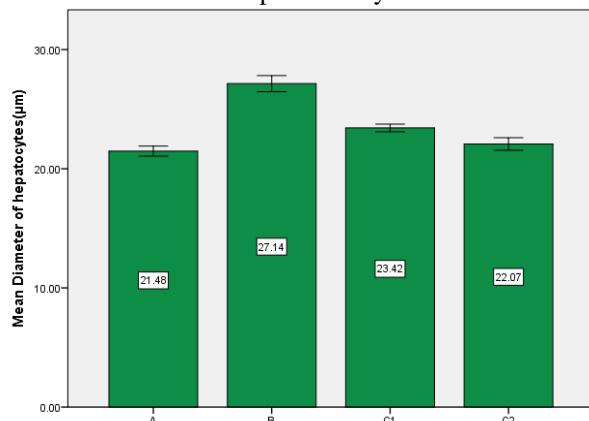


**Figure No. 1: Bar chart showing number of hepatocytes / HPF among the groups**

## DISCUSSION

Monosodium glutamate (MSG) is a widely used food additive and flavor-enhancer that may be present in canned food without appearing on the label. This makes MSG the one of most utilized food flavor additives in

the modern nutrition throughout the world.<sup>5</sup> Exposure to chemical preservatives and food additives have affected the liver through oxidative stress, which has a key role in xenobiotic induced hepatotoxicity.<sup>19</sup>



**Figure No.. 2: Bar chart showing diameters of hepatocytes among the groups**

The fruit of Date palm has been used since ancient time as an herbal remedy. Among many varieties of the date fruit, the medicinal properties of the Ajwa dates are unique, which are especially grown in the Al-Madina Al-Munawarah.<sup>19</sup> Studies have shown that Ajwa fruit or pits can significantly improve the liver function by reducing liver marker enzymes and increasing the level of antioxidants.<sup>18</sup> In our study, a significant increase in diameter of hepatocytes in toxic group B was observed after administration of MSG at dose of 2gm/kg body weight in comparison to the control group ( $P < 0.001$ ). The increase in diameter of hepatocytes after administration of MSG might be due to an increase in oxidative stress in liver tissue.<sup>12</sup> However, the groups C1 and C2 treated with MSG as well as ADFE showed normal arrangement of hepatic cords with normal size hepatocytes and reversal of cellular changes that observed in MSG group B. The reversal of these changes is in agreement with study of Ragab et al<sup>20</sup>, who found hepatoprotective effect of ADFE on lead induced hepatotoxicity in rats.

In the present study we also observed decreased number of hepatocytes/HPF in only MSG treated group as compared to control group, these finding may be due to large size of hepatocytes and congested dilated sinusoids. However, the groups C1 and C2 treated with ADFE plus MSG showed number of hepatocytes close to control group indicate protective effect of Ajwa date fruit extract against MSG induced liver toxicity. This study is in accord with the findings of study by Saafi et al<sup>21</sup> who found hepatoprotective effects of date palm on dimethoate induced liver toxicity in rats.

## CONCLUSION

Ajwa date fruit extract had significant protective effect against monosodium glutamate induced histological

changes in the liver. This effect may be due to the rich vitamins and antioxidants in the extract.

### Author's Contribution:

Concept & Design of Study: Rifat Shamim  
 Drafting: Zafar Iqbal, Arifa Tariq  
 Data Analysis: Seharish Zulfiqar, Nighat Ara, Farooq Khan  
 Revisiting Critically: Rifat Shamim, Zafar Iqbal  
 Final Approval of version: Rifat Shamim

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

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# Use of Snoreben in Patients Presented With Nasal Obstruction and Sleep Apnea

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Use of Snoreben With Nasal Obstruction

## ABSTRACT

**Objective:** To examine the effectiveness of snoreben device in patients presented with nasal obstruction.

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

**Place and Duration of Study:** This study was conducted at the Department of ENT, Continental Medical College, Lahore from January 2017 to December 2018.

**Materials and Methods:** One hundred and twenty patients of both genders with ages above 18 years presented with nasal obstruction were enrolled in this study. Patients detailed demographic including age, sex and causes of nasal obstruction were recorded. Patients complete nasal examination was done. Patients were advised to use snoreben device. Effectiveness of snoreben device was examined in term of excellent, good, fair and poor response after 6 months follow-up.

**Results:** Sixty five (54.17%) were males and 55 (45.83%) were females. Mostly patients 48 (40%) were ages between 31 to 40 years. Allergic rhinitis was the commonest cause of nasal obstruction found in 50 (41.67%) patients. After use of device 85 (70.83%) patients had excellent response, 15 (12.5%) patients had good response, 15 (12.5%) had fair and 5 (4.17%) patients had poor response.

**Conclusion:** Snoreben device is safe and effective treatment modality for patients with nasal obstruction.

**Key Words:** Snoreben, Nasal obstruction, Sleep apnea

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## INTRODUCTION

Impaired nasal breathing is a common reason for patients' consultations to the ENT physician and is considered by those affected to cause significant reduction in their quality of life.<sup>1</sup> Habitual snoring can have an incidence of up to 50% and can be a serious social problem for the patient and the bed partner.<sup>2</sup> Amongst anatomical causes, septal deviation plays an important role in many patients. Even so, a combined septoplasty with turbinate reduction does not always provide a complete solution to the problem. The most frequent cause of septoplasty failure is closely related to the nasal valve.<sup>3</sup>

The Snoreben is a nasal dilator that's said to help prevent snoring by opening up the nasal cavities a better airflow through the nose. It is supposed to be an effective solution for anyone suffering from snoring due to a deviated senostrils, narrow nostrils, or even nasal-cavity blockage.

The device is supposed to be inserted in cavity before sleep, and is designed to remain in the nostrils throughout the night.<sup>4,5</sup> The Snoreben device has been pretty thoroughly tested by sleep scientists, and has shown itself to be useful for referred patients who suffered from chronic snoring. Basically, patients spent nights monitored while sleeping - both and without the device, and the results showed a significant reduction in snoring in patients who uses the Snoreben. Patients who used the device also experienced an increase in oxygen levels.<sup>6,7</sup>

## MATERIALS AND METHODS

This observational/cross sectional study was conducted at Department of ENT, Continental Medical College, Lahore from 1<sup>st</sup> January 2017 to 31<sup>st</sup> December 2018. A total 120 patients of both genders with ages above 18 years presented with complaints of nasal obstruction and sleep apnea were enrolled in this study. Patients with septal deviation, nasal polyps, vestibulitis, severe pulmonary diseases, deformity of nose and patients with ages below 18 years were excluded from this study. Patients detailed demographic including age, sex and clinical presentation were recorded after taking written informed consent from all the patients. All patients had complaints of mouth breathing during the phase of nasal obstruction. The noses were examined clinically for airflow and assess level of obstruction. After full assessment of the anterior nares, nasal cavity was examined clinically and endoscopically with 0 degree and 30 degree scopes to exclude any

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pathological problems. Patients were followed for 6 months. The nose scoring system was applied to examine the response of modality rating 0-100. Excellent response 75 to 100% resolution, 50 to 74% resolution taken as good response, 25 to 50% resolution as fair and <25% resolution as poor response. Final follow-up was taken at 6 months. All the data was analyzed by SPSS 24.

## RESULTS

There were 65 (54.17%) were males and 55 (45.83%) were females. 10 (8.33%) patients had ages <20 years, 28 (23.33%) patients were ages 20 to 30 years, 48 (40%) were ages between 31 to 40 years, 26 (21.67%) patients had ages 41 to 50 years and 8 (6.67%) patients were ages above 50 years (Table 1). According to the clinical presentation of nasal obstruction, allergic rhinitis was the commonest cause of nasal obstruction found in 50 (41.67%) patients followed by vasomotor rhinitis, traumatic/post-surgical, common cold and congestion during pregnancy and menstruation in 30 (25%), 18 (15%), 13 (10.83%) and 9 (7.5%) patients respectively (Table 2).

At final follow-up, we found that 85 (70.83%) patients had excellent response, 15 (12.5%) patients had good response, 15 (12.5%) had fair and 5 (4.17%) patients had poor response (Table 3)

**Table No.1: Age and gender wise distribution**

Variable	No.	%
<b>Gender</b>		
Male	65	54.17
Female	55	45.83
<b>Age (years)</b>		
< 20	10	8.33
20 - 30	28	23.33
31 - 40	48	40
41 - 50	26	21.67
>50	8	6.67

**Table No.2: Causes of nasal obstruction**

Cause	No.	%
Allergic rhinitis	50	41.67
Vasomotor rhinitis	30	25
Traumatic/post-surgical	18	15
Common cold	13	10.83
Congestion during pregnancy & menstruation	9	7.5

**Table No.3: Outcomes at final follow-up**

Outcome	No.	%
Excellent	85	70.83
Good	15	12.5
Fair	15	12.5
Poor	5	4.17

## DISCUSSION

Nasal obstruction and sleep apnea are the common clinical problems in ENT settings. Nasal obstruction can be due to many causes in which allergic rhinitis vasomotor rhinitis, post-surgical/trauma were the most common causes of nasal obstruction. Many of treatment modalities have been used to relief for these complaints of nasal obstruction and snoring, in which mechanical dilator devices showed significant results for considerable relief.<sup>8,9</sup> The present study was conducted to examine the effectiveness of snoreben device in patients with complaints of nasal obstruction and sleep apnea. We enrolled 120 patients of both genders, in which 65 (54.17%) were males and 55 (45.83%) were females. 10 (8.33%) patients had ages <20 years, 28 (23.33%) patients were ages 20 to 30 years, 48 (40%) were ages between 31 to 40 years, 26 (21.67%) patients had ages 41 to 50 years and 8 (6.67%) patients were ages above 50 years. These results were similar to some previous studies regarding treatment outcomes of nasal obstruction in these studies mostly patients were males 55 to 70% and majority of patients were ages above 35 years.<sup>10,11</sup>

In present study allergic rhinitis was the commonest cause of nasal obstruction found in 50 (41.67%) patients followed by vasomotor rhinitis, traumatic/post-surgical, common cold and congestion during pregnancy and menstruation in 30 (25%), 18 (15%), 13 (10.83%) and 9 (7.5%) patients respectively. A study conducted by Noss et al<sup>12</sup> reported that allergic rhinitis was the commonest cause of nasal obstruction in 48% patients.

In our study we found that 70.83% patients had excellent results in term of relieve of nasal obstruction, 12.5% patients had good response, 12.5% and fair and 4.17% had poor response. In patients with allergic rhinitis 30 patients had excellent, 5 patients had good and 5 patients had poor response with none of patients resulted poor response. We found that majority of patients were highly satisfied after using the snoreben device. A study by Kiyohara et al<sup>13</sup> regarding effectiveness of mechanical dilator for nasal obstruction demonstrated that external nasal strips and nasal clips effectively relieve obstruction of the internal nasal valve and may be the effective alternative of surgical treatment. In a study published in Archives of Otolaryngology - Head & Neck Surgery, researchers examined the effects of nasal valve dilation on snoring and obstructed breathing in 11 patients with habitual snoring and/or OSA. They found the frequency and severity of obstructed breathing decreased significantly with the nasal dilator.<sup>14</sup> Many of other studies resulted mechanical dilators are safe and effective treatment modality for nasal obstruction with no major complications.<sup>15-18</sup>

## CONCLUSION

Blocked nose, snoring, and difficulty in breathing are the common nasal problem in all over the world. We concluded that snoreben device is safe and effective treatment modality for patients with nasal obstruction with no side effects. Majority of patients showed excellent response in term of relieve obstruction. So snoreben device is a better alternative to surgical treatment of nasal obstruction.

### Author's Contribution:

Concept & Design of Study: M. Mubarik Ali  
 Drafting: Muhammad Akhlaq  
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 Revisiting Critically: M. Mubarik Ali, Muhammad Akhlaq  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Vitamin D Deficiency Found in Young Females Suffering From Heart Diseases

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## ABSTRACT

**Objective:** To analyse the association of vitamin D deficiency with age and gender in Islamabad.

**Study Design:** Prospective cohort study

**Place and Duration of Study:** This study was conducted at the Rawalpindi General Hospital and Institute of Biogenetic Engineering (IBGE) Islamabad from January 2017 to December 2017.

**Materials and Methods:** A total of 110 subjects (age range 20-60 years) visiting Cardiac Clinic were enrolled in this study with informed consent. Blood 24-Hydroxyvitamin D levels were assessed in the participants by using an electro chemiluminescence system.

**Results:** Our results showed that 40% of the patients were vitamin D deficient, 35.54% were vitamin D insufficient and 25.45% had normal vitamin D levels. We observed the highest level of vitamin D deficiency in patients of age group 31-40 years and insufficiency in age group 20-30 years. A greater percentage of female patients (34.19%) were deficient in Vitamin D as compared to males (25.72%).

**Conclusion:** Low vitamin D levels are prevalent in young females in Islamabad suffering from cardiovascular diseases. Prevention of low vitamin D levels in individuals may help to avert development of heart diseases in Pakistan.

**Key Words:** Vitamin D deficiency, Age, Gender

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## INTRODUCTION

Vitamin D, synthesized from a cholesterol precursor, has a broad spectrum of action in the human body and is considered a steroid hormone. In multiple studies, its role is established in cardiac function and fertility. Its deficiency is found to be linked with coronary artery disease and heart failure.<sup>1</sup>

The American guideline has devised Vitamin D serum levels as (i) equal or below 20 ng/mL as deficiency, (ii) when between 20 and 30 ng/mL as insufficiency, while (iii) more than 30 ng/ml as normal.<sup>2</sup>

Genetic predisposition, reduced exposure to sunlight, non-standardized diet and malabsorption of vitamin D are the main risk factors implicated in vitamin D deficiency.

Other factors being indoor lifestyle, old age, multiple births and lactation in females. Furthermore, Irritable bowel syndrome and steroid treatment also induce vitamin D deficiency. Ethnically, black skin people are comparatively more vitamin D deficient. Air pollution and cigarette smoking also predispose to vitamin D deficiency.<sup>2,3</sup>

In present day, vitamin D deficiency is affecting more than a billion human beings.<sup>4,5</sup> Yet masses of population with vitamin D deficiency (VDD) are rarely diagnosed and treated, especially in developing countries.<sup>6-11</sup>, with unfortunately, Pakistan being one of them.<sup>12-16</sup> Normal vitamin D levels help an individual to avoid a number of common diseases including diabetes, infertility, rheumatoid arthritis, metabolic syndrome, respiratory diseases, coronary heart disease, multiple sclerosis, and can even reduce mortality rate<sup>17</sup>.

But according to another school of thought, concrete evidence is lacking in association of Vitamin D deficiency with cardiovascular diseases and multiple sclerosis.<sup>4,18,19</sup> Mainly the well-defined reasons have been established to be genetic factors, dietary deficiency, malabsorption syndrome and lack of exposure to clear sun. Advancing age, female gender with multiple children and sedentary lifestyle are found to be associated with vitamin D deficiency.<sup>5,15,20</sup> In Pakistan, female gender, dietary factors and genetics have the utmost important role. However, early diagnosis, fortified diet and calcium supplements can help prevent secondary complications and fractures.<sup>11,21</sup>

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Even though numerous vitamin D deficiency studies have been reported in Pakistan yet, according to our knowledge, none has evaluated the levels of 25(OH)D deficiency among all age groups and genders of patients suffering from cardiovascular diseases in Islamabad. In Pakistan, vitamin D deficiency prevalence is alarmingly high despite having plenty of sun light all year round. Generally, females are more affected but the incidence is rising in younger population as well, who is fond of junk food and cold drinks made of substandard ingredients. Moreover, the availability of pure milk has become a major challenge and the new generation is not fond of taking milk. Government should closely monitor food and milk quality and take concrete steps for their standardization.

## MATERIALS AND METHODS

The present prospective cohort study was carried out at IBGE and Rawalpindi General Hospital from January 2017 to December 2017. A total of 110 subjects (40 male and 70 females) suffering from heart diseases like hypertension, myocardial infarction or congestive cardiac failure (age range 20-60 years), admitted in the above-mentioned hospitals were enrolled. Subjects excluded from the study were those whose medical conditions were believed to have an effect on vitamin D metabolism including cancer, chronic endocrinological disorder like hyperthyroidism, diabetes, primary hyperparathyroidism, pituitary, adrenal malfunctioning and rheumatic fever or rheumatic heart diseases. We excluded cases treated for Vitamin D deficiency, in previously 3 months. Blood 24 hydroxy vitamin D levels were assessed in the participants by electrochemiluminescence system (Roche E170, Germany). The intra-assay coefficients of variation (CVs) for vitamin D were 5.7% at a level of 25.2 ng/mL, 5.7% at a level of 39.9 ng/mL, and 5.4% at a level of 65.6 ng/mL. The inter-assay CVs for 25(OH)D were 9.9% at a level of 25.2 ng/mL, 7.3% at a level of 39.9 ng/mL, and 6.9% at a level of 65.6 ng/mL, respectively. We set 4 ng/ml as the lower detection limit for vitamin D. Blood 24 hydroxyvitamin D levels were assessed in the participants. The normal level of vitamin D was taken as 32-80 ng/ml, a vitamin D level of <25 ng/ml was considered as vitamin D deficiency, while levels ranging from 25-32 ng/ml were labelled as vitamin D insufficiency.

Data was analysed using SPSS version 24. Mac. Pearson's coefficient for correlation was calculated for 25(OH)D levels with age and gender. Fisher's exact test and chi-square test were used for qualitative analysis of our results.

## RESULTS

We excluded 40 (26.6%) cases out of 150 total patients carefully selected for this study, because their serum 25(OH)D was below the lower detection limit we

defined for this study. This exclusion process left 110 participants (70 female and 40 male) finally for the study. The vitamin D values for these 110 cases, 70 females and 40 males (Table 1). Men have better overall vitamin D serum levels as compared to female participants. Young females in the age group of 31-40 years had significant deficiency of vitamin D (Table 1). Pearson correlation analysis showed a significant correlation of vitamin D levels with age ( $r = -0.206^*$ ;  $p < 0.05$ ) and gender ( $r = -0.579^*$ ;  $P < 0.001$ ) (Tables 2-5).

**Table No.1: Relationship of age and gender with vitamin D status**

Age (years)	Gender	N o.	Vit D (deficient)	Vit D (insufficient)	Vit D (normal)
20-30	Male	20	1 (2.27%)	-	7 (25.93 %)
	Female		1 (2.27%)	11 (28.20%)	-
31-40	Male	44	-	1 (2.56%)	6 (22.22 %)
	Female		35 (79.54 %)	2 (5.13%)	-
41-50	Male	23	-	7 (17.95%)	4 (14.81 %)
	Female		6 (13.63 %)	6 (15.38%)	-
51-60	Male	23	-	4 (10.26%)	10 (37.04 %)
	Female		1 (2.27%)	8 (20.51%)	-
Total		11 0	44 (40.00 %)	39 (35.54%)	27 (24.54 %)

**Table No.2: Correlation of vitamin D Deficiency with age group**

Variable	Age	Vit D (deficient) <25 ng/ml
Age		
Pearson Correlation	1	-.206*
Sig. (2-tailed)	110	.031
N		110
Vit D (deficient) <25 ng/ml	-	1
Pearson Correlation	.206*	
Sig. (2-tailed)	.031	
N	110	

\*Correlation is significant at the 0.05 level (2-tailed).

**Table No.3: Correlation of vitamin D deficiency with gender**

Variable	Vit D (deficient) <25 ng/ml	Gender
Vit D (deficient) <25 ng/ml	1	.579** .000
Pearson Correlation	110	110
Sig. (2-tailed)		
N		
Gender	.579** .000	1
Pearson Correlation	110	110
Sig. (2-tailed)		
N		

\*\*Correlation is significant at the 0.01 level (2-tailed)

**Table No.4. Co-rrelation of vitamin D deficiency with age and gender of patients**

Vit D deficient	Gender	Age
Pearson correlation	0.579**	-0.26*
Sig(2-tailed)	0.00**	0.031*

**Table No.5: Relationship of Vit D status (deficient, insufficient and normal) with gender**

Vit D status	Gender		X <sup>2</sup>	P value
	Male	Female		
<b>Vit D deficient</b>				
Yes	1 (2.30%)	43 (97.70%)		
No	39 (59.10%)	27 (40.90%)	36.83**	**p<.01.
<b>Vit D insufficient</b>				
Yes	12 (30.80%)	27 (69.20%)	12 (30.80%)	27 (69.20%)
No	28 (39.40%)	43 (60.60%)	28 (39.40%)	43 (60.60%)
<b>Vit D normal</b>				
Yes	27 (100%)	-		
No	13 (15.7%)	70 (84.3%)	62.62**	**p<.01

## DISCUSSION

We believe this is the only study which was carried out in cardiac patients indicating that more females were deficient in vitamin D as compared to males in the younger age group. The men had a higher serum 25(OH)D levels than women and young females. In the age group of 31-40 years a significant number of females were deficient in vitamin D.

Comparatively greater prevalence of vitamin D deficiency is found in young females of Pakistan and similar results have been documented by studies

previously in our part of world.<sup>4,12,16,22-27</sup> National Nutritional Survey reported vitamin D deficiency of moderate nature (40%) among children in 2011.<sup>28</sup> Other writers have found greater prevalence of VDD in postmenopausal females living in towns and flats as compared to those living in large bungalows and similar results have been reported from Saudi Arabia.<sup>20,29</sup> Our results were comparable with one of the largest sample sized study conducted in Pakistan by Hassan et al<sup>30</sup> who estimated the burden of VDD in people from different geographical areas of Pakistan. Out of the total, 66.1% of subjects were found to be vitamin D-deficient. The minute apparent difference (66.1% vs 56.5%) may be explained by geo-graphic allocation, as we obtained data exclusively from Rawalpindi/Islamabad region, while they reviewed data of Karachi. Our results were quite similar to another large sample sized study by Riaz et al<sup>31</sup> which published data of 4830 randomly selected citizens and reported that 53.5% had 25(OH)D deficiency and 31.2% had 25(OH)D insufficiency. We compared our results and found them to be in concurrence with a study conducted in the same geographic region by Khan et al<sup>32</sup>, who reported that 56.2% subjects were 25(OH)D deficient. Earlier Khan et al<sup>33</sup>, in 305 community-dwelling females, reported that 90.5% women were with 25(OH)D deficiency. Dar et al<sup>34</sup> reported the frequency of 25(OH)D deficiency (82.8%) and insufficiency (16.1) in 174 healthy premenopausal females. Iqbal & Khan<sup>29</sup> in their study on 215 participants at Lahore found 156 (73 %) to be vitamin D deficient. Mansoor et al<sup>35</sup> reported 25(OH)D deficiency and insufficiency in 123 healthy adults subjects and reported that 69.9% were vitamin D deficient and 21.1% had insufficient levels of vitamin D. Khan et al<sup>32</sup> reported a cross-sectional study results of 305 premenopausal women in Karachi, Pakistan and 90.1% were seen to be vitamin D deficient. These high figures are likely due to sample size effect as sample size in these studies is much smaller. Naqvi et al<sup>36</sup> estimated the prevalence of 25(OH)D deficiency in 360 obstetric cases at term, and found majority of (69.6%) females to be deficient.

In Pakistan, sun light is plenty in all four seasons of the year yet, the frequency of VDD is higher. Due to cultural and religious factors, women usually do not go out frequently and also wear a veil often completely covering their faces and bodies which can be a predisposing factor for higher prevalence of 25(OH)D deficiency. The general dietary ingredients are low in vitamin D content, indicating a need to fortify our basic diet. A higher phytate/calcium ratio may be linked with less calcium in basic diet ingredients which also reduces the calcium bioavailability in the gut. Which may raise blood parathyroid hormone levels and induces bone catabolism, which ultimately results in decreased serum 25(OH)D.

Now the all these studies suggest; either we in Pakistan are not getting enough sun exposure, we have low dietary intake or there is such genetic makeup in our population which hamper with vitamin D levels and its metabolism? More elaborated research is required to find the most agreed cause of VDD in our community settings, including investigation of expected genetic link. VDD is becoming a public health challenge in Pakistan and enormous efforts need to be made by public health authorities to educate the general population about the prevention and supplementation with this vitamin.

## CONCLUSION

Our females, particularly young ones are more vulnerable to 25(OH)D deficiency in Islamabad. Therefore, there is a dire need to devise and implement a particular program to cater to this severe deficiency by the Health Ministry of Government of Pakistan. We can prevent grave consequences including cardiovascular diseases in our population by simple recommendations and fortification of food stuff as prevention is more economical. Vitamin D has a predominant role in various body metabolisms and functions, which is a well-established fact. Vitamin D availability depends on social and cultural factors also due to their effects on exposure to sunlight and adequate intake from diet or supplements.

### Author's Contribution:

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

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# Evaluate the Mean Serum Calcium Levels in Pregnant Women with Pregnancy Induced Hypertension and Compare with Normotensive Pregnant Women

Ca Level in  
Hypertensive VS  
Normotensive  
Pregnant Women

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## ABSTRACT

**Objective:** To examine the mean serum Ca levels in pregnant women presented with pregnancy induced hypertension and compare with normotensive pregnant women.

**Study Design:** Case control study.

**Place and Duration:** Department of Obstetrics and Gynaecology, M. Islam Teaching Hospital Gujranwala from January 2019 to June 2019.

**Materials and Methods:** 200 pregnant women were enrolled. All women were equally divided into two groups. Group A comprised of 100 women with pregnancy induced hypertension and Group B with normal pregnancy was control group. Mean serum Ca level was examined and compare the findings between both groups.

**Results:** In group A mean age was  $28.12 \pm 3.21$  years and  $26.43 \pm 4.12$  years in Group B. The mean serum Calcium levels in pregnant women convoluted with pregnancy induced hypertension with normotensive pregnant women was  $7.86 \pm 0.39$  mg/dl in Group A and  $8.93 \pm 1.14$  mg/dl in Group B ( $P < 0.001$ ).

**Conclusion:** It is concluded that mean serum Ca level was significantly lower in women with pregnancy induced hypertension as compared to women with normal pregnancy.

**Key Words:** Pregnancy induced hypertension, Serum Ca level

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## INTRODUCTION

Worldwide hypertension is the common disorders found in pregnant women. Preeclampsia is the major cause of mortality and morbidity among pregnant women.<sup>1</sup> In developing countries 0.4 lac women died in every year due to the preeclampsia or eclampsia. In Pakistan preeclampsia is the most frequent cause of maternal and fetal morbidity and mortality.<sup>2</sup> The etiology of PIH is unknown despite decades of intensive research worldwide.

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This is a disorder of hypothesis and affliction to involve all organs in the body. Many of etiological factors involve for PIH in which abnormal placentation vasculopathy, inflammatory changes, immunological factors, genetic factors, and nutritional factors.<sup>3,4</sup>

The disorder usually progresses in the third trimester of pregnancy and worsens over time.<sup>5,6</sup> Patients with gestational hypertension and pre-eclampsia, both are characterised by similar risks like increased maternal age, obesity, low levels of serum Ca, Mg and increased concentration of uric acid [7]. A WHO Survey on maternal and perinatal health, in 2014 showed 2.18% pre-eclamptic deliveries out of 8265 deliveries. Among all pre-eclamptic outcome, 38.12% and 24.43% were reported with low birth weight and preterm deliveries respectively. In this survey the perinatal death were reported as 10.75% compared to 1.08% maternal mortality.<sup>7-9</sup> Pregnancy may induce hypertension in women who are apparently normotensive before pregnancy.<sup>10</sup> Risk stratification and prediction of severity at an early stage in pre-eclampsia helps in appropriate management and timing of foetal delivery in order to avoid serious sequelae like eclampsia.<sup>11</sup>

There are early studies establishing a relationship between pregnancy induced hypertension and Ca

deficiency.<sup>12,13</sup> In case control hospital based study showed that the mean serum Ca level in patients with pregnancy induced hypertension was significantly lower than the patients with normal pregnancy.<sup>14</sup>

Pregnancy induced hypertension is a common condition in Pakistani women as observed by practicing doctors and eclampsia is a noteworthy cause of maternal mortality in our population. This study will help in recommending women to include diet rich in Ca during pregnancy especially second and third trimester.

## MATERIALS AND METHODS

This study was conducted Department of Obstetrics and Gynaecology, M. Islam Teaching Hospital Gujranwala from 1<sup>st</sup> January 2019 to 30<sup>th</sup> June 2019. Two hundred cases included and they are divided in two equal groups, case and control groups. Women with primigravidae, onset of hypertension i.e. more than 140/90 mm of Hg during second or third trimester at two occasions at least six hours, age between 20-35 years and singleton pregnancy on ultrasound were included. Women with pre-existing hypertension, systolic B.P >130 mm of Hg, diastolic >80 mm of Hg on basis of medical record and history, pre-existing cardiovascular disease on history and examination and known case of Diabetes mellitus type 1 and 2 were excluded. Patients were divided into two groups; cases and controls. Group A comprised of 100 women with pregnancy induced hypertension and Group B with normal pregnancy was control group. 3ml blood sample was taken from the pregnant women to examine the serum Ca level. Serum Ca measurement was performed by Colorimetric assay with end point determination and sample blank from hospital laboratory. The colour intensity is measured photometrically. The data was entered and analyzed through SPSS-20.

## RESULTS

Majority of the patients were found between 26-30 years of age in both A & B groups, in Group A 48% (n=48) and in Group-B 53% (n=53), the subjects with 20-25 years of age in Group A were 35% (n=35) and in Group B 29% (n=29) while 17% (n=17) of Group A and 18% (n=18) in Group B were found between 31-35 years of age with mean age was 28.12±3.21 in Group A and 26.43±4.12 in Group B (Table 1).

The comparison of mean serum calcium levels in pregnant women complicated with pregnancy induced hypertension with normotensive pregnant women was done (Table 2), where in Group A (7.86±0.39 mg/dl) and in Group B (8.93±1.14 mg/dl) mean calcium score was measured, t test was applied and p value was calculated as 0.00, which is highly significant.

**Table No. 1: Frequency of age in the both groups (n=200)**

Age (years)	Group A		Group B	
	No.	%	No.	%
20-25	35	35.0	29	29.0
26-30	48	48.0	53	53.0
31-35	17	17.0	18	18.0

**Table No. 2: Comparison of mean serum calcium levels in pregnant women complicated with pregnancy induced hypertension with normotensive pregnant women**

Variable	Group A	Group B
Mean serum calcium (mg/dl)	7.86±0.39	8.93±1.14
P value		0.00

## DISCUSSION

Hypertension in one of the most frequent disorder in pregnant women and accounted about 10% in all over the world.<sup>15</sup> It is directly associated with maternal and neonatal morbidity and mortality.<sup>16</sup> These disorders are also associated with adverse perinatal outcomes such as stillbirth, preterm and small for gestational age babies.<sup>17,18</sup>

Ca is an important element in pregnant women. It is very important for the growth of bones and teeth and plays an important role for the development of fetus skeletal during pregnancy. It has been evident that there is high frequency of low serum Ca level in hypertensive pregnant women and this disorder contributes highly in maternal and neonatal mortality and morbidity.<sup>19</sup>

The results of our study demonstrates that majority of the patients were found between 26-30 years of age in both A and B groups, mean and sd was 28.12±3.21 in Group A and 26.43±4.12 in Group B while on comparing the mean serum Ca levels in pregnant women complicated with pregnancy induced hypertension with normotensive pregnant women reveals 7.86±0.39mg/dl in Group A and 8.93±1.14 mg/dl in Group B, which is statistically highly significant.

These findings are consistent with the findings of Yao and workers<sup>20</sup> who recorded the mean serum Ca of the study group 8.38±1.04 mg/dl, while that of the control group was 9.04±1.13mg/dl (P=0.001). Another study by Priyanka et al<sup>21</sup> reported significant difference regarding serum Ca level between hypertensive and normotensive pregnant women (8.47±0.208 mg/dl) compared to normal pregnancy (9.423±0.157 mg/dl). Many of previous studies showed similarity to our study findings in which serum Ca level was significant lower in hypertensive pregnant women as compared to hypertensive pregnant women and these factors contributed high rate of maternal and neonatal morbidity and mortality.<sup>22-24</sup>

A study conducted by Hofmyer et al<sup>25</sup> in which they demonstrated that calcium plays an important role for decreasing the risk of hypertension and preeclampsia in pregnant women. Studies reported that patients with low Ca level were on high risk for PIH and preeclampsia and these factors reported major causes of maternal and fetal mortality.<sup>26</sup>

## CONCLUSION

Low serum calcium level is directly associated with pregnancy induced hypertension and contributed high rate of morbidity and mortality among pregnant women. We concluded that mean serum Ca level was significantly lower in women with pregnancy induced hypertension as compared to women with normal pregnancy.

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# Risk Factors Related to Pneumonia in Children Aged Less Than Five Years

Khawar Saeed Jillani, Abdul Rehman and Imran Qaisar

Risk Factors  
Related to  
Pneumonia in  
Children

## ABSTRACT

**Objective:** To study the risk factors related with pneumonia in children aged less than 5 years.

**Study Design:** Case control study

**Place and Duration of Study:** This study was conducted at the Pediatric Unit 2, Bahawal Victoria Hospital, Bahawalpur from February 2019 to September 2019.

**Materials and Methods:** All 300 cases of < 5 years of age, admitted to pediatrics unit 2 having being diagnosed as pneumonia along with 300 controls who were also < 5 years of age and admitted in ward due to non respiratory illnesses. Demographics along with relevant clinical data and risk factors were noted.

**Results:** Out of a total of 600 children (300 cases and 300 controls), majority were male 344 (57.3%). Low socioeconomic status, children of illiterate mothers, rural area of residence, respiratory tract infection in any of the family members, incomplete immunization status, low birth weight, undernutrition and smoking by family member were identified as significant ( $P<0.05$ ) risk factors for pneumonia whereas all other study variables were insignificantly associated with pneumonia ( $p>0.05$ ).

**Conclusion:** Low socioeconomic status, children of illiterate mothers, rural area of residence, respiratory tract infection in any of the family members, incomplete immunization status, low birth weight, undernutrition and smoking by family member were identified as significant risk factors for pneumonia in children aged less than 5 years.

**Key Words:** Acute Respiratory Infection, pneumonia, risk factors, undernutrition, smoking, case control study, low birth weight.

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## INTRODUCTION

Acute respiratory infections are known as one of the most frequent cause of morbidity amongst children estimating between 30 to 40% of children outpatient visits as well as 20 to 30% admissions.<sup>1-2</sup> Mortality associated with acute respiratory infections in developing countries figure 2 to 6 fold higher as compared to developed countries, especially in population that is aged < 5 years. In developed countries, acute respiratory infections are responsible for nearly 1/3<sup>rd</sup> deaths in children who are aged < 5 years. The main cause of mortality among respiratory infections is pneumonia.<sup>3</sup> In published literature, an average of 6 to 8 episodes of acute respiratory infections are reported in children who are aged < 5 years.<sup>4,5</sup> A variety of pathogens are involved in acute respiratory infections.

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The pneumonia is most serious form of respiratory infections which is responsible for 15% mortality in children aged < 5 years.<sup>6,7</sup>

The epidemiology of risk factors associated with acute respiratory infections especially with pneumonia varies geographically. These can be categorized as demographic, nutritional, socioeconomic as well clinical risk factors.<sup>8</sup> Identifying possible risk factors linked with acute respiratory infections especially pneumonia in our setting may give us some direction about devising a strategy for the prevention of the disease. So this study was conducted to note the risk factors related with pneumonia in children aged less than 5 years.

## MATERIALS AND METHODS

This case control study was done at Pediatric unit 2, Bahawal Victoria Hospital, Bahawalpur from 1<sup>st</sup> February 2019 to 31<sup>st</sup> September 2019. A total of 600 children (300 cases, 300 controls) were enrolled for this study. All 300 cases between ages 1month to 5years admitted to Pediatric unit 2 having being diagnosed as pneumonia along with 300 controls who were also between ages 1month to 5years of age admitted with non respiratory illnesses during the study period. Verbal consent was taken from the parents/guardians of all the participants of the study. Approval was granted from institute's ethical committee.

Case definition of pneumonia was made as per World Health Organization criteria (Pneumonia was labeled as a case having in drawing of lower chest or rapid breathing which is more than what is expected upper limit in relation to age or both having duration less than 2 weeks).<sup>9</sup> Children aged > 5 years or less than one month or having chronic respiratory illness or some other underlying chronic illness (e.g. heart failure, renal disease or hepatic disorders) or history of atopy or history of recurrent episodes of respiratory distress were excluded from the study.

SPSS version 20 was used for data handling and analysis. Demographics along with relevant clinical data and risk factors were noted. Chi square test was applied for association of the studied variables. The odds ratio and 95% confidence intervals were also calculated. P value < 0.05 was taken as statistically significant.

## RESULTS

Out of a total of 600 children (300 cases and 300 controls), majority were male 344 (57.3%). 390 (65.0%) children were of age 1 to 12 months, 360 (60.0%) socioeconomic status as middle or upper, 487 (81.2%) father's educational status as literate, 469 (78.2%) mother's educational status as literate, 361 (60.2%) with area of residence as urban, 430 (71.7%) with family history of respiratory infection within 2 weeks, 447 (74.5%) with complete to date immunization status, 318 (53.0%) with no smoking by any of the close family members, 554 (92.3%) were term at birth, 514 (85.7%) born with normal birth weight, 408 (68.0%) nutrition status as normal and 365 (60.8%) without exclusive breastfeeding.

**Table No.1: Demographic Factors amongst Cases and Controls**

Factors	Categories	Group		P Value	Odds Ratio	OR at 95% Confidence Interval	
		Cases	Control			Lower	Upper
Gender	Male	182 (60.7%)	162 (54.0%)	0.099	1.31	0.95	1.82
	Female	118 (39.3%)	138 (46.0%)				
Age	1-12	198 (66.0%)	192 9 (64.0%)	0.608	1.09	0.78	1.53
	13-60	102 (34.0%)	108 (36.0%)				
Socioeconomic Status	Lower	149 (49.7%)	91 (30.3%)	<0.001	2.27	1.62	3.17
	Middle/Upper	151 (51.3%)	209 (69.7%)				
Father's Education	Illiterate	65 (21.7%)	48 (16.0%)	0.076	1.45	0.96	2.19
	Literate	235 (78.3%)	252 (84.0%)				
Mother's Education	Illiterate	80 (26.7%)	51 (17.0%)	0.004	1.78	1.20	2.64
	Literate	220 (73.3%)	249 (83.0%)				
Area of Residence	Rural	164 (54.7%)	75 (25.0%)	<0.001	3.62	2.56	5.12
	Urban	136 (45.3%)	225 (75.0%)				
Respiratory infection in Family Members	Yes	130 (43.3%)	40 (13.3%)	<0.001	4.97	3.32	7.44
	No	170 (56.7%)	260 (86.7%)				
Immunization Status	Incomplete	104 (34.7%)	49 (16.3%)	<0.001	2.72	1.85	4.01
	Complete	196 (65.3%)	251 (83.7%)				

**Table No.2: Environmental and Nutritional Factors amongst Cases and Controls**

Factors	Categories	Group		P Value	Odds Ratio	OR at 95% Confidence Interval	
		Cases	Control			Lower	Upper
Preterm / Term	Preterm	276 (92.0%)	278 (92.7%)	0.759	0.91	0.50	1.67
	Term	24 (8.0%)	22 (7.3%)				
Birth Weight	Low	53 (17.7%)	33 (11.0%)	0.020	1.74	1.09	2.77
	Normal	247 (82.3%)	267 (89.0%)				
Malnutrition	Undernutrition	128 (42.7%)	64 (21.3%)	<0.001	2.74	1.92	3.93
	Normal	172 (57.3%)	236 (78.7%)				
Smoking by any Family Member	Yes	182 (60.7%)	100 (33.3%)	<0.001	3.09	2.21	4.31
	No	118 (39.3%)	200 (66.7%)				
	No	182 (40.7%)	100 (33.3%)				
Exclusive Breastfeeding	Yes	113 (37.7%)	122 (40.7%)	0.452	0.88	0.64	1.22
	No	187 (62.3%)	178 (39.3%)				

When both groups were compared, lower socioeconomic status turned out to significantly associated with pneumonia as these children had 2.8 times more chance to have pneumonia as compared to controls ( $P<0.001$ ). Children whose mothers were illiterate were found to have 1.8 times more chance of pneumonia occurrence ( $p = 0.004$ ). Children from rural areas had 3.6 times more chances of pneumonia ( $p<0.001$ ). Children with any of the family members having respiratory infection within 2 weeks had 5 times more chance of having pneumonia ( $p<0.001$ ). Children with incomplete to date immunization status were having 2.7 times more chance of pneumonia ( $p<0.001$ ). Low birth weight was also significantly associated ( $p=0.020$ ) with pneumonia as these children had 1.7 times more chances of having pneumonia. Children with under nutrition status had 2.7 times risk of having pneumonia ( $p<0.001$ ). Smoking by any of the close family member was associated with a risk 3.1 times more ( $p<0.001$ ) as shown in Table 1 and 2. All other study variables like gender, age, father's education status, preterm/term child and exclusive breastfeeding were insignificantly associated with pneumonia ( $p>0.05$ ) as shown in Table 1 and 2.

## DISCUSSION

Pneumonia is documented to be one of the top 5 killers of children.<sup>10</sup> In the present study, lower socioeconomic status, children of illiterate mothers, rural area of residence, respiratory infection in any of the family member within 2 weeks, incomplete immunization status, low birth weight, undernutrition and smoking by any close family member were identified as significant risk factors associated with pneumonia.

Poor socioeconomic status<sup>3,11</sup> has been marked as a significant risk factor associated with pneumonia as was shown in the present finding. Rural area of residence is also an identified risk factor for pneumonia in children. Possible reasons could be less access to good medical care in those areas, bad hygiene, and lack of awareness as well indoor pollution related to indoor cooking.

We found respiratory infection in any of the family member within 2 weeks as significant risk factor associated with pneumonia. An Indian study<sup>12</sup> also documented the same when they reported that upper respiratory infection within 2 weeks to mother increased the chances of pneumonia up to 6.5 times. This risk increased to 24 times when any of the sibling had upper respiratory infection. Savitha MR et al<sup>13</sup> also reported similar results. This could be because members of the close family share the same environment commonly that may contribute to transmission of infections especially in children who are  $< 5$  years of age via respiratory droplet.

We noted a significant relation of incomplete immunization with pneumonia in the current study.

This is consistent with many of others studies conducted in the past.<sup>14,15</sup> This result emphasizes the fact that appropriate immunization for every child is necessary. This again proves the lack of compliance to routine immunization by general public. Efforts should be put to increase awareness as well importance of adequate immunization in every child.

Malnutrition also turned out to be a significant risk factor associated with pneumonia in the present study. Other researchers<sup>10,16,17</sup> have also noted malnutrition to increase chances of pneumonia and more importantly, these children have 2 to 3 times more risk of case fatality. Malnutrition is well documented to be causing weak immune response as well as overall poor defense against childhood diseases.

Smoking by any of the close family member exposes children passive smoking that has been documented as a type of risk factor significantly associated with pneumonia in children.<sup>13,18</sup> We did not find any significance of gender with pneumonia in the current work. Many studies in the past<sup>19-21</sup> showed boys to have more chances of having pneumonia that may be because of male gender predominance or male gender finding more access to medical services.

The current study highlighted important risk factors of pneumonia in children aged  $< 5$  years. Most of these risk factors can be prevented by adopting simple steps like appropriate nutrition, proper immunization, prevention from pollution, parental literacy and maintaining overall hygienic status. Awareness about these preventable risk factors can reduce the burden of pneumonia in our population.

## CONCLUSION

Low socioeconomic status, children of illiterate mothers, rural area of residence, respiratory infection in any of the family members, incomplete immunization status, low birth weight, under nutrition and smoking by family member were identified as significant risk factors associated with pneumonia in children aged less than 5 years.

### Author's Contribution:

Concept & Design of Study: Khawar Saeed Jillani  
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 Data Analysis: Imran Qaisar  
 Revisiting Critically: Khawar Saeed Jillani, Abdul Rehman  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Assessment of Nutritional Status of Children with Beta Thalassemia Major with BMI

Imran Qaisar, Abdul Rehman and Khawar Saeed Jillani

## ABSTRACT

**Objective:** To assess the nutritional status of the children with thalassemia major by WHO based BMI classification at Bahawal Victoria Hospital Bahawalpur.

**Study Design:** Cross sectional study

**Place and Duration of Study:** This study was conducted at the Bahawal Victoria Hospital Bahawalpur from April to July 2019.

**Materials and Methods:** Children aged 0-215 months of either sex with Thalassemia major visiting Pediatric department/ Thalassemia unit by consecutive non probability sampling were included. Their weight and height were taken and subsequently BMI was calculated. The nutritional status for 0-59 months old children was classified according to BMI based WHO classification for 0-59 months age group as obese, overweight, normal, moderate acute malnutrition (wasting) and severe acute malnutrition (severe wasting) while the nutritional status for 60-215 months old children was classified according to BMI based WHO classification for 5-19 years age group as obese, overweight, normal, thin and severely thin.

**Results:** Total 300 cases with age 0-215 months were included, out of which 164 (54%) were male. There were 140 cases in 0-59 months old group, out of which 79 (56.43%) were male. There were 77 (55%) cases in the 'normal' category of BMI classification, out of which 43 (54.43%) were males and 34 (55.74%) female (p value 0.8775). There were 160 cases in 60-215 months old group, out of which 85 (53.12%) were male. There were 52 (32.5%) cases in the 'normal' category of BMI classification, out of which 28 (32.94) were males and 24 (32) female (p value 0.8991).

**Conclusion:** The under nutrition in children with thalassemia major is very common and increases with advancing age irrespective of sex.

**Key Words:** Thalassemia Major, body mass index (BMI), WHO child growth standards, WHO Growth reference, Nutritional status, world health organization (WHO).

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## INTRODUCTION

Beta thalassemia major is one of the commonest hereditary disorders of the human race. It is associated with decreased production of hemoglobin beta chains that results in the expression of clinically variable severity of anemia as thalassemia minor (also known as beta-thalassaemia trait), thalassemia intermedia and thalassemia major. The usual age of onset with thalassemia major usually present within the first two years of life with severe anemia<sup>1</sup>. The carrier rate of the disease is 1.5%<sup>2</sup> while 5-7% in Pakistan<sup>3,4</sup>.

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This carrier state may rise up 62.2% in the close family relatives of patients suffering from thalassemia<sup>5</sup>. Growth problems in thalassemia major are well recognized features. Its pathogenesis is multifactorial. There is decreased nutrients intake, hypermetabolism, heart failure, hypoxia of gut causing poor appetite and malabsorption, impaired liver synthetic activity, abnormalities in regulation of the GH-IGF-1 axis and endocrinologic disorders (delayed puberty, hypogonadism, hypothyroidism, emotional problems<sup>6</sup>). There are various methods available to measure growth and nutrition which include height for age, weight for age, and weight for height. The body mass index also called as BMI is the most commonly used method for the assessment of a child nutritional status whether he is underweight, normal weight, overweight or obese. BMI is weight in Kg divided by the square of height in meters. BMI in children (2-20 years) is both age and sex based while it has fixed values in adults for the classification of nutritional status<sup>7</sup>. Moreover various organizations like world health organization (WHO) and the Centers for Disease Control and Prevention (CDC) etc have issued their own BMI value based classifications.

There is very little data present on nutritional status of thalassemic children based BMI both internationally<sup>8-11</sup> and nationally<sup>12,13</sup>. These studies showed that 11.3%-58.69% were underweight<sup>8-13</sup>. Most of these studies are based on CDC based BMI classification which is not applicable below two years of age while WHO based BMI classification applicable since birth.

Since thalassemia major is not uncommon in our area and no study is available on WHO BMI based growth assessment of thalassemic children, so this study is planned. The objective of the study is to assess the nutritional status of the children with thalassemia major by WHO based BMI classification at Bahawal Victoria Hospital Bahawalpur. The information collected gathered from the study will guide us in developing recommendations to develop growth monitoring and thus improving quality of life in thalassemic children.

## MATERIALS AND METHODS

This cross sectional study was conducted at Bahawal Victoria Hospital Bahawalpur from 1<sup>st</sup> April to 31<sup>st</sup> July 2019. The study was approved by the institutional ethical committee and the informed consent was taken from the parents or guardians. Children aged 0-215 months of either sex with Thalassemia major visiting Pediatric department/ Thalassemia unit by consecutive non probability sampling were included. The patients having any other systemic illness or any hemoglobinopathy other than thalassemia major and patients whose parents refused to take part in the study were excluded. The weight and the height (if the child was above 2 years of age)/ length (if the child was less than 2 years of age) were taken. The formula: weight in Kg / [height in meter]<sup>2</sup> was used to calculate BMI. The BMI was plotted on age and sex specific WHO child growth standards BMI charts for 0-59 months old children available at <https://www.who.int/childgrowth/en/> and WHO Growth reference BMI charts for 60-215 months old children available at <https://www.who.int/growthref/en/>. The nutritional status for 0-59 months old children was

classified according to BMI based WHO classification for 0-59 months age group as<sup>14</sup>:

Obese: BMI for age greater than +3 standard deviations (SD) of the median.

Overweight: BMI for age greater than +2 SD but equal or less than +3 SD of the median.

Normal: BMI for age equal or less than +2 SD and but equal or more than -2 SD of the median.

Moderate acute malnutrition (Wasting): BMI for age less than -2 SD but equal or more than -3 SD of the median

Severe acute malnutrition (Severe wasting): BMI for age less than -3 SD of the median.

The nutritional status for 60-215 months old children was classified according to BMI based WHO classification for 5-19 years age group<sup>15</sup> as:

Obese: BMI for age more than +2 SD.

Overweight: BMI for age more than +1 SD but equal or less than +2 SD.

Normal: BMI for age equal or more than -2 SD but equal or less than +1 SD.

Thin: BMI for age less than -2 SD but equal or more than -3 SD.

Severely thin: BMI for age is less than -3 SD.

The data was entered and analyzed through SPSS version 20. Chi-square test was applied to compare qualitative data and P value less than 0.05 was taken as significant.

## RESULTS

Total 300 cases with age 0-215 months were included, out of which 164 (54%) were male and 136 (45.33%) were female. The nutritional status of 0-59 months old thalassemic children based on WHO child growth standards BMI charts for 0-59 months old children is shown in table-1. There were 140 cases in 0-59 months old group, out of which 79 (56.43%) were male and 61 (43.57%) female. There were 43 (54.43%) males and 34 (55.74%) female in the normal category of BMI (p value 0.8775).

**Table No.1: Nutritional status of 0-59 months old thalassemic children based on WHO child growth standards BMI charts for 0-59 months old children**

BMI category	0-23 months Total cases 49			24-59months Total cases 91			Total cases 140		
	Male cases (%)	Female cases (%)	Total cases (%)	Male cases (%)	Female cases (%)	Total cases (%)	Male cases (%)	Female cases (%)	Total cases (%)
Severe acute malnutrition (Severe wasting)	0(0)	0(0)	0(0)	2(4)	2(4.88)	4(4.4)	2(2.53)	2(3.28)	4(2.86)
Moderate acute malnutrition (Wasting)	5 (17.24)	4(20)	9 (18.37)	18(36)	15(36.58)	33(36.26)	23(29.11)	19(31.15)	42(30)
Normal	20(68.97)	14(70)	34(69.39)	23(46)	20(48.78)	43(47.25)	43(54.43)	34(55.74)	77(55)
Overweight	3(10.34)	2(10)	5(10.2)	5 (10)	3 (7.32)	8 (8.79)	8(10.13)	5(8.2)	13(9.28)
Obese	1(3.45)	0 (0)	1(2.04)	2(4)	1 (2.44)	3(3.3)	3(3.8)	1(1.63)	4(2.86)
Total	29	20	49	50	41	91	79	61	140

**Table No.2: Nutritional status of 60-215 months old Thalassemic children based on WHO child growth standards BMI charts for Growth reference data of 5-19 years**

**Total children 160**

Male BMI category	60-143months Total cases 110			144-215months Total cases 50			Total cases 160		
	Male cases (%)	Female cases (%)	Total cases (%)	Male cases (%)	Female cases (%)	Total cases (%)	Male cases (%)	Female cases (%)	Total cases (%)
Severely thin	5 (8.47)	5 (9.8)	10 (9.09)	1 (3.85)	1 (4.16)	2 (4)	6 (7.06)	6 (8)	12 (7.5)
Thin	33 (55.93)	28 (54.9)	61 (55.45)	17 (65.38)	16 (66.67)	33 (66)	50 (58.82)	44 (58.67)	94 (58.75)
Normal	20 (33.9)	17 (33.33)	37 (33.64)	8 (30.77)	7 (29.17)	15 (30)	28 (32.94)	24 (32)	52 (32.5)
Overweight	1 (1.69)	1 (1.96)	2 (1.82)	0 (0)	0 (0)	0 (0)	1 (1.18)	1 (1.33)	2 (1.25)
Obese	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	59	51	110	26	24	50	85	75	160

The nutritional status of 60-215 months old thalassemic children based on WHO child growth reference BMI charts are shown in table-2. There were 160 cases in 60-215 months old group, out of which 85 (53.12%) were male and 75 (46.87%) female. There were 28 (32.94%) males and 24 (32%) female in the normal category of BMI (p value 0.8991).

## DISCUSSION

Thalassemia major is chronic common hematological disorder in this part of Pakistan. Growth failure is very common in this condition<sup>6,12</sup>. This is the first study based on WHO growth standards and WHO Growth Reference for the growth assessment based on WHO BMI classification.

This study showed that undernutrition is very common problem while overnutrition is uncommon event in Thalassemic children. There were 55% children belonging to 'normal' category in 0-59 months age group while 32.5% in 60-215 months age group. Only other study that used WHO BMI charts was by Moiz et al<sup>11</sup> and even this study did not include children below 5 years of age. It showed 23% thin and 19% severely thin patients. Obesity was not observed in any of the patients and same was the result in our study in this age group. Sheikh et al<sup>13</sup> conducted a study on growth assessment in Thalassemic children of this area based on CDC based BMI data which excluded children less than 2 years of age. This study also showed high rate of undernutrition.

There was increasing tendency of undernutrition with increasing age in our study. The similar pattern was found in other studies<sup>11,13,16-20</sup>. There was no difference of undernutrition rate between two sexes in our study. Similar results were found in other studies al.<sup>11,17</sup>

There were 54% males in our study. Other studies showed 52-63% males<sup>11,17,18,21</sup>.

## CONCLUSION

The under nutrition in children with thalassemia major is very common and increases with advancing age irrespective of sex.

### Author's Contribution:

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Revisiting Critically: Imran Qaisar, Abdul Rehman  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Effects of Guidelines on Opioid Analgesic's Prescription among Practicing Doctors in Rawalakot City: An Important Step to Prevent Opioid Misuse & Overuse

Reduction in  
Misuse of Opiod  
Analgesics

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## ABSTRACT

**Objective:** To quantify the effects of dissemination & implementation of updated guidelines to achieve reduction & promotion of judicious prescription of opioid analgesics.

**Study Design:** Experimental descriptive study

**Place and Duration of Study:** This study was conducted at Sheikh Khalifa Bin Zayad Alnayan Hospital (CMH) Rawalakot from January to October 2019.

**Materials and Methods:** Summary of updated guidelines, agreed by a panel of experts, for opioid analgesic's prescription was circulated along with personal communications to 94 practicing doctors; 42 General physicians, 5 dental surgeons, 42 specialists & 5 postgraduate trainees. They were requested to read and implement the guidelines. After few weeks to months; on second visit, feedback of effects of these guidelines was collected through a well-designed Performa.

**Results:** Out of 94 doctors, 71 (75.5%) were male and 23 (24.5%) were female. Majority of doctors (94.68 %) doctors stated that their overall rate of opioid analgesic's prescription has decreased; on average by 51% with maximum 95% and minimum 10%. Knowledge about safe and effective opioid prescription has increased in 97.87%.

Assessment of risk factors was started by 93.61 % and patient's counseling by 88.29 % of doctors.

**Conclusion:** Educating the practicing doctors about Updated Guidelines on opioid analgesic's prescription has significantly reduced the opioid prescription rate along with improvement in its judicious prescription. It is an important step to prevent opioid and overuse.

**Key Words:** Guidelines, opioid analgesics, judicious prescription, non-opioid analgesics.

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## INTRODUCTION

Adequate pain relief is important otherwise it can lead to irritability, anger, anorexia, disturbed sleep, psychological disturbances & depression.<sup>1</sup> Opioids are potent 2<sup>nd</sup> line analgesics for severe pain, however these are not safe and can have serious side effects in addition to risk of addiction. Non-opioid measures (acetaminophen, non-steroid anti-inflammatory drugs & non-drug therapies) are first line treatment for all types of pain.<sup>2</sup>

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Non-pharmacological therapies that can help to reduce pain are massage, acupuncture, physiotherapy, hot-cold treatments, cognitive behavior therapy, transcutaneous electrical nerve stimulation (TENS) & self-care strategies. These measures can reduce dose & reliance on analgesics.<sup>3</sup> Opioid analgesic's prescription accounted for about 6% of all prescriptions and about half were by primary care physicians. Specialty wise trend noted was 48.6% by pain medicine, 36.5% surgery & 33.5% physical medicine/rehabilitation.<sup>4</sup> Common side effects of opioid analgesics are sedation, dizziness, nausea, vomiting and constipation. Less common side effects are physical dependence, tolerance, respiratory depression, delayed gastric emptying, hyperalgesia, immunosuppression, muscle rigidity, myoclonus, addiction and endocrine disorders. Most of these side effects are difficult to manage.<sup>5</sup>,  
<sup>6,7</sup> Sudden stoppage of opioid analgesics can lead to fatal withdrawal symptoms; due to sympathetic over-activation leading to sweating, diarrhea, rhinorrhea, muscle aches, insomnia, yawning and gooseflesh.<sup>8</sup> There is a potential risk of opioid abuse from short term opioid used for acute postoperative pain because 3-10%

of these patients will continue to take opioids one year after surgery.<sup>9,10</sup>

The world is facing opioid epidemic due to increased trend of opioid prescriptions in response to the policy of eliminating all pain from 1991 onwards. Moreover misconception that opioids are highly effective and safe analgesics, lack of knowledge about guidelines and inaccurate belief of under treatment of pain also contributed. Now main aim is to reduce pain to minimum bearable level and zero pain is considered as unrealistic expectation.<sup>11</sup> Centre for Disease Control (CDC) guidelines (2016) recommended to add opioid analgesic in small effective dose; along with other therapeutic options for pain control, after considering benefits, side effects, misuse and risk of addiction. Counseling before prescription and close monitoring are essential.<sup>12</sup>

Hospital based opioid monitoring program and implementation of expert guidelines have reduced the rate and dose of opioid prescription. However the results are not up to the mark and needs multi-sectorial involvement of all stakeholders of health care system.<sup>13</sup> Assessment should be done to detect high risk patients who are more prone to side effects and misuse of opioids. These patients include those having substance abuse, psychiatric illness, young males & extreme of age, pulmonary disease, obesity, pregnancy and are on benzodiazepines. It is better to avoid opioids in these patients but rarely can be prescribed with close monitoring.<sup>14,15</sup> Judicious opioid prescription also has a risk of abuse, because 39% of heroin addicts admitted that they were initially prescribed opioid analgesics for acute pain before using heroin. This fact indicated the need of reducing judicious opioid prescription.<sup>16</sup> Options to combat emerging opioid epidemic are educational & legislative activities of law enforcement, government regulatory agencies, pharmaceutical companies and healthcare providers.<sup>17,18</sup> According to a survey report by the United Nations office on drug and crime in 2013 found that during 2012, more than 6.7 million Pakistanis have used opioids.<sup>19</sup> Preliminary evidence indicated that guidelines can reduce the rate and dose of opioid analgesics prescription, but its effectiveness depends on the extent of understanding and implementation by the prescribers.<sup>20</sup>

Two main aims of this study were reduction in rate and promotion of judicious prescription of opioid analgesics. There was a knowledge gap in national and international literature about proper guidelines and effective interventional strategies to curb opioid epidemic. There was no previous study about implementation of guidelines for reduction and promotion of judicious opioid prescription in Pakistan. Moreover there was no consensus about opioid's guidelines.

## MATERIALS AND METHODS

Research study was conducted from January to October 2019, in Sheikh Khalifa Bin Zayed AlNayan Hospital (CMH), affiliated with Poonch Medical College Rawalakot Azad Kashmir Pakistan. Approval from hospital medical ethical committee was taken. According to inclusion criteria among total 94 practicing doctors, 42 were General physicians, 5 dental surgeons, 42 specialists & 5 postgraduate trainees. All practicing doctors of the hospital and Rawalakot city were included. The non-practicing doctors such as radiologists, Pathologists, administrators and basic sciences doctors were excluded from the study. House job doctors were also excluded from the study. In this study we used educational method and disseminated awareness about updated opioid prescription guidelines among practicing doctors; specialists, post-graduate trainees, dental surgeons & general physicians for information & implementation. Guidelines for prescription of opioid analgesics were finalized after consulting with expert representatives of every group of practicing doctors. Summary of agreed guidelines along with briefing about its salient features was given to every practicing doctor, on first visit by one of the authors. They were requested to read and implement these guidelines. After few weeks to few months, 2<sup>nd</sup> visit by one of authors; was made to every practicing doctor to collect information on a performance about effects of guidelines. The average time between initial and follow-up visit was 8 weeks. The average duration of initial and follow-up visit was 12 minutes. The collected data was analyzed by using SPSS-21.

## RESULTS

**Table No.1 Effects of guidelines on opioid analgesic's prescription**

S No		No. of doctors	%
1	Decrease in opioid prescription rate	91	96.80
2	Increase in knowledge	92	97.87
3	Started counseling about other pain treatment options, side effects & benefits of opioids	83	88.29
4	Started assessment of high risk factors	88	93.61
5	Started monitoring	84	89.36
6	Started early shifting to non-opioid treatment	81	86.17
7	Avoid prescription of opioid analgesics with benzodiazepines	64	68.08

Out of 94 doctors, 71 (75.5%) were male and 23 (24.5%) were female. Among 94 doctors, 96.80% stated that they prescribe opioids for acute and chronic pain. Overall reduction of opioid prescription was noted by 94.68% doctors. The average rate of reduction was 51%, ranging from 10-95%. Knowledge about safe and effective opioid prescription has increased in 97.87 %. Assessment of risk factors was started by 93.61 % and patient's counseling by 88.29 % of doctors (Table-1).

## DISCUSSION

In our study majority of the doctors (94.68%) admitted that their overall opioid prescription rate has reduced. The average reduction rate of opioid prescription was 51% with a range of 10-95%. It is statistically significant, having P-value less than 0.05. Results of this study also indicated that all indicators for judicious prescription of opioid analgesics particularly increase in knowledge, counseling, risk factors assessment and monitoring has improved significantly (68.08-97.87%). These results are almost similar to other studies. Wetzel M et al (2018) in 2 studies have found that patient based guidelines dissemination to clinicians reported up to 53% reduction in rate of opioid prescription.<sup>21</sup> Maureen HV, et al in 2018 observed 53% reduction in opioid prescription after disseminating operation specific guidelines to surgeons.<sup>22</sup> Implementation of opioid guidelines at largest worker's compensation insurer in Utah, after 18 months, the number of claims with opioid prescription were reduced from 3061 to 1665, indicating 50.2% reduction (P<0.001).<sup>23</sup> In a study by Bohnert ASB et al in 2018, the overall prescribing rate of opioid analgesics in January 2012 was 6577 per 100000 persons which after release of 2016 CDC-guidelines was reduced to 56.74 (CI, -65.96 to 47.53) per month afterward.<sup>24</sup>

In our study the higher reduction rate (average 51% with a range of 10-95%) of opioid prescription was due to briefing about guidelines to all practicing doctors on 1<sup>st</sup> visit by one of authors which was missing in most of other studies leading to low reduction rate. In a study by Gaiennie CC and others in 2018, Guidelines implementation in internal medicine showed 10% decrease in opioid prescription. Moreover prescriber's knowledge and adherence to guidelines was also increased.<sup>25</sup> In Staten Island (2016), due to public health detailing, the opioid prescribing rate was decreased from 889 prescriptions per 10 000 patients in the pre-campaign period to 785 prescriptions per 10 000 patients in post-campaign period, an 11.5% decrease having a P-value less than 0.05.<sup>26</sup> In Utah (USA), six practicing guidelines were developed and presented to 581 health care workers for implementation. The results showed that 60-80% clinicians stopped long acting opioid prescription for acute pain or with sedatives; 50% started lower doses and slower escalations.<sup>27</sup> Del & his fellow authors examined records of 13000

emergency room visits from January 2012 to July 2013 for dental, back, neck or nonspecific pains. After implementation of guidelines, the rate of opioid prescription was reduced by 23%.<sup>28</sup> In Pakistan, a survey in 2013 revealed about 1.6 million patients abused prescription opioids for non-medical needs. Pakistan is more prone to develop opioid epidemic due to its limited resources, low literacy rate and increasing opioid production in nearby Afghanistan. However impending opioid epidemic can be prevented by appropriate training of medical students and doctors about safe prescription of opioid analgesics.<sup>29</sup> Clinicians and health authorities are recommended to adopt guidelines to reduce frequency & misuse of opioid analgesic's prescription. The Government can adopt legislative measures to prevent opioid epidemic.

## CONCLUSION

The study demonstrated that a clinician's awareness campaign can reduce the rate of opioid prescription along with promotion of its judicious use.

### Author's Contribution:

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

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# Incidence of Hip Fractures (Subtrochanteric and Intertrochanteric) in Sialkot in Last Five Years

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Muhammad Munir Akhtar Khan<sup>1</sup> and M. Sabir<sup>4</sup>**

## ABSTRACT

**Objective:** To study the incidence of hip fractures (subtrochanteric and intertrochanteric) in Sialkot last five years

**Study Design:** Retrospective Study

**Place and Duration of Study:** This study was conducted at the Idris Teaching Hospital, Sialkot Medical College, Sialkot from January 2015 to July 2019.

**Materials and Methods:** A total of 121 patients were included in this study. There were 52(43%) patients were male and 69(57%) patients were female. The performance was designed to note down the demographic data and complications of hip fracture and lab test. Written informed consent was taken from every patient included in this study. The permission of ethical committee was also taken before collection of data and publishing in the medical journal. Participants were selected through non-probability consecutive sampling technique.

**Results:** At the age of 26-35 years, there were patients of hip fracture 9(17.30%) Male and 2(3%) female. At the age of 36-45 years the patients of hip fracture were 3(5.76%) Male and 5(7.24%) female. At the age of 46-55 years the patients of hip fracture were 3 (5.76%) Male and 4(6%) female. At the age of 56-65 years the patients of hip fracture were 6(11.52%) Male and 6(9%) female. At the age above 65 years the patients of hip fracture were 31(59.61%) Male and 52(75.36%) Female. There was cause of hip fracture due to fall or slippage was 31(59.61%) Male and 60(87%) female, due to RTA especially car accidents 19 (36.53%) Male and 06(9%) female. Due to obesity, there were 2(3.84%) Male and 3(4.5%) female were found. Conservative skin traction or bed rest there were 2(3.84%) Male and 4(6%) female were found. There were DHS 31(59.61%) male and 48 (69.56%) female, DCS 12(23.04%) Male and 14(20.28%) Female, due to I/M or I/L nail there were 7(13.46%) Male and 03(4.5%) female. There was complication of Blood clot leading to pulmonary Embolism 00(00%) Male and 1(1.5%) female. There was complication of Pneumonia 00(00%) Male and 2(3%) Female. There was complication of Infection 03(5.76%) Male and 04(06%) Female. There was complication of Cut out implant 01(1.92%) Male and 03(4.5%) Female. There was complication of Bed sores 00(00%) Male and 01(1.5%) Female. There was complication of Mortality in 1<sup>st</sup> year 03(5.76%) Male and 06(9%) Female. There was outcome and end result in hip fracture union of hip fracture was 43(87.75%) male and 54(85.71%) female, there was delayed union of hip fracture 02(4.1%) male and 03(4.76%) female, there was non-union of hip fracture in 04(8.2%) Male and 06(9.5%) Female.

**Conclusion:** It was concluded that there was hip fracture due to fall or slippage, car accidents and obesity.

**Key Words:** Incidence, Hip Fractures (Subtrochanteric and Intertrochanteric), Sialkot, Last Five Years.

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## INTRODUCTION

Osteoporosis represents a major public health problem because of its association with low-energy trauma or fragility fractures.

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Hip fracture has been recognized as the most serious consequence of osteoporosis because of its complications, which include chronic pain, disability, diminished quality of life, and premature death. Osteoporotic hip fracture is an established health problem in the West and is increasingly recognized as a growing problem in Asia as per the Asian Audit Report, 2009.<sup>1</sup> With rising life expectancy throughout the globe, the number of elderly individuals is increasing in every geographical region, and it is estimated that the incidence of hip fracture will rise from 1.66 million in 1990 to 6.26 million by 2050.<sup>2</sup>

Studies over the last few decades have demonstrated geographic variation in the incidence of hip fracture across continents as well as among different parts of a region. Incidence of hip fracture is highest in Sweden and North America, with almost seven-fold lower rates

in Southern European countries.<sup>3</sup> Hip fracture rates are also lower in Asian and Latin American populations. But as three-quarters of the world's population live in Asia, it is projected that Asian countries will contribute more to the pool of hip fractures in coming years. It is estimated that by 2050 more than 50% of all osteoporotic fractures will occur in Asia.<sup>2</sup> This variation in the distribution of hip fracture over different regions of the world demonstrate that genetic and environmental factors play a role in the etiology of hip fracture. It is therefore worthwhile to examine the geographic variations in hip fracture and speculate on the factors responsible for these differences. This review will serve as an update of the epidemiology of hip fracture worldwide, with special emphasis on the geographic variations and etiological factors. This review was conducted using the PubMed database. The keywords that were employed included hip fracture, incidence rate, geographic variation, osteoporosis, and epidemiology. The articles were chosen on the basis of 1) focus (studies that specifically focused on geographic variation in hip fracture); 2) language (studies that were in English); and 3) methods (studies that used statistical tests to examine hip fracture incidence rates).

Hip fracture rates are available from many countries across Asia, including from Singapore, Taiwan, Japan, Malaysia, China, and the Middle East. Unfortunately, only projected figures are available from India, which is second most populous country in the world. Studies on hip fracture incidence rates are available from Japan, particularly from the Tottori prefecture, a region representative of the Japanese population in terms of demographic and economic status.<sup>4</sup> A recent survey (Hagino et al.) identified 851, 901, and 1059 patients with hip fracture (aged 35 years and older) in 2004, 2005, and 2006, respectively. The residual lifetime risk of hip fracture at 50 years of age was estimated to be 5.6% for men and 20% for women. The study concluded that in the Japanese population aged 35 years or older, the crude incidence of hip fracture was 244.8 per 100 000 person-years from 2004 to 2006 and the gender-specific incidence was 99.6 per 100 000 person-years for men and 368 per 100 000 person-years for women. When these incidence rates were compared with that from 30 years ago, the authors concluded that the incidence of hip fracture in the Japanese population is increasing. This increasing incidence is due to the increase in the population of the elderly in Japan over the last three decades.

The highest incidence of hip fractures from Asia has been reported from Singapore. A study by Koh et al. revealed that hip fracture rates from 1991 to 1998 (per 100 000) were 152 in men and 402 in women; this was respectively 1.5 and 5 times higher than corresponding rates in 1960s.<sup>5</sup> Examined by ethnicity, since 1960, the main increase in hip fracture rates has been seen in

Chinese and Malays, while the rates in the Indian ethnic group appear to have decreased. The factors responsible for these racial differences include differences in the demographic profile, body weight, physical activity, prevalence of cigarette smoking and alcohol consumption, calcium intake, and frequency of falls in the community in elderly.

In Korea, Lim et al. analyzed the incidence and cost of hip fracture from 2001 to 2004 using data from the Health Insurance Review Agency, Korea.<sup>6</sup> In individuals over 50 years of age, the number of hip fractures in women increased from 250.9/100 000 persons in 2001 to 262.8/100 000 in 2004, a 4.7% increase. However, hip fractures in men decreased from 162.8/100 000 in 2001 to 137.5/100 000 in 2004, a 15.5% decrease. The direct medical care costs of hip fracture increased from \$62 707 697 in 2001 to \$65 200 035 in 2004, and the proportional cost of hip fractures in the national medical costs increased by 4.5% over 4 years (from 0.200% in 2001 to 0.209% in 2004). On analysis of the population-based data obtained from the whole country from 2001 to 2004, the incidence rate of hip fractures in women (but not in men) and its cost have increased in Korea. This gender difference in the distribution of hip fractures underlines the need for aggressive intervention in osteoporosis in elderly women.

In 1995, the incidence rates of hip fracture from Hong Kong were 110/100 000 in women and 50/100 000 in men as per data from public hospitals.<sup>7</sup> Secular trends on hip fracture from Hong Kong suggest that over the last three decades the age-specific incidence increased 2.5-fold in women and 1.7-fold in men. The incidence rates were found to similar to those seen in the Wessex health region of UK.<sup>8</sup> In Beijing, China, hip fracture incidence were calculated from admissions to 76 city hospitals between 1988 and 1992.<sup>9</sup> It was presumed that all the fracture cases from Beijing go to these public hospitals only. Based upon the 1990 China census, age-standardized rates of hip fracture were 87/100 000 for women and 97/100 000 for men. These data further demonstrate that from 1988 to 1992, the rates in Beijing increased by 34% in women and 33% in men.

Maximum data from the Middle East is available from Iran from the Iranian Multicenter Study on Accidental Injuries.<sup>10</sup> This study reported age-standardized incidence rates of hip fracture of 127.3/100 000 person-years in men and 164.6/100 000 person-years in women, which is much lower than the rates reported from any of the Western countries, including the US. Smaller studies are available from Kuwait and show similar results.<sup>11</sup>

## MATERIALS AND METHODS

This study was conducted at the Idris Teaching Hospital, Sialkot Medical College, Sialkot from January 2015 to July 2019. A total of 121 patients were

included in this study. There were 52(43%) patients were male and 69(57%) patients were female. The performa was designed to note down the demographic data and complications of hip fracture and lab test.

Written Informed consent was taken from every patient included in this study. The permission of ethical committee was also taken before collection of data and publishing in the medical journal.. Participants were selected through non probability consecutive sampling technique.

**Inclusion criteria:** All the cases of hip fracture were included in this study.

## RESULTS

**Table No. 1:Age and gender distribution in Hip fracture**

Sr. No.	Age(years)	Male(52)	Female(69)
1	26-35	9(17.30%)	2(3%)
2	36-45	3(5.76%)	5(7.24%)
3	46-55	3(5.76%)	4(6%)
4	56-65	6(11.52%)	6(9%)
5	Above 65	31(59.61%)	52(75.36%)
Total		52(100%)	69(100%)

At the age of 26-35 years, there were patients of hip fracture 9(17.30%) Male and 2(3%) female

At the age of 36-45 years the patients of hip fracture were 3(5.76%) Male and 5(7.24%) female

At the age of 46-55 years the patients of hip fracture were 3 (5.76%) Male and 4(6%) female

At the age of 56-65 years the patients of hip fracture were 6(11.52%) Male and 6(9%) female

At the age above 65 years the patients of hip fracture were 31(59.61%) Male and 52(75.36%) Female as shown in table no 1.

**Table No. 2: Distribution of marital status**

Sr. No	Causes	Male	Female
1	H/o fall or slippage	31(59.61%)	60(87%)
2	RTA esp car accidents	19(36.53%)	06(9%)
3	Obesity	02(3.84%)	03(4.5%)
Total		52(100%)	69(100%)

There was cause of hip fracture due to fall or slippage was 31(59.61%) Male and 60(87%) female, due to RTA especially car accidents 19 (36.53%) Male and 06(9%) female. Due to obesity, there were 2(3.84%) Male and 3(4.5%) female were found as shown in table no 2.

Conservative skin traction or bed rest there were 2(3.84%) Male and 4(6%) female were found.

There were DHS 31(59.61%) male and 48 (69.56%) female, DCS 12(23.04%) Male and 14(20.28%)

Female, due to I/M or I/L nail there were 7(13.46%) Male and 03(4.5%) female.

**Table No. 3:Treatment Distribution of Hip Fracture**

Treatment	Male	Female
Conservative Skin Traction or bed rest	2(3.84%)	4(6%)
Female	DHS	31(59.61%)
	DCS	12(23.04%)
	I/M , I/L nail	7(13.46%)

**Table No. 4: Complications in Hip Fracture**

Complications	Male	Female
Blood clot leading to pulmonary Embolism	00	01(1.5%)
Pneumonia	00	02(3%)
Infection	3(5.76%)	04(6%)
Cut out implant	01(1.92%)	03(4.5%)
Bed sores	00	01(1.5%)
Mortality in 1 <sup>st</sup> year	03(5.76%)	06(9%)
Total	07(13.46%)	17(24.63%)

There was complication of Blood clot leading to pulmonary Embolism 00(00%) Male and 1(1.5%) female. There was complication of Pneumonia 00(00%) Male and 2(3%) Female. There was complication of Infection 03(5.76%)Male and 04(06%) Female. There was complication of Cut out implant 01(1.92%) Male and 03(4.5%) Female. There was complication of Bed sores 00(00%) Male and 01(1.5%) Female. There was complication of Mortality in 1<sup>st</sup> year 03(5.76%) Male and 06(9%) Female as shown in table no 4.

**Table No. 5: Output / end result in hip fracture**

Output	Male	Female
Union	43(87.75%)	54(85.71%)
Delayed union	02(4.1%)	03(4.76%)
Non union	04(8.2%)	06(9.5%)
Total	49(100%)	63(100%)

There was outcome and end result in hip fracture union of hip fracture was 43(87.75%) male and 54(85.71%) female, there was delayed union of hip fracture 02(4.1%) male and 03(4.76%) female, there was non union of hip fracture in 04(8.2%) Male and 06(9.5%) Female as shown in table no 5.

## DISCUSSION

Hip fracture rates are available from many countries across Asia, including from Singapore, Taiwan, Japan, Malaysia, China, and the Middle East. Unfortunately, only projected figures are available from India, which is second most populous country in the world. Studies on hip fracture incidence rates are available from Japan, particularly from the Tottori prefecture, a region

representative of the Japanese population in terms of demographic and economic status.<sup>4</sup> A recent survey (Hagino et al.) identified 851, 901, and 1059 patients with hip fracture (aged 35 years and older) in 2004, 2005, and 2006, respectively. The residual lifetime risk of hip fracture at 50 years of age was estimated to be 5.6% for men and 20% for women. The study concluded that in the Japanese population aged 35 years or older, the crude incidence of hip fracture was 244.8 per 100 000 person-years from 2004 to 2006 and the gender-specific incidence was 99.6 per 100 000 person-years for men and 368 per 100 000 person-years for women. When these incidence rates were compared with that from 30 years ago, the authors concluded that the incidence of hip fracture in the Japanese population is increasing. This increasing incidence is due to the increase in the population of the elderly in Japan over the last three decades.

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In Korea, Lim et al. analyzed the incidence and cost of hip fracture from 2001 to 2004 using data from the Health Insurance Review Agency, Korea.<sup>6</sup> In individuals over 50 years of age, the number of hip fractures in women increased from 250.9/100 000 persons in 2001 to 262.8/100 000 in 2004, a 4.7% increase. However, hip fractures in men decreased from 162.8/100 000 in 2001 to 137.5/100 000 in 2004, a 15.5% decrease. The direct medical care costs of hip fracture increased from \$62 707 697 in 2001 to \$65 200 035 in 2004, and the proportional cost of hip fractures in the national medical costs increased by 4.5% over 4 years (from 0.200% in 2001 to 0.209% in 2004). On analysis of the population-based data obtained from the whole country from 2001 to 2004, the incidence rate of hip fractures in women (but not in men) and its cost have increased in Korea. This gender difference in the distribution of hip fractures underlines the need for aggressive intervention in osteoporosis in elderly women.

In 1995, the incidence rates of hip fracture from Hong Kong were 110/100 000 in women and 50/100 000 in men as per data from public hospitals.<sup>8,9,10,11,7</sup> Secular trends on hip fracture from Hong Kong suggest that over the last three decades the age-specific incidence

increased 2.5-fold in women and 1.7-fold in men. The incidence rates were found to similar to those seen in the Wessex health region of UK.<sup>8</sup> In Beijing, China, hip fracture incidence were calculated from admissions to 76 city hospitals between 1988 and 1992.<sup>12,13,15,16,9</sup> It was presumed that all the fracture cases from Beijing go to these public hospitals only. Based upon the 1990 China census, age-standardized rates of hip fracture were 87/100 000 for women and 97/100 000 for men. These data further demonstrate that from 1988 to 1992, the rates in Beijing increased by 34% in women and 33% in men.

Maximum data from the Middle East is available from Iran from the Iranian Multicenter Study on Accidental Injuries.<sup>16,10</sup> This study reported age-standardized incidence rates of hip fracture of 127.3/100 000 person-years in men and 164.6/100 000 person-years in women, which is much lower than the rates reported from any of the Western countries, including the US. Smaller studies are available from Kuwait and show similar results.<sup>11,7</sup>

## CONCLUSION

It was concluded that there was hip fracture due to fall or slippage, car accidents and obesity.

### Author's Contribution:

Concept & Design of Study: Salman Imran Butt  
 Drafting: Muhammad Asif Saeed, Maqsood Ahmed Khan  
 Data Analysis: Liaqat Ali, Muhammad Munir Akhtar Khan, M. Sabir  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Efficacy of Oral Misoprostol in the Induction of Labor

Roeda Shams<sup>1</sup>, Sarwat Noreen<sup>2</sup> and Qamar-un-Nisa<sup>1</sup>

Efficacy of Oral Misoprostol in the Induction of Labor

## ABSTRACT

**Objective:** To determine the efficacy of oral mesoprostol in the induction of labor at term pregnancy

**Study Design:** Prospective observational

**Place and Duration of Study:** Obstetrics & Gynaecology Department, Rehman Medical Institute, Peshawar from 15<sup>th</sup>June 2015 to 14<sup>th</sup>June 2016.

**Patients and Methods:** All women received 50 ug of tablet misoprostol orally every 4 hours (max 6 doses). All the women were followed up regularly till 12 to 24 hours After the first course of 3 doses patients were given 24 rest and then re induced with patient consent. All the observations and therapeutic intervention were done under supervision of an expert obstetrician having minimum of five years of experience.

**Results:** In this study mean age was 27 years with SD  $\pm$  2.317. 43 percent patients were Primi gravida patients while 57% patients were multi gravida. The most common indication for induction was postdate pregnancies (41%) followed by PROM and oligohydramnios. 211(95%) patients delivered with 24 hours requiring only 3 doses of misoprostol. The efficacy of misoprostol was found to be 78% in induction of labor at term pregnancy.

**Conclusion:** The efficacy of misoprostol was 78% in induction of labor at term pregnancy.

**Key Words:** Efficacy, Oral misoprostol, Labour induction, Term pregnancy

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## INTRODUCTION

Labor induction is frequent, lifesaving procedure in almost all obstetrical practice<sup>1</sup>. Labor induction is a procedure in which labor is started artificially before its spontaneous onset, to accomplish safe delivery of fetus and placenta<sup>2</sup>. According to WHO, global incidence of labor induction is 9.6% of total deliveries. with higher incidence in Asian and Latin American countries<sup>3</sup>. Labour induction is indicated in number of case where continuation of pregnancy is hazardous to both fetus and mother<sup>4</sup>. Early induction of labor helps in decreasing risk of chorioamnionitis, decreases need for neonatal intensive care(NICU) admission especially in case of premature rupture of membrane(PROM)<sup>5,6</sup>. Favorable bishop scoring prior to oxytocin infusion and artificial rupture of membrane decreases failure rate of induction and risk of caesarean section.<sup>7</sup>

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If bishop score is less than 6 then cervix is considered unfavorable and its ripening is indicated. Number of different pharmacological and non-pharmacological methods are in use for cervical ripening and stimulation of regular uterine contractions.<sup>8</sup>

Prostaglandin E2 is considered as agent of a choice for labor induction but is expensive<sup>9</sup>. unstable at room temperature and only administered vaginaly.

Misoprostol in comparison is an inexpensive, effective and easy to administer synthetic prostaglandin E<sub>1</sub> analog.<sup>10</sup>. Additional advantage is that it can be administered vaginaly, orally and sublingually<sup>11</sup>. It has been approved by FDA since 2002 for use in pregnancy.<sup>12</sup>

The present study is designed to determine the efficacy of oral misoprostol in the induction of labor at term. Efficacy is determined in terms of successful vaginal birth. Oral route was selected because it was previously used vaginaly in our unit, which requires multiple vaginal examination and is associated with maternal discomfort. Despite its chronic use and research, the efficacy is still debatable which varies from one population to another (54-94%). This study will give us local magnitude of efficacy of oral misoprostol in the induction of labor at term. The results of this study will be shared with other local obstetricians and if found to be significantly high, more research will be recommended specially RCTs to draw future guidelines in the augmentation of labor with misoprostol.

## MATERIALS AND METHODS

This prospective descriptive study was conducted at Department of Obstetrics and Gynecology, Rehman Medical Institute, Peshawar. Over period of one year

(from 15 June 2015 to 15 June 2016), Total of 221 patients were observed .All women with term pregnancy (37-42 weeks of gestation), Singleton viable pregnancy (as determined US), with Cephalic Presentation were included while women with twin pregnancy ,previous cesarean delivery, and parity more than 6 were excluded. The study was conducted after approval from hospitals research and ethical board. All women meeting the inclusion criteria will be enrolled in the study through OPD. The purpose and benefits of the study will be explained to the patients and they will be assured that the study is done purely for data publication and research purpose and their confidentiality will be maintained, a written informed consent will be obtained from all patients. All women will be subjected to complete history taking and detailed physical and gynecological examination to detect and exclude confounders to exclude bias from the study results. All women will receive 50 ug of tablet misoprostol orally every 4 hours. The patients will be advised to remain in recumbent position for 30 minutes after oral administration of the drugs. All the women were followed up regularly till 12 to 24 hours after the first dose. All the observations and therapeutic intervention were done under supervision of an expert obstetrician having minimum of five years of experience. After first course of 3 doses of 50ug.patients were given 24-hour rest period and reinduction decided as per patient desire. Total of 6 doses were given. In various studies misoprostol solution are used but we are using 100ug tablet which is cut into equal half using tablet cutter. All data regarding parity, doses, indication for induction, mode of delivery and indication for cesarean deliveries were collected, stored and analyzed in SPSS version 23.

## RESULTS

The mean age was  $27 \pm 2.317$  years (Table 1). Ninety-five (43%) patients were primi gravida while 126 (57%) patients were multi gravida. Regarding indication 90 (41%) patients had post date pregnancy, 43 (19%) patients had PROM, 22 (10%) patients had oligohydramnios, 8 (4%) patients had obstetric cholestasis, 9(4%) patients had decrease fetal moments, 7(3%) patients had pre-eclampsia, 5 (2%) patients had fetal anomalies, 4 (2%) patients had intra uterine fetal demise, 12 (5%) patients had PIH, 6 (3%) patients had GDM, 1 (0.45%) patient had Previous history of IUFD, 2(0.90%) patients had precious pregnancy, 2(0.90%) patients had RH incompatibility, one patient had twice and 2(0.90%) patients had Multi gravida with breach. (Tables 2-3). Fifty-seven (26%) patients had single dose of mesoprostol, 65(29%) patients had 2 doses of mesoprostol, 89(40%) patients had 3 doses of mesoprostol, 6(3%) patients had 4 doses of mesoprostol while 4(2%) patients had 5 doses of mesoprostol (Table 4). 138(62%) patients had delivery interval  $<12$  hours

while 83(38%) patients had delivery interval  $>12$  hours (Table 5). 172(78%) patients had NVD while 49(22%) patients had caesarean section (Table 6). Indication of cesarean section among 49 patients was analyzed as 22(45%) patients had fetal distress, 4(8%) patients had fail induction while 23(47%) patients had labour dystocia. The efficacy of misoprostol was found to be 78% in induction of labor at term pregnancy.

**Table No.1: Age distribution (n=221)**

Age (years)	No.	%
18-25	27	12.0
26-35	159	72.0
36-45	35	16.0
Mean $\pm$ SD		27 $\pm$ 2.317

**Table No.2: Frequency of gravida (n=221)**

Gravida	No.	%
Primi gravid	95	43.0
Multi gravid	126	57.0

**Table No.3. Frequency of indications (n=221)**

Indications	No.	%
Post date pregnancy	90	41.0
PROM	43	19.0
Oligohydramnios	22	10.0
Obstetric cholestasis	8	4.0
Decrease foetal movements	9	4.0
Pre-eclampsia	7	3.0
Foetal anomalies	5	2.0
Intra uterine fetal demise	4	2.0
PIH	12	5.0
GDM	6	3.0
Previous history of IUFD	1	0.5
Precious pregnancy	2	0.9
RH incompatibility	2	0.9
Twin	1	0.5
Multi gravida with breach	2	0.9

**Table No.4: Total number of doses given (n=221)**

Doses	No.	%
1	57	26.0
2	65	29.0
3	89	40.0
4	6	3.0
5	4	2.0

**Table No.5: Induction of delivery interval (n=221)**

Delivery Interval (hours)	No.	%
<12	138	62.0
>12	83	38.0

**Table No.6: Mode of delivery (n=221)**

Mode of delivery	No.	%
Normal vaginal delivery	172	78.0
Cesarean section	49	22.0

**Table No.7: Indication of cesarean section (n=49)**

Indication of cesarean section	No.	%
Fetal distress	22	45.0
Fail induction	4	8.0
Labour dystocia	23	47.0

**Table No.8: Frequency of Efficacy (n=221)**

Efficacy	No.	%
Effective	172	78.0
Not Effective	49	22.0

## DISCUSSION

Since widely increasing trend of induction of labour it is necessary to know the safest and inexpensive pharmacological agent especially for low resource setting. The purpose for choosing misoprostol oral administration was its low cost, stability at room temperature and requirement for minimal vaginal examination.

In present study the most common indication for induction was post date pregnancies followed by PROM and in 95% of cases no more than 3 doses (single course) of misoprostol were required. This was similar to study by Marilyn<sup>13</sup> conducted in New Guinea, where 91% required single course and most common indication was postdate pregnancies.

In study by Syed<sup>14</sup>. 99% induced patients delivered within 24 hours and 78% were vaginal deliveries. Our study shows 95% deliveries in less than 24 hours. Our study shows that the efficacy (successful vaginal delivery) of oral misoprostol was 78% in the induction of labor at term pregnancy.

Similar results were observed in another study conducted by Rouzi AA et al<sup>15</sup> in which the efficacy of oral misoprostol in induction of labor was 77.1%. Our study correlates with another study conducted by Husain S et al<sup>16</sup> in which the efficacy of oral misoprostol in induction of labor was 71.3%. Similar findings were observed by Aalami-Harandi R et al<sup>17</sup> in which the efficacy of oral misoprostol in induction of labor was 79.7%. Results of studies by Munzar Z et al<sup>18</sup> and Sadaf M et al<sup>19</sup> showed lower efficacy of only 54% and 48% respectively .

## CONCLUSION

The efficacy of oral misoprostol is 78% in the induction of labor at term pregnancy.

### Author's Contribution:

Concept & Design of Study: Roeda Shams  
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 Data Analysis: Qamar-un-Nisa  
 Revisiting Critically: Roeda Shams, Sarwat Noreen  
 Final Approval of version: Roeda Shams

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

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