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Editorial**Osteoporosis: Second in Line****Mohsin Masud Jan**

Editor

The government and NGOs have remained silent over the rampant prevalence of osteoporosis, a disease of the bones. The need for maximum awareness regarding the disease cannot be stressed enough, and it is suggested that people adopt a healthy lifestyle in order to protect and equip themselves in the battle against osteoporosis. Osteoporosis is a silent killer, even the educated masses lack awareness and information when it comes to Osteoporosis. The Punjab government has announced to include Osteoporosis in its Prevention and Treatment of Non Communicable Diseases program.

It is stated that of all the complications experienced by females after their menopause none was more devastating than osteoporosis. It is estimated that about one-third of women aged between 60 and 70 years, and two-thirds of all women aged 50 years or older, were afflicted by this disorder. Fracture incidence is reported to be 2 to 3 times higher than heart attacks, strokes and breast cancer among women and needs to be paid the same amount of attention. According to the World Health Organization osteoporosis is second only to cardiovascular disease and is a leading health care problem. Statistics from the International Osteoporosis Foundation claim that, 30 to 50 per cent of women and 15 to 30 per cent of men were likely to suffer a fracture related to osteoporosis in their lifetime.(1)

More than 75 million people worldwide are affected by osteoporosis, whereas in Pakistan, it is estimated that, over 40 percent of women suffer from osteoporosis. In Pakistan there are 9.91 million people with osteoporosis out of which 7.19 million are females and 2.71 million are males. This number will rise to 13 million by 2050. Fifteen percent of the victims are over 60 years old. (2) The risk factors for a fracture include: low bone mass density, advanced age, lack of exercise, menopause, Vitamin D or Calcium deficiency, use of hard drinks and junk food with lesser nutritional ingredients, excessive use of tea, carbonated drinks, alcohol and heparin, a history of fracture over the age of 50, a family history of hip fractures, long term use of steroids, rheumatoid arthritis and smoking.

The major consequence of osteoporosis is a fracture which, in the target population, occurs after a fall, most commonly resulting in hip and femur fractures. And such fractures consequently lead to, debility, incurrence of high cost in terms of treatment and rehabilitation, loss of freedom, mobility and prolonged dependency on others. Hip fractures are a particularly dangerous consequence of osteoporosis in the elderly. Approximately 20% of those who experience a hip fracture will die in the year following the fracture and

only one-third of hip-fracture patients regain their pre-fracture level of function.

Osteoporosis afflicts nearly 16 per cent of the population of Pakistan. Women, specifically after menopause, are the main victims. It makes the bones weak and brittle, increasing the risk of a fracture by several folds.

In Pakistan, osteoporosis is normally diagnosed once the patient has suffered a fracture, which is a practice that needs to be stopped. Osteoporosis in itself, is easily diagnosed and prevented. It is therefore, increasingly being recognized by the medical fraternity as a significant health problem. There is an urgent need to diagnose and manage osteoporosis, before it results in catastrophe.

Osteoporosis may be diagnosed directly through the use of a bone scan that measures bone mineral density (BMD). X-ray technology is used in the scanning, known as bone density scanning or bone mineral density test. Two other names for it are dual-energy X-ray absorptiometry (DXA for short) and bone densitometry. Combined with the evaluation of risk factors, DXA offers an indication of the likelihood of fractures occurring due to the osteoporosis. The test is also used to track response to treatment. (3)

Fracture risks can be lowered by preventive lifestyle measures against osteoporosis:

- Get enough calcium (about 1,000-1,200 mg a day, with a higher amount needed by women over 50 and everyone over 70). Calcium is available in the diet or through supplements
- Get enough vitamin D (doctors can help monitor this; sunshine enables vitamin D production, so preventing being housebound helps; it is available from egg yolks, saltwater fish, and liver; the daily recommended amount is 600 international units, and 800 IU in men and women over 70)
- Stop smoking if applicable (this affects a number of factors, including reducing women's estrogen levels)
- Drink alcohol only in moderation (poor nutrition and risk of falls are factors here)
- Exercise - weight-bearing exercise, including simple walking, promotes healthy bone and strengthens support from muscles. Exercises such as yoga also promote posture and balance and so reduce the risk of falls and fractures. (4& 5)

It is imperative that awareness of osteoporosis be raised through campaigns and seminars, that the government and NGOs raise their voice to highlight this preventable cause of morbidity, and the masses be educated to adopt a healthier lifestyle and thwart osteoporosis.

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New Perspectives in the Management of Hypertension: Role of Herbal Medicines

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ABSTRACT

Objective: To compare the efficacy of coded herbal medicine (Hyprol) and losartan in hypertensive type II diabetic patients.

Study Design: Case control study

Place and Duration of Study: This study was carried out at the Out-patient Department of JPMC, Karachi and Herbal Clinics of Karachi from January 2014 to June 2014.

Materials and Methods: This study is a case control prospective study to compare the effects of Losartan with herbal medicine (Hyprol) in type 2 diabetic hypertensive patients. 200 patients were enrolled and divided in two groups 'A' (Control group) & 'B' (Test group) treated with Losartan and Hyprol respectively.

Results: With ARB (Losartan) baseline to final change for SBP as well as DBP was significantly reduced i.e. 22.45 % (p<0.001) and 16.84% (p<0.001) respectively and FBS was reduced by 21.85% (p<0.001) while Hyprol shows comparable results i.e. difference in SBP, DBP and FBS was 14 % (p<0.001), 15.31 % (p<0.001), 34.57% (p<0.001) respectively.

Conclusion: ARBs are the first line drug of choice for hypertension since long time. Use of herbal medicine is an alternative mean of therapy to treat these patients and limit its cardiovascular and renal complications.

Key Words: Hypertension, Type 2 diabetes mellitus, ARB, Losartan

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INTRODUCTION

Hypertension is a global health problem including Pakistan¹. Rise in systemic blood pressure occurs with increasing age and so does the incidence of cardiovascular disease². Though it is common and known as "Silent Killer" because it remains asymptomatic but readily detectable and usually easy to treat³. For cerebrovascular and cardiovascular diseases the most important risk factor is hypertension. Prevention of the onset of disease can be done by controlling blood pressure within appropriate levels⁴. Globally diabetes is one of the major health problems. In an estimate it is noted that worldwide 246 million people are affected from this disease. In the next 30 years it is expected that this prevalence of diabetes is going to be doubled⁵. According to World Health Organization (WHO) 170 million patients are affected with type 2 diabetes mellitus which will be enhanced

twice by the year 2030 and it is a global epidemic⁶.

The prognosis of a combination of diabetes and hypertension is particularly very poor. This can be explained by several research trials in the general population with type 2 diabetes that have shown that controlling blood pressure under 130/80 mmHg changes the morbidity and mortality⁷. Risk of cardiovascular diseases is proportionally greater in patients with elevated systolic hypertension which indicates a greater potential for controlling cardiovascular deaths associated with elevated blood pressure in diabetic patients⁸.

Extensively used antihypertensive agents that act via inhibition of angiotensin II type 1 (AT1) receptors are Angiotensin Receptor Blockers (ARBs). Organ protection like vasculoprotection, cardioprotection and renoprotection are additive effects of ARBs⁹. Blockade of renin-angiotensin system (RAS) by improving insulin sensitivity reduce the risk of developing type 2 diabetes¹⁰. Similarly losartan and Valsartan are classified as competitive antagonist at AT1 receptor while Irbesartan and Candesartan act as full antagonists. The administration of large doses of less potent ARBs can also be done to improve their antihypertensive property¹¹. Losartan delays the progression of diabetic

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nephropathy and also treat hypertension. In patients with hypertension, type 2 diabetes, glomerulonephritis and nephritic syndrome losartan prevents the progress of renal disease¹².

Plants are used as a source of medicine from the ancient times in all cultures. Traditional medicines are utilized in health care both in developed and developing countries¹³. *Cichorium intybus* also known as cichory, is very famous for its biological activities¹⁴. *Rauwolfia serpentina* belongs to botanical class of Apocynaceae family¹⁵. It is observed that alkaloids present in the root of *Rauwolfia serpentina* have antihypertensive effects¹⁶. *Tribulus terrestris* is a very well known herbal medicine since ancient time and also in modern world¹⁷. It is also use to treat hypertension, as a diuretic, in urinary tract infections and for lithotripsy¹⁸. *Valeriana officinalis* decrease systolic blood pressure and feelings of stress¹⁹. *Withania somnifera* L. Dunal is a plant of Solanaceae family, it is used in the disorders of stress like arteriosclerosis, aging, arthritis, diabetes mellitus, hypertension and malignancies can be prevented and managed by *Withania somnifera*²⁰.

MATERIALS AND METHODS

The study comprises of six month duration. Patients were selected from outpatient department at JPMC and Amna Ibrahim Unani Clinic, Karachi. 200 patients of hypertension with type 2 diabetes were enrolled in the study. All patients had mild to moderate hypertension with type II diabetes which was not treated previously. Before starting the study an informed written consent was taken. Patients were divided in two groups each consisting of 100 patients. **Group A** was treated with allopathic medicine Losartan 50 mg once daily and **Group B** was treated with Hyprol 500mg once daily (a combination of five herbal plants named *Cichorium intybus* (Kasni 100mg), *Rauwolfia serpentina* (Asrol) 200mg, *Tribulus terrestris* (Klarkhask) 50mg, *Valeriana officinalis* (Balchar) 50mg and *Withania somnifera* (Asgand) 100mg) for a period of 12 weeks and kept as control and test groups respectively. 5 mg Glibenclamide was added to control group for the regulation of blood glucose levels. Drug dosages were

adjusted appropriately during the study period. Newly diagnosed untreated patients of hypertension with type 2 DM from either sex between 25 to 65 years of age were included. Patients with any other comorbidity were excluded from the study. Laboratory investigations were performed as baseline to evaluate patients according to inclusion criteria. Systolic and diastolic blood pressure measurements were taken at fortnightly visits in sitting position according to the recommendations of JNC 7 while fasting blood glucose levels, serum urea and serum creatinine were measured as baseline and 6 weekly intervals.

RESULTS

All 200 subjects completed the study successfully. Data was analyzed on SPSS version 14 and student 't' test was applied. Mean systolic blood pressure among groups A and B were found 147 ± 13.55 and 150 ± 11.38 respectively at day 0 while at day 90 it was found 114 ± 8.61 and 129 ± 6.82 respectively. The difference between groups A v/s B was found statistically significant with $P < .001$. Group A performed 8.45 % better than group B at 90th day of treatment. The average difference from baseline to final i.e. from day 0 to day 90 showed significant changes in group A and B ($P < .001$). The percentage change in groups A and B from base line to final i.e. day 0 to day 90 have shown reduction of 22.45 % and 14 % respectively. (Table-1 & Figure- 1).

Mean diastolic blood pressure among groups A and B were found 95 ± 7.40 and 98 ± 7.55 respectively at day 0 while at day 90 it was found 79 ± 6.57 and 83 ± 9.05 respectively. The difference between groups A v B was found statistically insignificant with $P < 0.42$. Group A performed slightly better with 1.53 % more reduction than group B at day 90th of treatment. The average difference from baseline to final i.e. from day 0 to day 90 showed significant changes in group A and B ($P < .001$). The percentage change in groups A and B from base line to final i.e. day 0 to day 90 have shown reduction of 16.84 % and 15.31 % respectively. (Table-2 & Figure- 2).

Table No.1: Changes in the mean Systolic Blood Pressure at Day- 45 and Day – 90 of treatment in groups A and B in Hypertensive Type II Diabetic patients.

	Day 0	Day 45	Day 90	P – value			% Change
				D 0–45	D 45–90	D 0–90	
Group A	147	122	114	t = 19.54	t = 8.18	t = 24.11	↓ 22.45
	±13.55	±10.31	±8.61	p < 0.001	p < 0.001	p < 0.001	
Group B	150	133	129	t = 21.39	t = 9.66	t = 24.42	↓ 14
	±11.38	±7.56	±6.82	p < 0.001	p < 0.001	p < 0.001	
All observations are measured in mmHg							
Each group consist of 100 observations							
A VS B				t = -8.99		t = -12.92	
				p < 0.001		p < 0.001	

Group A = Diabetic diet + Tab. Glibenclamide + Tab. Losartan

Group B = Diabetic diet + Tab. Hyprol

Table No. 2: Changes in the mean Diastolic Blood Pressure at Day- 45 and Day – 90 of treatment in groups A and B in Hypertensive Type II Diabetic patients

	Day 0	Day 45	Day 90	P – value			% Change
				D 0–45	D 45–90	D 0–90	
Group A	95	82	79	t = 15.7	t = 3.87	t = 18.27	↓ 16.84
	±7.40	±7.83	±6.57	p < 0.001	p < 0.001	p < 0.001	
Group B	98	87	83	t = 17.92	t = 6	t = 20.1	↓ 15.31
	±7.55	±8.16	±9.05	p < 0.001	p < 0.001	p < 0.001	
All observations are measured in mmHg							
Each group consist of 100 observations							
A VS B				t = 0.90		t = 0.88	
				p < 0.45		p < 0.42	

Group A = Diabetic diet + Tab. Glibenclamide + Tab. Losartan

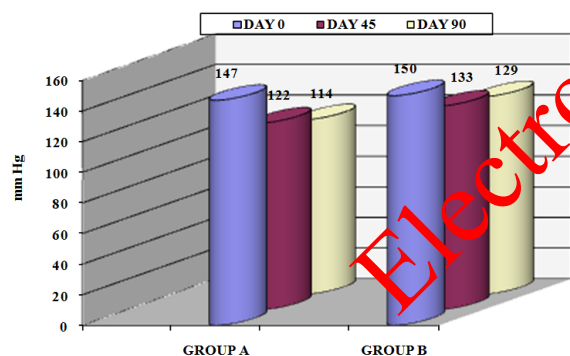
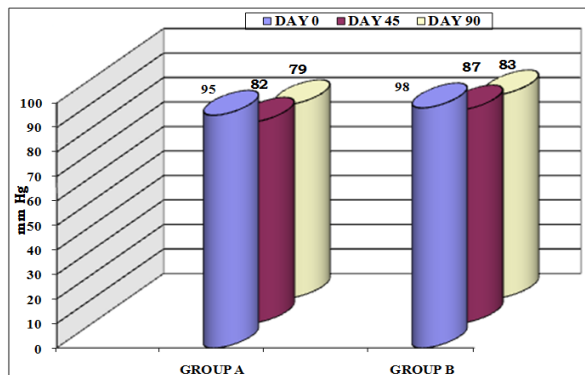
Group B = Diabetic diet + Tab. Hyprol

Table No.3: Changes in the mean Fasting Blood Sugar (FBS) level at Day- 45 and Day – 90 of treatment in groups A and B in Hypertensive Type II Diabetic patients

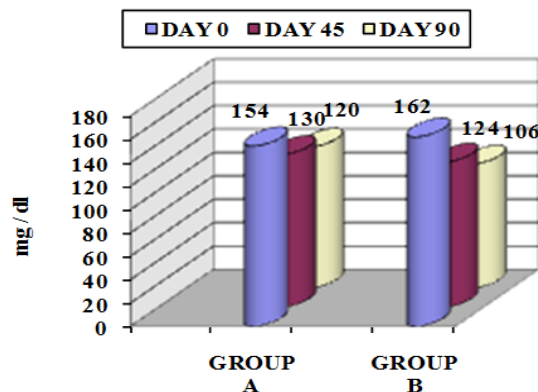
Groups A and B in Hypertensive Type II Diabetic patients							
	Day 0	Day 45	Day 90	P – value			% Change
				D 0–45	D 45–90	D 0–90	
Group A	154.3	130.5	120.58	t = 12.3	t = 7.93	t = 14.35	↓ 21.85
	±32.23	±21.92	±17.49	p < 0.001	p < 0.001	p < 0.001	
Group B	162	124	106	t = 15.32	t = 10.02	t = 21.65	↓ 34.57
	±27.23	±19.71	±9.89	p < 0.001	p < 0.001	p < 0.001	
All observations are measured in mg/dl							
Each group consist of 100 observations							
A VS B				t = 2.38		t = 7.27	
				p < 0.02		p < 0.001	

Group A = Diabetic diet + Tab. Glibenclamide + Tab. Losartan

Group B = Diabetic diet + Tab. Hyprol

**Figure No.1: Changes in the mean Systolic Blood Pressure at Day- 45 and Day – 90 of treatment in groups A and B in Hypertensive Type II Diabetic patients****Figure No.2: Changes in the mean Diastolic Blood Pressure at Day- 45 and Day – 90 of treatment in groups A and B in Hypertensive Type II Diabetic patients**

Mean fasting blood sugar among groups A and B were found to be 154.3 ± 32.23 and 142 ± 27.23 respectively at day 0 while at day 90 it was found 120.58 ± 17.49 and 106 ± 9.89 respectively. The difference between groups A v B was found statistically significant with $P < .001$. Group B performed 12.72 % better than group A at 90th day of treatment. The average difference from baseline to final i.e. from day 0 to day 90 showed significant changes in group A and B ($P < .001$). The percentage change in groups A and B from base line to final i.e. day 0 to day 90 have shown reduction of 21.85 % and 34.57 % respectively. (Table-3 & Figure- 3)

**Figure No.3: Changes in the mean Fasting Blood Sugar (FBS) level at Day- 45 and Day – 90 of treatment in groups A and B in Hypertensive Type II Diabetic patients**

DISCUSSION

High blood pressure is responsible for one death in every eight people. It is estimated by world health organization that hypertension is the third leading cause of death all over the world. Worldwide one billion people are suffering from hypertension.

The results of our present study are in consistent with Ito et al. who reported a reduction of 20 mmHg in systolic blood pressure and 10 mmHg reductions in diastolic blood pressure after 3 month treatment with Losartan²¹. The results of our study also correlated with the results of Miyauchi et al. who observed a reduction in mean systolic blood pressure by 10 mmHg and mean diastolic blood pressure by 8 mmHg with Losartan treatment for 12 weeks²². Similarly Iino et al. reported a decrease of 11.3% in systolic blood pressure and 10.8% decrease in diastolic blood pressure after 6 week treatment with Losartan²³. Holdass et al. also found a decrease in systolic blood pressure from 162 mmHg to 148 mmHg and diastolic blood pressure from 105 mmHg to 96 mmHg with the significant p value of <0.001 in Losartan group after 2 months treatment²⁴.

The decrease of systolic and diastolic blood pressure with group B patients have also been reported and found in literature with research studies of Baren et al., Salma et al., Von poser et al., and Wakil RJ²⁵.

As Hyprol is a combination formula of different herbal compounds so its cumulative effect have not been reported as a whole magnitude of response but as a single compound the effect of this coded herbal drugs has been reported and document by various researchers in their clinical research findings. The antihypertensive effects of Tribulus terrestris due to inhibition of angiotensin converting enzyme was reported by Sharifi AM et al²⁶. Similarly Klausgraber F, Arnold OH et al., and Bhatia BB reported the hypotensive effects of Rauwolfia serpentina in their research trials²⁷.

Losartan, an angiotensin receptor blocker is known for its effects on glycemia control and improvement in blood glucose levels. Both the groups have significant effects on blood glucose & levels of HbA1c. In case of group A, 21% decrease in blood glucose level was found. While group B shows highly significant reduction in blood glucose level i.e. 34.57%.

Our results of group B patients treated with Hyprol on glycemia control are correlated with study conducted by Udayakumar et al., who found 35% reduction in blood glucose level and 45% fall in HbA1c with p value of <0.001²⁸. Similarly Gauttam et al., in another study on Withania somnifera found 54% fall in blood glucose level²⁹. Another study conducted by Nowouzi et al., on Cichory seeds, one of the components of Hyprol showed decrease in blood glucose level from baseline 408 mg/dl to 286 mg/dl³⁰. Study conducted on Rauwolfia serpentina by Qureshi et al., also document

reduction in blood glucose levels that are coincides with the results of group B in present study³¹.

CONCLUSION

We observed that losartan produces highly significant effect over proteinuria, systolic and diastolic blood pressure and 24 hr creatinine clearance; in contrast this herbal combination gives promising results with regard to these parameters. The reason of this impact might be because of a cumulative effect of five herbal components in a single drug formulation.

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Determination of Occlusal Vertical Dimension by Correlating Hand, Thumb and Index Finger Length with Craniofacial Measurements

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ABSTRACT

Objectives: The objective of this study was to compare the craniofacial measurements with body measurements and their implementation among the Pakistani population.

Study Design: Prospective / comparative study

Place and Duration of Study: This study was conducted at University College of Dentistry, The University of Lahore from January 2014 to March 2014.

Materials and methods: Measurements were taken on 300 fully dentate patients with their teeth in centric occlusion. Results were statistically analyzed by using SPSS version 20.

Results: Height of the face to height of the hand, Length of the nose to length of the thumb and Distance from tip of index finger to tip of the thumb and chin-nose distance were measured All these measurements showed a statistically significant p-value thus indicating no correlation with each other.

Conclusion: These measurements had no close approximation to each other and with original occlusal vertical dimensions (OVD) among Pakistani population as compared to others faces.

Key Words: Occlusal Vertical Dimension, Craniofacial Measurements, Pakistani Population

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INTRODUCTION

The appearance, speech and mastication, all depend on specific vertical and horizontal relations of the mandible to the maxilla.¹ Various researchers have developed characteristics of rest and occlusal vertical relations by using different methods to determine these relations. These can be broadly divided into physiological and mechanical methods that include the use of physiologic rest position, swallowing, phonetics, aesthetic, facial measurements, pre-extraction records, cephalometry etc.² However, there is no particular universally accepted method for determining vertical relation especially when no pre-extraction records exist.³ There seems to be no advantage of one technique over the other, however, cost, time and equipment may be the determining factors.⁴

If the dentures are fabricated at a greater occlusal vertical height, premature tooth contacts may result in trauma to the underlying tissues and other consequences like clattering sounds, muscle fatigue and

fullness of the mouth.⁵ Decreased occlusal vertical dimension leads to reduce biting force, pre-senile appearance and temporomandibular joint disorders, the tongue may fall back towards the throat and consequently, displacement of adjacent tissues may lead to obstruction of the eustachian tube and hence impaired hearing.⁶

Craniofacial and body measurements offer significant prosthetic advantages in determining occlusal vertical dimension. The acrylic templates and occlusion rims may be used to confirm phonetics, physiologic rest jaw position and deglutition after initial determination of OVD.⁷ Accurate occlusal vertical dimension for all individuals cannot be measured by any absolute method. Cephalometric radiographs and other costly & delicate measuring devices are not needed in case of the facial and finger measurements, so it can be an attractive choice.⁸

Under the influence of the Pythagorean concept,⁹ Greek sculptors of the fourth century used the "golden number" in the body proportions of their statues. In "Apollo Belvedere", which made Lysippus a celebrity, the body length was proportionate to eight times the height of the head.⁹ Roman standards were imposed by the famous artist.⁹ Vitruvius, whose proportions were reproduced by Leonardo da Vinci in a classic "Square of the Ancients". The application of the golden number

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to dentistry was first mentioned by Lombardi¹⁰ and developed by Levin.¹¹ Currently; a number of parameters that conform to this golden number can be considered elements, which constitute the structural and biologic composition of the dentofacial apparatus.

The term “divine proportions” was added by Leonardo da Vinci. This demonstrated his many observations and drawings on facial and other body proportions in relation to lower third of the face. He proposed that the chin-nose distance is equal to one third of the face, the height of the hand is almost equal to facial height (Height from chin-hairline), and the length of thumb is similar to length of nose (Similar is the case with the distance between the tip of the index finger and tip of the index thumb).^{12,16}

Review of literature reveals that Caucasian and Asian characteristics used in numerous craniofacial and body measurements may be inadequate for application to different racial or ethnic groups and even persons belonging to the same race and different geographical regions may have differences. Socio-cultural and racial variables have definite influences.¹³

The Study is aimed to assess the above mentioned characteristics in a section of Pakistani population subjects. This study may be useful in determining lost occlusal vertical dimension of edentulous patients.

MATERIALS AND METHODS

The current study was conducted on 300 undergraduate students of University College of Dentistry, The University of Lahore with age ranging 18-25 years in age. The total sample subjects were placed into 4 groups according to age and gender. Groups 1 and 3 included male subjects, while Groups 2 and 4 comprised of female subjects. Subjects with age range of 18-21 were placed in Group 1 and 2, while the subjects of age group 22-25 were allotted Groups 3 and 4. Only those Subjects having Angle's class-1 maxillo-mandibular relationship and with a definite occlusal stop in centric occlusion were included in this study. Patients with posterior bite collapse as a result of loss of teeth and subjects having excessive amount of soft tissues under the chin were excluded. Demographic data was recorded and written consent of all the participants was obtained. Measurements were taken on fully dentate subjects in centric occlusion. Boley's gauge of “Tricle” brand was used for measuring different craniofacial distances. Following landmarks were selected for the determination of facial measurements:

- Hairline
- Bridge of nose
- Lower border of the septum of the nose
- Most under surface of the mandible

Following body parts were included:

- Tip of the thumb
- Tip of the index finger

- Knuckle of the Thumb
- Crease of the hand
- Tip of the middle finger

Following measurements were taken to compare their values and correlate with chin nose distance:

- Height of the face from hair line to base of the chin and height of right hand from tip of the middle finger to the crease of the right hand
- Height of the nose from bridge to the lower border of the septum of the nose
- Height of the right thumb from tip of the thumb to tip of the index finger
- Distance between tip of the thumb and tip of the index finger

Distance from lower border of the septum of the nose to most under surface of the mandible.

RESULTS

The database of all study sample measurements was analyzed by using SPSS version 20. The results were tabulated using Paired-Sample t-Test.

Height of the face to height of the hand: Table No. 1 indicates the results of the current study regarding height of the face to height of the hand. Mean value of height of the face was 176.55 mm. Mean value of the height of the right hand was 182.28 mm. All these values indicated statistically significant difference among them.

Length of the nose to length of the thumb: Mean values of length of nose and length of the thumb were found to be 58.43 and 63.70 mm respectively, indicating a statistically significant p- value, so did not coincide with each other (Table: 2).

Table No. 1: Comparison Between Height of Face and Hand. Total numbers= 300

Parameter	Mean Value (mm)
a) Height of the face	176.55
b) Height of the right hand	182.28

(p value 0.000)

Table No. 2: Comparison Between Length of the Nose and Thumb. Total numbers= 300

Parameter	Mean Value (mm)
a) Length of the nose	58.43
b) Length of the thumb	63.70

(p value 0.000)

Distance from tip of index finger to tip of the thumb and chin-nose distance: Mean value of distance from tip of index finger to tip of the thumb was 65.14mm and chin-nose distance was 62.70 mm showing a statistically significant p-value thus indicating no correlation with each other (Table: 3).

Table No. 3: Comparison Between Distance from tip of thumb to tip of index finger and chin nose distance. Total numbers= 300

Parameter	Mean Value (mm)
a) Tip of the right thumb to Tip of the right index finger	58.43
b) Lower border of the septum of the nose to most under surface of the mandible	62.70

(p value 0.000)

DISCUSSION

Leonardo da Vinci,¹² Knebleman,¹³ McGee,¹⁴ Wills,¹⁵ and Misch¹² were able to correlate distances of facial and body landmarks to establish occlusal vertical dimension in skulls where growth, development and occlusion were normal. Substantial benefits from prosthetic point of view have been gained by determination of occlusal vertical dimension from facial and finger measurements. From numerous available measurements, the prosthodontist may proceed with the average of 4 or more measurements especially when they lie within a range of 1-2 mm. Once the initial occlusal vertical dimension is determined, the wax rim or acrylic temporaries may be used to evaluate speech, swallowing and resting jaw position. Accurate occlusal vertical dimension for all individuals cannot be measured precisely by any absolute method. So an attractive choice may be the facial and finger measurements because they require no cephalometric radiographs and costly special devices for measurements.^{7,8}

Leonardo¹² stated that:-

- Chin-hairline distance (Facial height) is equivalent to length of the hand
- The length of thumb is the same as the length of the nose thumb

In our study, the mean value of height of the face and height of the hand were 176.55, 182.28mm respectively. The significant p-value indicated that these two parameters did not coincide with each other. Another comparison described by Leonardo da Vinci, was between length of the nose and length of the thumb for the determination of OVD. The mean value of length of the nose was 58.43mm and length of the thumb was 63.7 mm. Results obtained after the application of t-test, again indicated that both values did not coincide with each other. The mean value of chin-nose distance was 62.7 mm. The above two measurements also did not correlate with the chin nose distance and cannot be recommended for the determination of OVD.

Leonardo¹² also found chin nose distance equal to the following measurements:-

- One third of the face

- The Distance between tip of the thumb to tip of the index finger (When finger pressed together)

In the current study, the mean value of chin nose distance was 62.7 mm. The mean total face height average was 176.5mm and one third of the face came out as 58.8mm. The mean value of distance from tip of the thumb to tip of the index finger was 65.14mm. Results obtained from present study indicate that these two measurements have no close relationship with the chin nose distance and cannot be recommended for the determination of OVD or chin nose distance in Pakistani population. Hence all the above mentioned distances are not recommended for the determination of OVD among Pakistani population.

CONCLUSION

In Pakistani population, no significant relationship found among various craniofacial and body measurements and with the original OVD as described by Leonardo da Vinci and it also confirmed racial differences in various parts of the world.

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Clinical Evaluation of Coded Herbal Medicine (Hypoess) and Angiotensin Receptor Blocker (Candesartan) in Essential Hypertensive Patients

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ABSTRACT

Objective: The basic aim of this research study was to determine the comparative effect of herbal treatment in comparison with standard allopathic medicine in control and treatment of essential hypertensive patients.

Study Design: Prospective and comparative study

Place and Duration of Study: This study was carried out in Department of Pharmacology, HCM&D, FH&MS, Hamdard University, Karachi, from January 2014 to July 2014.

Materials and Methods: A total of 200 patients were enrolled in study and were given Hypoess in one hundred patients while remaining one hundred patients received allopathic medicine Candesartan.

Results: In test group one hundred patients were treated with herbal drug (Hypoess) and it decreased mean systolic blood pressure of study patients with a decrease of 15.17% whereas a reduction of 20.56% was found with allopathic medicine Candesartan Cilexetil. Similarly a decrease of 18.07% was found in mean diastolic blood pressure with herbal medicine in test group patients and a decrease of 21.65% was observed in case of allopathic drug in mean diastolic blood pressure of control group patients.

Conclusion: The effects of herbal medicine were found statistically significant in controlling blood pressure and it has been found as an alternative option to treat essential hypertensive patients with its cost-effectiveness.

Key Words: Hypoess, Angiotensin Receptor Blocker (Candesartan) Systolic & Diastolic Blood Pressure

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INTRODUCTION

According to latest research updates 17 million deaths have been reported because of cardiovascular problems worldwide which is about one third of total deaths¹ among all cardiac manifestations. Whereas 9.4 million deaths have been documented as complications and issues related to high blood pressure². Among all heart diseases 45% of deaths reported because of increased blood pressure. Fig-1. shows IHD, mortality rates³. A large number of people with high blood pressure have been observed and their number was increased from 600 million in 1980 to 1 billion in 2008⁴. The percentage of high blood pressure was recorded more in African region with a percentage of 46% in comparison with a low prevalence in case of American region with

a population of 35% respectively. Moreover a low prevalence was observed in high-income countries 35% in comparison to low-income countries 40%

of patients suffered from hypertension⁵. In Pakistan high blood pressure affects 18% of adults over 15 years of age and 33% of adults over 45 years only 50% of all hypertensive patients are diagnosed and half of them are being treated to manage their disease. According to literature prevalence of hypertension in Pakistan estimated as 29, 26432 millions in an estimated population of 160, 19633 millions⁶. High blood pressure involves the interplay of multiple neural, hormonal, renal and environmental factors. Despite effective treatment regimens the mortality among hypertensive subjects is much higher than that of normal individuals. Although reduction in clinic BP is an important and a major determinant in mortality reduction, several other factors influence survival in hypertensive patients⁷. Essential hypertension is the most prevalent form of high blood pressure in all cases of hypertension. It is also known as primary hypertension in which other causes of high blood pressure like; Reno-vascular disease, adrenal

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medulla tumor (Pheochromocytoma), increase in the release of aldosterone secretion, and other associated causes of hypertension of secondary reason shall be excluded⁸.

MATERIALS AND METHODS

This research clinical study was completed in pharmacology department of HCM&D, Hamdard University. The patients were enrolled from medical OPD of J.P.MC and herbal centres of Karachi.

The study period was consisted of six months duration. The test group patients received Tab. Hypoess 500 mg two times a day for 90 days, while control group study subjects were given allopathic drug Candesartan 16 mg one time every day for 90 days. One hundred patients (aged 25-75 years) were randomized to receive Hypoess comprised of (Dorema ammoniacum (Daroonaj Aqrabi) =3g, Nepeta hindostana (badranj boya) =3g, Rauwolfia serpentina (Asrol) =2g, and Bombyx mori (Abresham) =2g) in the double-blind, parallel group trial. The effect of both drug groups was seen in systolic and diastolic blood pressure.

Statistical Analysis: The statistical analysis was done with the help of excel software students' test was applied for paired data. Interquartile range test was used

to show the normal distribution of data. One way ANOVA and Wilcoxon rank sum test were applied to further reinforce the results. A ($p < 0.05$) was considered as level.

RESULTS

Table 1 and figure 1 shows the variation in the levels of systolic blood pressure for the patients treated with Hypoess and Candesartan at day 0, day 45 and day 90. Both drug groups Hypoess and Candesartan had decreased systolic blood pressure. In Hypoess group patients the mean systolic blood pressure decreased from 161.5 ± 9.14 mmHg on day 0 to 149.8 ± 6.47 mmHg on day 45 and 137 ± 6.11 mmHg was found at day 90. However, the mean systolic blood pressure in case of Candesartan group on day 0 was 162.45 ± 8.60 mmHg which decreased to 139.5 ± 11.94 mmHg on day 45 and to 129.05 ± 6.92 mmHg on day 90. This effect on B.P was observed highly significant ($p < 0.001$) when compared between day 0, 45 and 90 in both drug groups. The average percentage decrease in systolic blood pressure was observed as 15.17 percent from day 0 to day 90 in test group while; a 20.56 percent reduction in systolic blood pressure was observed in case of control group patients.

Table No.1: Changes in systolic blood pressure from day 0, 45 and 90 of treatment with Hypoess and Candesartan in patients with essential hypertension.

Groups	Day 0	Day 45	Day 90	P – value			% Change
				D 0–45	D 45–90	D 0–90	
Hypoess	161.5 ± 9.14	149.8 ± 6.47	137 ± 6.11	$t = 16.13$ $p < 0.001$	$t = 18.85$ $p < 0.001$	$t = 23.3$ $p < 0.001$	↓15.17
Candesartan	162.45 ± 8.60	139.5 ± 11.94	129.05 ± 6.92	$t = 13.7$ $p < 0.001$	$t = 8.11$ $p < 0.001$	$t = 30.8$ $p < 0.001$	↓20.56
Candesartan vs. Hypoess				$t = -7.58$ $p < 0.001$		$t = -8.62$ $p < 0.001$	

Key: Hypoess (test drug), Candesartan (control drug), ↓ Indicates decrease in percentage

Table No.2: Changes in mean diastolic blood pressure from day 0, 45, 90, of treatment with Hypoess and Candesartan in essential hypertensive patients.

Groups	Day 0	Day 45	Day 90	P – value			% Change
				D 0–45	D 45–90	D 0–90	
Hypoess	94.1 ± 11.31	85.9 ± 8.74	77.1 ± 6.12	$t = 17.7$ $p < 0.001$	$t = 17.32$ $p < 0.001$	$t = 22.91$ $p < 0.001$	↓18.07
Candesartan	103.7 ± 8.63	89.25 ± 7.76	81.25 ± 7.05	$t = 13.07$ $p < 0.001$	$t = 17.58$ $p < 0.001$	$t = 21.08$ $p < 0.001$	↓21.65
Candesartan vs. Hypoess				$t = 2.86$ $p = 0.0046$		$t = 4.45$ $p < 0.001$	

Table 2 and figure 2 shows the variation in the levels of diastolic blood pressure for the patients treated with Hypoess and Candesartan. Both Hypoess and Candesartan reduced the diastolic blood pressure. The mean diastolic blood pressure of patients of Hypoess group decreased from 94.1 ± 11.31 mmHg on day 0 to 85.9 ± 8.74 mmHg on day 45 and 77.1 ± 6.12 mmHg on day 90. This effect was found highly significant with

a ($P < 0.001$) when compared between day 0, 45, and 90. The average percentage reduction was 18.07 percent from day 0 to day 90. The mean diastolic blood pressure of Candesartan group patients was 103.7 ± 8.63 on day 0, which reduced to 89.25 ± 7.76 mmHg on day 45 and to 81.25 ± 7.05 mmHg on day 90. A 21.65 % decrease was observed from day 0 to 90 in case of control drug group patients.

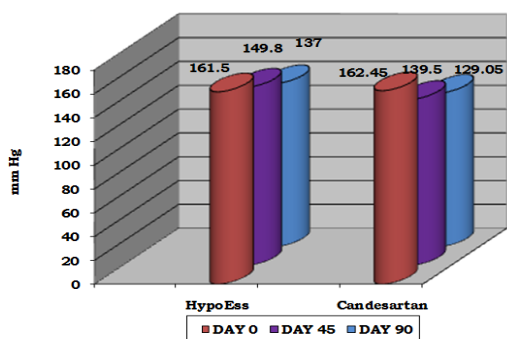


Figure No.1: Changes in systolic blood pressure from day 0, 45, and 90, of treatment with Hypoess and Candesartan in study patients.

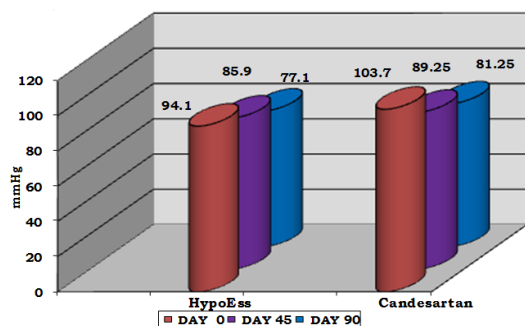


Figure No.2: Changes in diastolic blood pressure from day 0, 45, and 90, of treatment with Hypoess and Candesartan in study participants.

DISCUSSION

High blood pressure is no doubt a disease with great financial and social consequences affecting the population irrespective of any discretion of gender and nation. It is the main cause of progression of cardiovascular disease worldwide. It increases the incidence of stroke, coronary artery disease and problems of cardiac failure globally. In spite of progress in medical sciences the prevalence of hypertension does not decreased accordingly. In the present study we have compared the effects of standard allopathic drug Candesartan Cilexetil as control and coded-herbal formulation (Hypoess) as test drug in essential hypertensive patients. The ARBS are a new approach to treat hypertension⁹. Candesartan is indicated for the treatment of high blood pressure and cardiac failure^{10,11}. Several clinical and basic research studies with Candesartan in healthy volunteers and diagnosed essential hypertensive patients have reported a significant and long lasting decrease in both parameters of blood pressure. The present study reveals the changing effects of Candesartan and Hypoess. The results of present study may also be correlated with the results of research clinical trial of¹² who have observed a reduction of 19% in systolic and 18% decrease in diastolic blood pressure with Candesartan Cilexetil after 4 weeks treatment. Similarly¹³ reported a decrease of 15 mmHg in case of systolic blood pressure and a decrease

of 5-10 mm Hg in mean diastolic blood pressure with a significant ($p < 0.001$) after 8 days treatment, the clinical research study of¹⁴ also found a decrease of 10.8 mmHg in systolic and 7.3 mmHg in diastolic blood pressure with a significant p (< 0.001) after 6 weeks of Candesartan treatment. The research findings of researchers like^{15,16} differ from our findings in regard of decrease in percentage and magnitude of response; this may be because of difference in drug dosage and duration of study. The decrease of systolic and diastolic blood pressure with test group patients have also been reported and found in literature with research studies of^{17,18,19,20}. The antihypertensive effect of herbal medicine has also been reported by^{21,22,23} in their studies.

CONCLUSION

In the present study, we have observed the comparative effects of Candesartan Cilexetil with coded unani medicine Hypoess in essential hypertensive patients. Our main objective was to evaluate the antihypertensive effect of coded herbal medicine with a standard established allopathic medicine. We have observed a 15.17% reduction in mean systolic blood pressure while, 18.07% decrease was observed in case of diastolic blood pressure. This effect on blood pressure was observed to be statistically highly significant.

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Reduction of Testicular Volume of Albino Rats in Lead Induced Toxicity and Reversal of IT with High Dosages of Vitamin C

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ABSTRACT

Objective: Lead toxicity is a common industrial hazard. It affects all systems of the body. The study was conducted to see reduction in volume of the testes of albino rats and reversal of it with high dosages of vitamin C.

Study Design: Experimental study

Place and Duration of Study: The study was conducted in the Department of Anatomy, Post Graduate Medical Institute (PGMI), Lahore from May 2007 to April 2009.

Materials and Methods: 90 albino rats were divided into five groups A, B, C, D and E. Each group was comprised of 18 animals and divided into 3 subgroups 1, 2 and 3 sacrificed after 5th, 6th and 7th weeks. Groups A was given normal saline, group B was given lead acetate 10mg/kg body weight, group C was given lead acetate with 250mg/kg body weight of vitamin C, group D was given lead acetate with vitamin C 500mg/kg body weight and group E was given vitamin C 1000mg/kg body weight with lead acetate intraperitoneally.

Results: The animals sacrificed after the 5th week in subgroups A1, B1, C1, D1 and E1 showed insignificant changes while in subgroup A2, B2, C2, D2 and E2 sacrificed after 6th week, P value was 0.015 which was significant. The P value of subgroup 3 sacrificed after 7th week was 0.002 which was significant.

Conclusion: This study showed that lead toxicity brought caused a significant reduction in the volume of the testes. The testes regained their normal size after heavy dosage of vitamin C.

Key Words: Lead acetate, vitamin C, Toxicity, Volume

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INTRODUCTION

Lead is a common, persistent toxic metal for mankind since thousands of years. Recently it has been seen that lead is causing diseases in millions of people.¹ Lead is a heavy metal present as such in the earth's crust and is also produced with disintegration of uranium.² Environmental scientists and clinicians have much interest for its wide distribution and continuous emission from industry.³ Lead can catalyze oxidative reactions and no system of the body is immune to its toxic effects.^{4,5} Within 14 days lead can reduce stereogenic enzymes 3 beta hydroxyl steroid and 17 beta hydroxyl steroid which are forming follicle stimulating hormone and leutinizing hormone.⁵ Excessive oxygen radicals are produced in the body due to lead than the antioxidant radicals present in the body.⁶ Due to lead toxicity, the size of the testes is reduced because of degeneration of sperms, leydig cells and reduction in diameter of seminiferous tubules.⁷ Vitamin C works as an antioxidant and protect the

testes against oxidative stress.⁸ A heavy dose of vitamin C can increase the sperm count and the volume of the testes is back to normal.⁹

MATERIALS AND METHODS

For this study, 90 animals (albino rats) were taken from National Health Institute Islamabad. These were divided into five groups. Each group had 18 animals as group A,B,C,D and E. The animals of group A were given 10 mg/kg body weight and vitamin C 1000 mg/kg body weight daily intraperitoneally.

In the beginning of the experiment, Group A was divided into subgroup A1, A2 and A3. Group B into subgroup B1, B2 and B3. Group C, D and E were divided into C1, C2 and C3, D1, D2 and D3 and E1, E2 and E3 respectively. Subgroup 1 was sacrificed after the 5th week, subgroup 2 was sacrificed after the 6th week and subgroup 3 was sacrificed after the 7th week. Lead acetate was purchased and Vitamin C was given by the courtesy of Mr. Shoaib.

Statistical Analysis: After measuring the volume, the version SPSS 17 was applied. The P value was evaluated with ANOVA. The significant and insignificant values were calculated and added in to results.

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RESULTS

In subgroup 1, 2 and 3 the volume of the testes was measured by Varnier Calliper. The mean volume of the testes was taken and Lambert formula was

applied. In subgroup A1 the P value was 0.422 as in table 1 which was insignificant.

In multiple comparison of subgroups (A1,B1,C1,D1 and E1) with control, the P value of A1 to B1 was 0.094, A1 to C1 0.394, A1 to D1 0.653 and A1 to E1 was 0.935 which were insignificant as in table 2.

Table No. 1: Volume of Testes of Rats in mm³ of subgroup 1

Sub group	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A1	6	212.983	7.975	3.256	204.613	221.353	199.30	221.80
B1	6	202.783	15.090	6.160	186.946	218.619	188.90	230.70
C1	6	207.900	5.762	2.352	201.852	213.947	201.70	215.00
D1	6	210.316	8.444	3.447	201.454	219.178	201.70	221.80
E1	6	212.500	10.938	4.465	201.020	223.979	195.20	228.00
Total	30	209.296	10.159	1.854	205.503	213.090	188.90	230.70

ANOVA

	Sum of Squares	Df	Mean Square	F	P value
Between Subgroups	415.605	4	103.901	1.008	0.422
Within subgroups	2577.545	25	103.102		
Total	2993.150	29			

Table No. 2: Multiple Comparisons of Volume of Testes in mm³ of subgroup 1

I	J	(I-J) Mm ³	Std. Error	P value	95% Confidence Interval	
					Lower Bound	Upper Bound
A1	subgroup B1	10.200	5.862	0.094	-1.873	22.273
	subgroup C1	5.083	5.862	0.394	-6.990	17.157
	subgroup D1	2.666	5.862	0.653	-9.407	14.740
	subgroup E1	0.483	5.862	0.935	-11.590	12.557
B1	subgroup C1	-5.116	5.862	0.391	-17.190	6.957
	subgroup D1	-7.533	5.862	0.211	-19.607	4.540
	subgroup E1	-9.716	5.862	0.110	-21.790	2.357
C1	subgroup D1	-2.416	5.862	0.684	-14.490	9.657
	subgroup E1	-4.600	5.862	0.440	-16.673	7.473
D1	subgroup E1	-2.183	5.862	0.713	-14.257	9.890

Table No. 3: Mean Volume of Testes of Rats in mm³ of subgroup 2

Sub group	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
subgroup A 2	6	224.250	7.650	3.123	216.221	232.278	212.40	233.30
subgroup B 2	6	202.800	15.728	6.421	186.293	219.306	188.90	228.00
subgroup C 2	6	214.183	15.355	6.268	198.068	230.298	192.90	230.70
subgroup D 2	6	218.433	3.999	1.632	214.235	222.630	212.50	223.60
subgroup E 2	6	223.200	6.254	2.553	216.636	229.763	215.00	233.30
Total	30	216.573	12.858	2.347	211.772	221.374	188.90	233.30

ANOVA

	Sum of Squares	Df	Mean Square	F	P value
Between subgroups	1810.322	4	452.581	3.791	0.015
Within subgroups	2984.217	25	119.369		
Total	4794.539	29			

The P value in sub group 2 was 0.015 which was significant as in table 3. In comparison of subgroups with control, the P value of A2 to B2 is 0.002 which was significant while A2 to C2 0.123, A2 to D2 0.365 and A2 to E2 is 0.869, they were insignificant as in table 4. The P value of all the subgroups was insignificant except A2 to B2.

The volume of the testes was reduced when compared with control subgroup A2 to medicated subgroup B2 while the volume had increased in subgroup C2, D2 and E2 figure 1.

The mean volume of the testes and P value in group 3 was given in table 5 which is 0.002 and

significant. In comparison of subgroups with control, the P value of A3 to B3 was 0.000. A3 to C3 0.070, A3 to D3 0.208 and A3 to E3 is 0.845 (table 6). The P value of all the subgroups was insignificant except A3 to B3.

In multiple comparison the P values in B3 to C3 0.030, B3 to D3 0.008 and B3 to E3 0.001 were significant while in all other subgroups the P was insignificant (table 6).

The volume of the testes was grossly reduced when compared with control subgroup A3 to medicated subgroup B3 while the volume had increased in subgroup C3, D3 and E3 (fig 1).

Table No.4: Multiple Comparisons of Volume of Testes in mm³ of subgroup 2

I	J	(I-J)	Std. Error	P value	95% Confidence Interval	
					Lower Bound	Upper Bound
A2	subgroup B 2	21.450	6.307	0.002	8.458	34.441
	subgroup C 2	10.066	6.307	0.123	-2.924	23.058
	subgroup D 2	5.816	6.307	0.365	-7.174	18.808
	subgroup E 2	1.050	6.307	0.869	-11.941	14.041
B2	subgroup C 2	-11.383	6.307	0.083	-24.374	1.608
	subgroup D 2	-15.633	6.307	0.020	-28.624	-2.642
	subgroup E 2	-20.400	6.307	0.003	-33.391	-7.408
C2	subgroup D 2	-4.250	6.307	0.501	-17.241	8.741
	subgroup E 2	-9.016	6.307	0.165	-22.008	3.974
D2	subgroup E 2	-4.766	6.307	0.457	-17.758	8.224

Table No. 5: Mean Volume of Testes in mm³ of subgroup 3

Sub group	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
A 3	6	224.383	6.975	2.847	217.063	231.703	215.00	233.30
B 3	6	196.133	14.886	6.077	180.511	211.755	182.70	223.60
C 3	6	211.650	16.550	6.756	194.281	229.018	192.80	233.30
D 3	6	215.683	9.922	4.079	205.196	226.170	197.60	226.20
E 3	6	223.050	6.066	2.476	216.683	229.416	212.40	230.70
Total	30	214.180	14.979	2.7348	208.586	219.773	182.70	233.30

ANOVA

	Sum of Squares	Df	Mean Square	F	P value
Between subgroups	3102.768	4	775.692	5.697	0.002
Within subgroups	3404.140	25	136.166		
Total	6506.908	29			

Table No. 6 Multiple Comparisons of Volume of Testes in mm³ of subgroup 3

I	J	(I-J)	Std. Error	P value	95% Confidence Interval	
					Lower Bound	Upper Bound
A3	B 3	28.250	6.737	0.000	14.374	42.125
	C 3	12.733	6.737	0.070	-1.142	26.608
	D 3	8.700	6.737	0.208	-5.175	22.575
	E 3	1.333	6.737	0.845	-12.542	15.208
B3	C 3	-15.516	6.737	0.030	-29.392	-1.641
	D 3	-19.550	6.737	0.008	-33.425	-5.674
	E 3	-26.916	6.737	0.001	-40.792	-13.041
C3	D 3	-4.033	6.737	0.555	-17.908	9.842
	E 3	-11.400	6.737	0.103	-25.275	2.475
D3	E 3	-7.366	6.737	0.285	-21.242	6.508

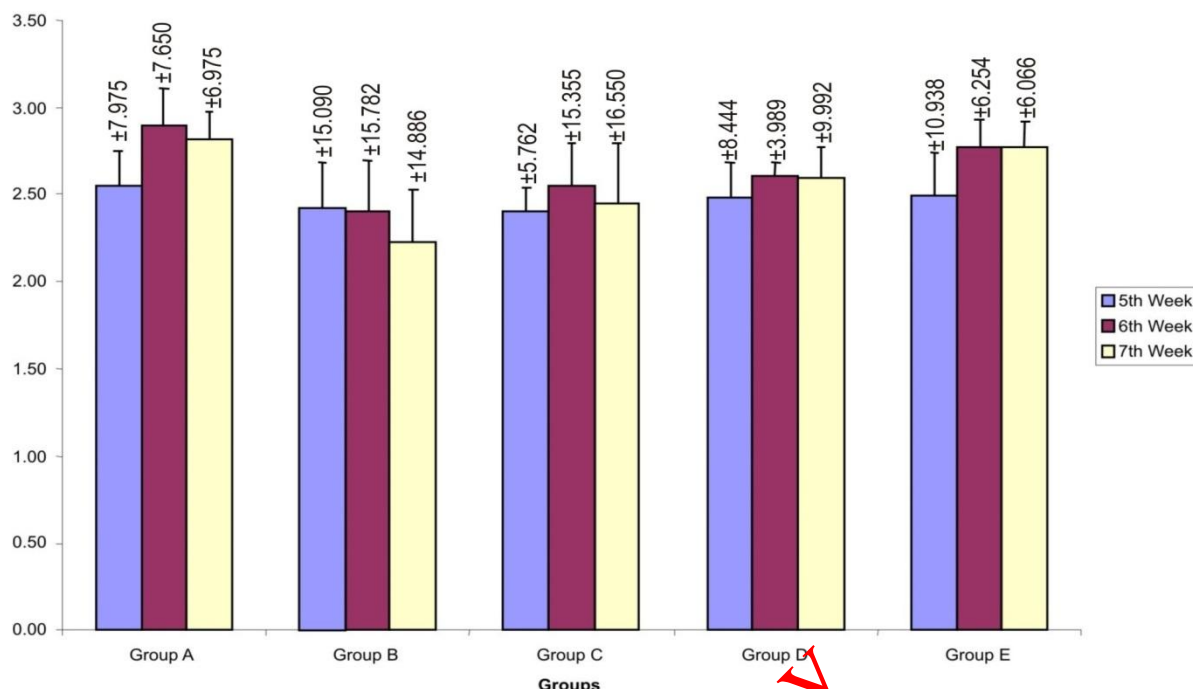


Figure No.1: Comparison of Volume of Testes

DISCUSSION

Sub group A was given only normal saline intraperitoneally and worked as control. Sub group B was given only lead and created toxicity, reduced the volume of testes. When heavy dosages of vitamin C was added in lead toxicity, the volume of the testes becomes normal. Imran et al given the lead to the albino rats and observed the atrophy of the testes.⁷ Biswas observed that the neither only the size of the testes reduced but the gonadal activity also decreased due to lead toxicity.¹⁰ Lead toxicity reduced the body weight and reduced the weight of testes with the reduction of volume of the testes.¹¹ If the lead has been given pups of mice, the size of the testes reduced and the function became abnormal.¹² Lead induced the oxidative stress which reduced the spermatogenesis and the volume of the testes with the reduction of the size of the diameter of seminiferous tubules.¹³ In lead toxicity, ascorbic acid and thiamin increased spermatogenesis and the volume of testes.

CONCLUSION

Lead toxicity reduced the volume of the testes with the reduction of spermatogenesis and diameter of seminiferous tubules while high dosages of ascorbic acid (vitamin C) eliminate the toxic effect of lead and kept the volume of testes normal.

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Influence of Oxidative Stress in Aging on Antioxidant Levels in Healthy Male and Females

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ABSTRACT

Objective: Specific objective of this study was to determine the oxidative stress and anti-oxidant level in aging among 30 to 62 years of healthy male and female of Peshawar City.

Study Design: Descriptive Study.

Place and Duration of Study: This study was conducted in Jinnah Medical College, Peshawar with collaboration of Faculty of Pharmacy, Gomal University D.I. Khan from January 2013 to May 2014.

Materials and Methods: Total 180 study. Subjects were examined and standardized according to essential parameter of age and sex with no history of any disease and were not taking any medicine with same Socio-economic factor used for analysis. 90 male divide into three (03) Groups A,B,C and 90 female Subjects was also divide in 3 Groups A,B,C. Serum Ferric Reducing Antioxidant Power (FRAP) assay of Vitamin C, Vitamin E and Glutathione was determined and analyzed.

Results: Results were observed with the FRAP values of Vitamin C, E and Glutathione values which are summarized in the table in Show in Figure. Vitamin E, a Secondary antioxidant is very important for generation of other antioxidants.

Conclusion: The decrease of value also indicate that defense system is decreased during aging the GSH is an important for defense system of the body. Also decreased during aging, specially in old age after 40 years. It is important to use the supplement with diet to fulfill deficiency of their secondary antioxidant.

Key Word: Oxidative Stress, Antioxidant, FRAP assay

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INTRODUCTION

Oxidative stress is a normal phenomenon in the body. Under normal conditions, the physiologically important intracellular levels of reactive oxygen species (ROS) are maintained at low levels by various enzyme systems participating in the *vivo* redox homeostasis. Therefore, oxidative stress can also be viewed as an imbalance between the pro-oxidants and antioxidants in the body. Any alteration in homeostasis leads to an increased production of these free radicals, much above the detoxifying capability of the local tissues⁽¹⁾. These excessive free radicals then interact with other molecules within cells and cause oxidative damage to proteins, membranes, and genes.^(2,3,4) In this process they often create more free radicals, sparking off a chain of destruction. Oxidative damage has been implicated in the cause of many diseases such as cardiovascular diseases, neuronal degeneration, and cancer and has an impact on the body's aging process

too.⁽⁵⁾ Alongside with ROS other redox metals also play a critical role in development of aging, mutation, and tumour.⁽⁶⁾

In regular cellular mechanism, free radicals scavenger vitamin E, C and glutathione along with enzymes like Catalase, Peroxidases, and superoxide dismutase control the mechanism of DNA repair.⁽⁷⁾

The studies have shown that with age, ROS levels show accumulation in major organ systems such as liver, heart, brain, and skeletal muscle,^(8,9) either due to their increased production or reduced detoxification. Thus, aging may be referred to as a progressive decline in biological function of the tissues with respect to time as well as a decrease in the adaptability to different kinds of stress or briefly an overall increase in susceptibility to diseases⁽¹⁰⁾.

The antioxidants are the first line of choice to take care of the stress. Small molecular-weight nonenzymic antioxidants (e.g., GSH, NADPH, Trace metal, vitamins E and C, and trace metals, such as selenium) also function as direct scavengers of ROS. These enzymatic and nonenzymatic antioxidant systems are necessary for sustaining life by maintaining a delicate intracellular redox balance and minimizing undesirable cellular damage caused by ROS.⁽¹¹⁾

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The present study was conducted to find out the antioxidant status in aging with Healthy Male and Female individuals of 30 to 62 years of Peshawar District.

MATERIALS AND METHODS

Group of Subjects: 90 male and 90 female Healthy volunteers, 90, Male subject were medical examination and divide into three Groups, Group A,B,C each containing 30 Healthy volunteers. 90 Female Subject were divide into Group A, (30-40 Years), Group B, (41-50 Years), Groups C (51-62 Years).

Blood Sampling: Blood Sampling (3-5 ml) was done from each subject by venipuncture using aseptic technique. The blood samples were collect by in clean over dried test tube. The blood serum was separated by centrifugations, after separation of serum, it was transferred to glass bottles with plastic caps. Stored in deep freezer till analysis.

Antioxidant Determination: The FRAP (Ferric Reducing Antioxidant Power) assay is a Recitative test used to determine the concentration of Total Antioxidant in VIVO, described as the total concentration of all electron donating reductants. In the presence of antioxidants the FRAP assay measures the reduction of Ferric to ferrous iron. Because the ferric to ferrous ion reduction occurs rapidly with all redundant with half-reduction. The values in the FRAP assay will express the corresponding concentration of electros donating antioxidants.⁽¹²⁾ This modified assay was used to measure the antioxidant –Capacity in biological Fluids. Standard curves of Vitamin C, Vitamin E and Glutathione were used. The unit of Measure of FRAP value is Micro mole/L.

Biochemical And Statistical Analysis: Serum FRAP assay was done any modified method. The data was analyzed using Microsoft Excel and SPSS-20 P-Value of <0.05 was considered statistically Significant.

RESULTS

90 male individual were selected with some socio economic factor, with no history any disease and were not talking any medium were divide into three Groups A, (n=30) age between 30-40 years, Groups B, (n=30) 41-50 Years, and Group C, (n=30) 51-60 years, were included in this study. Antioxidant levels vise Vitamin C, Vitamin E and Glutathione were determine by FRAP assay. Mean ($\pm$ Sum) values of Group A,C were 446.2 ± 4.57 , 492.13 ± 8.26 , 2462.24 ± 22.8 respectively. Age Group B (41-50 years), 421.4 ± 4.32 , 464.21 ± 4.37 and 2323.2 ± 25.4 . The Groups C (n=30) age between 51-60 years the antioxidant Vitamin C, Vitamin E, Glutathione values was 414.3 ± 4.51 , 457.6 ± 7.34 , 2256.4 ± 21.6 respectively details are given in Table 1. 90 female Healthy volunteer were selected, they were also divided into three Groups according to their age. Group A (n=30) 31-40 years, Group B (n=30) 41-50 years and Group C 51-60years old. The antioxidant levels was analyzed and recorded. Mean ($\pm$ Sum) values were calculated. The results are given in the table 1. The antioxidant starts Vitamin C, Vitamin E and glutathione of Group A, 31-40 years, are as 394.12 ± 3.85 , 434.91 ± 4.45 and 2176.41 ± 20.31 respectively. Group B, 386.55 ± 4.12 , 426.11 ± 4.17 and 2133.66 ± 18.32 respectively and the results of Group C, FRAP value of Vitamin C 384.42 ± 4.18 Vitamin E 423.85 ± 3.15 , Glutathione 2122.85 ± 21.56 , were recorded.

Table No.1: Mean ($\pm$ Sum) of Different Antioxidant Levels in Male and Female of Different Age Groups

Age Group	Male Antioxidants (μ MOLE/L)			Female Antioxidants (μ MOLE/L)		
Group (A) (31-40 yr) N=30	Vitamin C 446.2 ± 4.57	Vitamin E 492.13 ± 8.26	Glutathione 2462.2 ± 24.28	Vitamin C ** 394.12 ± 3.85	Vitamin E ** 434.95 ± 4.45	GSH * 2176.41 ± 20.31
Group (B) (41-50 yr) N=30	421.4 ± 4.32	464.21 ± 4.37	2323 ± 25.4	* 386.55 ± 4.12	* 426.11 ± 4.17	** 2133.66 ± 18.32
Group (C) (51-60 yr) N=30	414.3 ± 4.51	437.6 ± 21.6	2286.4 ± 21.6	* 384.42 ± 4.18	* 423.85 ± 3.15	** 2122.85 ± 21.56
Level of Significance	*** = P<0.02 Very Highly Significant ** = P<0.03 Very Highly Significant * = P<0.04 Significant					

FRAP Value Micromole/L

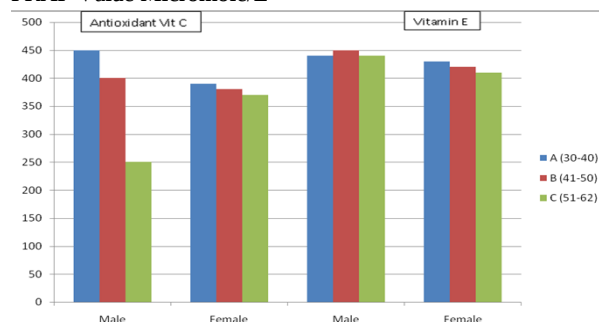


Figure No.1: Comparative FRAP values of Antioxidant in Male and Female of Different Age Groups

FRAP Value Micromole/L

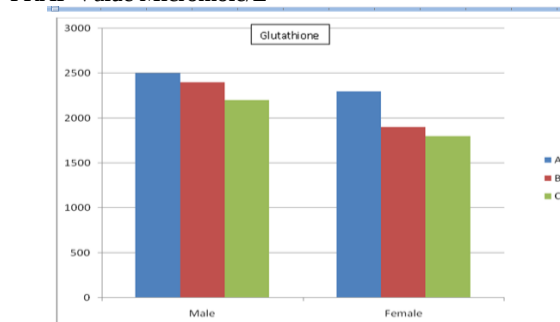


Figure No.2: Comparative FRAP values of Antioxidant in Male and Female of Different Age Groups

DISCUSSION

The result of different age Groups of male and female of healthy individual are summarized in Table 1 and the FRAP values of secondary antioxidants are shown in Figures. These values when compared with male and female a significant decrease in secondary antioxidant. The Vitamin C content was decrease in age Group B & C when compared with age Groups A 30-40 years. This indicates that during aging the Vitamin C content decreased very significantly as compared with the same age Groups of male and females Groups. This value was decreased in old age 50 to 60 years, as time passed the Physiological super glucose has affected on the cells of individual organ in the vitamin C content decrease too much because of rapid process of glycolysis which produce has less oxidative species which affect the organs, ascorbic acid is been found to act as a Cyp inhibitor.^(13,14)

Same results were observed with the FRAP value of Vitamin E and Glutathione values which are summarized in the table-1 and Show in Figures. Vitamin E, a Secondary antioxidant is very important for generation of other antioxidants. The decrease of value also indicate that defense system is deceased during aging, the GSH is an important for defense system of the body. Also decreased during aging, specially in old age after 40 years.

Oxidative stress induced damage particularly the involvement of genetic codes and gene protein interaction. Understanding of genetic alterations and molecular mechanism is certainly helping out to reveal the interaction of free radicals and their role in proteomics, genomics and disease development process.⁽¹⁰⁾

CONCLUSION

Our results show that a decrease in GSH to GSSG ratio indicates a relative shift from a reduced to an oxidized form of GSH, suggesting the presence of oxidative stress at the cellular or tissue level. In aging, an age-related shift from a redox balance to an oxidative profile is observed which results in a reduced ability to buffer ROS that are generated in "normal" condition. Thus a progressive shift in cellular redox status is a primary molecular mechanism contributing to the aging process.⁽¹⁵⁾ It is important to use the supplement with natural diet having Vitamin-C and Vitamin-E to fulfill deficiency of their important secondary antioxidant.

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To Assess the Knowledge of Women in Regards to Antenatal Care

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ABSTRACT

Objective: To evaluate the awareness of women associated to antenatal care at Asian Institute of Medical Sciences Hyderabad.

Study Design: Observational study

Place and Duration of Study: This study was conducted at Gynae/Obs Outpatient Department of Asian Institute of Medical Sciences Hyderabad and LUMHS Hyderabad from 1st January 2014 to June 30th, 2014.

Materials and Methods: Total 150 women were selected in the study. All the awareness regarding antenatal care of the women was documented on Performa.

Results: Total 150 women were selected in the study, mostly cases 53.3% were more than 31 years of the age. Majority of the women 64.4% were uneducated. 69% chose doctors as primary provider for antenatal care, 11% nurses, 19% trained birth attendants. 52% women wished to receive care at home while 47% said at hospital. 70% responded yes to understanding what antenatal care was while 30% had no awareness. 89% of women responded yes it is necessary to have antenatal care while 11% responded that no it is not necessary.

Conclusion: Awareness regarding antenatal is very rare in the women. Women seek antenatal care only when they are symptomatic and not as a preventive or screening measure. The time of pregnancy is a necessary time period during which the promotion of healthy behaviours is imperative. Participation of the family members and the community can perform a very important role for healthy women during pregnancy.

Key Words: Pregnancy, awareness, antenatal care.

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INTRODUCTION

WHO characterizes antenatal care as a dichotomous variable, having had one or more visits to a prepared individual amid the pregnancy.¹ It incorporates routine checkups gave to all pregnant ladies at essential consideration level from screening to escalated life backing along with pregnancy and up to the delivery.² Routine antenatal consideration incorporates medicinal intercessions and guidance that a lady gets amid pregnancy and is a key indicator that pregnant ladies get an expansive scope of wellbeing advancement and preventive wellbeing services,³ including learning about solid works on amid pregnancy, dietary help, aversion and treatment of sickness, conclusion and treatment of different ailments and tetanus toxoid immunization..^{4,5} Furthermore, routine antenatal care can be given at both the family unit and essential social insurance level and serves to guarantee a connection to larger amounts of consideration when required.^{6,7} The World Health Organization suggests that a lady without intricacies ought to have no less than four antenatal care visits beginning from the first trimester to get sufficient pre-birth consideration to minimize and the complications

of the pregnancy.^{8,9}

Pakistan is one of the 11 nations that represented 65% of worldwide maternal mortality in 2008. These nations, which likewise included India and Bangladesh, have a significant experience in maternal deaths worldwide.¹⁰ In Pakistan, the Maternal Mortality Rate (MMR) is elevated in country zones and in less developed provinces.¹¹ The circumstances in Balochistan are particularly serious. In Balochistan, the MMR remains at 750 maternal deaths every 100,000 live births, as contrasted with 227, 314, and 275 in alternate regions of Punjab, Sindh and Khayber Pakhtoon Khwa, respectively.¹² Utilization of routine antenatal consideration at government wellbeing offices in Pakistan for the most part is low. Antenatal care Administration in country zones is lower at around 10%. The District Health Information System in Balochistan reported just 15% of pregnant ladies enlisted for antenatal care in 2010-11.¹³

The Government of Pakistan has been giving maternal wellbeing administrations amid the most recent two decades through essential, auxiliary, and tertiary wellbeing offices, increased by the Lady Health Workers (LHW) Program.¹³ Around 100,000 LHWs are the foundation of the essential social insurance framework. Sufficient antenatal care having great association with the negative birth outcomes like as low birth weight, premature birth. Accessing AC in a

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appropriate manner facilitate women to get knowledge starting in their pregnancies along with complete screening tests.¹⁴ Absence of antenatal consideration, particularly in rustic ranges of Pakistan, is a main reason for maternal and foetal mortality in pregnant women. The quantity of ladies having antenatal consideration is low in many regions and needs to be enhanced for the wellbeing of the people.² Therefore the purpose behind the study to focus the consciousness of ladies with respect to antenatal consideration convenience partner to the ladies amid pregnancy.

MATERIALS AND METHODS

This prospective observational study was completed at Gynae/Obs OPD branch of Asian Institute of Medical Sciences, and Liaquat college clinic Hyderabad from January first, 2014 to June 30th, 2014. 150 ladies were chosen in the study. All ladies of reproductive age with past history of equality were incorporated in this study. All unmarried women and nulliparous women were barred from this study. An aggregate of 150 ladies was randomly chosen over duration of six months for this study. The information was gathered through a semi-organized poll made out of five questions. All the knowledge with respect to antenatal consideration was recorded. All the information was investigated by utilizing the SPSS version 16.0.

RESULTS

Total 150 women were included in the study, majority of the cases 53.3% were above 31 years of the age, while 46.6% women were under 30 years of the age. 56.6% women having low parity (<4 children), while 43.3% women were found with high parity (>4 children). Majority of the women 64.4% were uneducated, while 36.6% were educated. **Table 1.**

Table No. 1. Basic characteristics of the women.
N=150

Characteristics	Frequency/(%)
Age	
<30 years	70/(46.6%)
>31 Years	80/(53.3%)
Parity	
<4 children (low)	85/(56.6%)
>4 children (high)	65/(43.3%)
Educational status	
Educated	55/(36.6%)
Uneducated	95/(64.4%)

From a total of 150 women, 69% (n=104) chose doctor as primary provider for antenatal care, 11% (n=16) nurse, 19% (n=29) trained birth attendant, and .006% (n=1) did not know. **Figure 1.**

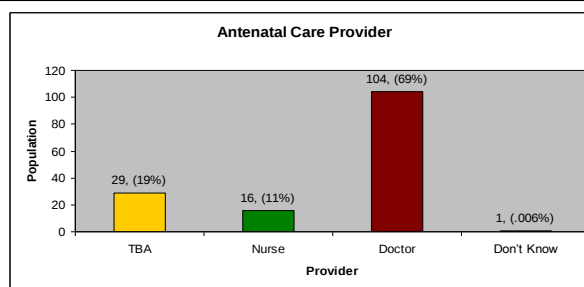


Figure No. 1. Distribution of the antenatal care provider.
N=150

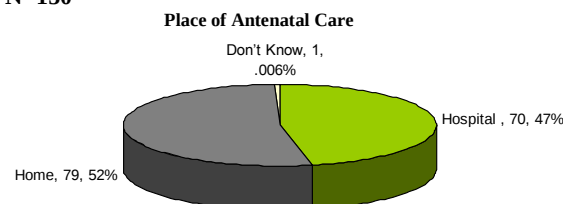


Figure No. 2: Distribution of the places for antenatal care provider. N=150

Table No.2: Distribution of women regarding knowledge of antenatal care. N=150

Characteristics	Frequency/(%)
Knowledge/Understanding of antenatal care	
Yes	105/(70.0%)
No	45/(30.0%)
Necessary of antenatal care	
Yes	134/(89.3%)
No	16/(10.6%)
Knowledge regarding component of antenatal care	
Investigations	82/(55%)
diet	81/(54%)
exercise	12/(0.8%)
medicine	40(26.0%)
don't know	16(11.0%)

From a total of 150 women, 52% (n=79) of women wished to receive care at home while 47% (n=70) said at hospital. About .006% (n=1) did not know. **Figure 2.** From a total of 150 women, 70% (n=105) responded yes to understanding what antenatal care was while 30% (n=45) did not understand. 89% (n=134) of women responded that yes it is necessary to have antenatal care while 11% (n=16) responded no it is not necessary. Investigations 55% (n=82) and diet 54% (n=81) were major concerns during antenatal care. **Table 2.**

DISCUSSION

In Pakistan, wellbeing administrations are poor by and large; however they are especially inadequate for maternal wellbeing prompting antagonistic results for both ladies and infants. Antenatal care is named as one of the four pillars of the safe motherhood initiative:

although its relative contribution to maternal health care has been under debate, its importance cannot be denied. In the present series a total of 150 women from a reproductive age group were selected randomly for study and majority of the cases 53.3% were above 31 years of the age, while 46.6% women were under 30 years of the age. 56.6% women having low parity (<4 children), while 43.3% women were found with high parity (>4 children). Nisar N, et al¹⁵ reported mean age 29±3.95 years.

Educational status is important effectible factor on early AC. Long et al.¹⁶ Mentioned that ladies of western China those having less educational status were less likely to get AC. Nisar N, et al¹⁵ mentioned 40% women were illiterate, 47% educated up to primary education and 9% secondary level. Advanced educational status tend to positively concern Health-seeking behaviours, and the educational status also can play important role in the birth control.¹⁷ There are various clarifications for why instruction is a key determinant of demand. Education is likely to enhance female autonomy: women thereby develop greater confidence and capabilities to make decisions regarding their own health, as well as their children's health. It is likely that more instructed ladies look for higher quality administrations and have more noteworthy capacity to utilize medicinal services and inputs to deliver better wellbeing. This study also found majority of the women 64.4% uneducated.

In this study 52% of women wished to receive care at home while 47% said at hospital and .006% did not know. The reasons were primarily due to low income sources, they believed home provided a more aseptic environment as compared to hospitals, there was no tradition of antenatal care due to lack of doctors in villages, spouses did not agree with the concept, a family member was a trained birth attendant, antenatal care facilities should only be taken when symptoms or illnesses arise during pregnancy. Similarly in a study of Karachi, mentioned, among the women who did not receive antenatal care, 28% reported that they did not know it was required, 10% were not advised by anyone, 8% said that they did not have permission from home, 10% found the facility to be far away, 7% reported that transport was not available and 37% did not have any reason.¹⁸

Ghafari A, et al¹⁹ reported that majority of women 57.7% had a negative attitude towards the antenatal care of pregnancy, and 42.3% had a positive attitude. While in this study 70% responded yes to understanding what antenatal care was 30% (n=45) did not understand. On other hand 89% of women responded that yes it is necessary to have antenatal care while 11% responded no it is not necessary. From all of the women 55% had knowledge that, Investigations are essential during pregnancy and 54% women suggested that diet is a major concern during antenatal care.

CONCLUSION

The idea of antenatal consideration is not clear till now in the minds of numerous ladies. Ladies are confronting numerous troubles to go to the clinic in view of transportation issues, or that authorization by the spouse is not given, an individual is not accessible to go with the lady to a health centre, and that the expense of antenatal consideration is in large quantity of their base wages. Family and community should participate amid pregnancy. Their backing can give support and inevitably enhance the wellbeing of mother and the unborn tyke. Antenatal consideration can go about as a vehicle for various intercession projects, for example, administration of iron deficiency, jungle fever, sick health, immunizations, and sexually transmitted illness. Training is exceptionally vital, it is likely that more instructed ladies look for higher quality administrations and have more notable capacity to utilize medicinal services inputs to create better health.

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To Determine the Most Common Semen Abnormalities and Risk Factors Associated With Different Types of Semen Abnormalities in Infertile Male

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ABSTRACT

Objective: To determine the most common semen abnormalities and risk factors associated with different types of semen abnormalities in infertile male.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted in the Department of Obstetrics and Gynaecology, Unit B, Lady Reading Hospital Peshawar, for a period of one year from 1st January 2009 to 31st December 2009.

Materials and Methods: Hundred male patients with abnormal semen analysis were recruited after fulfilling the inclusion criteria. Semi structured Questionnaire was filled and data was collected regarding association of male infertility with common risk factors. Results were expressed in percentages. Descriptive statistics was applied using Microsoft Excel and the frequency and percentages were calculated.

Results: Among 100 infertile male patients, 44% patients had asthenospermia, 17% had oligospermia 14% had azoospermia, 13% had pyospermia and 12% had oligoasthenospermia. Drug addiction was (cigarette or cigarette plus THS) observed in 55% (n=55) of patients. Among all participants 46% (n=46) were overweight or obese, In 40% (n=40) infertile males, there were coital problems. Systemic illness was found to be in 34% (n=34) of males with infertility, of all the participants largest number of infertile males were farmers 19% (n=19).

Conclusion: Asthenospermia accounted for the frequently associated problem of abnormal semen analysis followed by oligospermia, azoospermia pyospermia and oligoasthenospermia respectively. Cigarette smoking and obesity are the most frequently associated risk factors.

Key Words: Male Infertility, Semen Abnormalities, Oligospermi

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INTRODUCTION

The inability to conceive children is experienced as a stressful situation by individuals and couples all around the world. The consequences of infertility are manifold and can include societal repercussions and personal suffering. It is defined as the inability to conceive after at least one year of unprotected intercourse, it affects about 8-12 % of all married couples. In about one third of these couples, a male factor is the primary problem and in another one quarter, both the male and the female partner contribute to the infertility. Recognizable causes of male infertility are present in about 40-50 % of cases. In Pakistan the prevalence of male infertility is reported as 21.91%.¹⁻³

In men risk factors for infertility, such as male accessory gland infection (including epididymitis and prostatitis), mumps orchitis, varicocele and cryptorchidism are well documented.^{4,5} Several studies

have demonstrated the hazardous effect of environmental factors such as toxic substances, pesticides and radiation on male reproductive function.^{6,7} The abuse of tobacco, alcohol and caffeine also have been linked with male infertility^{8, 9}. Most of these factors are preventable. Incidence of preventable infertility is much higher in developing countries.⁴ Treatment of male fertility is expensive and there is no surety and in poor country like us it cannot be easily afforded. The other main problem is delay in seeking treatment because of stigma attached to male infertility.

Semen analysis is a key element in the fertility evaluation of men and permits male reproductive potential to be evaluated in association with possible

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risk factors. This study was conducted to determine the most common risk factors of male infertility in men attending the infertility clinic so awareness is created to possibly avoid them.

MATERIALS AND METHODS

This study was conducted in Gynae B unit LRH from 1st January 2009 to 31st December 2009. Couples presented with infertility to Gynae OPD were further investigated. The males with abnormal semen analysis were enrolled in study, after the procedures had been described to them. A separate room in Gynae OPD was used for these male infertile patients. Men with recent history of febrile illness and reversal of vasectomy, and men with normal semen analysis were excluded. A detailed history and physical examination was carried out. The structured questionnaire was designed to obtain relevant medical and reproductive health history, and lifestyle information. Two semen analyses of not less than fourteen and not more than ninety days apart were routinely undertaken. Semen samples were obtained by masturbation after 3-5 days sexual abstinence. Semen assessment was performed within one hour from collection according to the routine method described by WHO.¹⁰ The descriptive statistics was applied using Microsoft Excel and the frequency and percentages were calculated. W.H.O criteria for Semen analysis was used i.e. volume 2ml or more, PH 7.2-7.8, Sperm concentration $>20 \times 10^6$ cell/ml, Motility of $>50\%$ forward movement, Morphology $>30\%$ of normal form, WBC $<1 \times 10^6$ cells/ml, Abnormal sperm parameters were, Azoospermia (no sperm cell) Oligospermia ($<20 \times 10^6$ sperm/ml), Asthenozoospermia (abnormal motility).¹⁰

RESULTS

Total of 100 males with infertility was evaluated. In this study it is observed that infertility is most commonly

observed in males within the age group of 35-50 years (Table 1). The most common abnormality of semen analysis was asthenozoospermia which was found in 44% (n=44) patients. Other abnormalities observed are shown in Table 2. Fertility status (whether primary or secondary) was noted with each type of semen abnormality found (Table 3). A history of systemic illness, alcohol consumption and tobacco smoking, STIs, occupation, coital problems, testicular damage, and maldescent, and varicocele, was obtained and it was found that they had statistically significant associations with impaired semen quality. In this study it was observed that 55% (n=55) had no history of medical illness, the frequency of medical illness with different types of semen abnormality is shown in Table 4. Among all participants 46% (n=46) were overweight, varicocele was present in 18% (n=18), undescended testis was observed in 9% (n=9) of all patients, considering occupation farmers 19% (n=9) and drivers 17% (n=17) were most commonly effected, drug addiction to cigarette alone or with chars was found in 55% (N=55), coital problems were present in 40% (n=40) of these men, antidiuretics were being used by 39% (n=39) of these infertile males.

Table No.1: Age of patient presented with infertility

Age (years)	No.	%
> 24	7	7.3
25 – 34	26	26.0
35 – 50	51	51.0
> 50	16	16.0

Table No.2: Type of abnormality

Type of abnormality	No.	%
Asthenospermia	44	44.0
Oligospermia	17	17.0
Azoospermia	14	14.0
Pyospermia	13	13.0
Oligoasthenopermi	12	12.0

Table No.3: Fertility status

Type of infertility	Asthenospermia N=44	Oligospermia N=17	Azoospermia N=14	Pyospermia N=13	Oligoasthenopermi N=12	Overall analysis
Primary	25	10	14	7	10	66%
Secondry	19	7	0	6	2	34%

DISCUSSION

The male factor is the cause of the infertility in about one third infertile couples and is regarded as a condition that is difficult to treat in a low-cost setting. The risk factors of male infertility differ from one country to another, so it is important that any developing country should determine the most influential factors in their population. In this study Asthenospermia 44% (n=44) accounted for the frequently associated problem of abnormal semen analysis followed by oligospermia 17% (n=17), azoospermia 14% (n=14) pyospermia 13% (n=13) and oligoasthenospermia 12% (n=12)

respectively. Another study on the aetiological factors of infertility also shows asthenospermia as the most common abnormal semen parameter (63.23%), while the second third and fourth common abnormal parameters were oligospermia, azoospermia and pyospermia respectively.¹¹

Age was observed and In this study the maximum number of infertile male were between 35 and 50 years of age. As men age, their testes tend to get smaller and softer, and sperm morphology (shape) and motility (movement) tend to decline. In addition, there is a slightly higher risk of gene defects in their sperm. Aging men may develop medical illnesses that

adversely affect their sexual and reproductive function. Another study shows that paternal age of >35 years halves the chance of achieving a pregnancy compared with a paternal age of <25 years.¹² The effect of age on

male fertility is more noticeable after the age of 50¹³, with studies showing a concomitant increase in adverse outcome in the offspring.^{14,15}

Table No.4: Association of common risk factors and male infertility

Risk Factors	Astheniospermia N=44	Oligospermia N=17	Azospemia N=14	Pyospermia N=13	Oligiasthenospermia N=12	Overall
No significant problem	59%(n=26)	88.23%(n=15)	50% (n=7)	15.38%(n=2)	41.66%(n=5)	55%
Recurrent UTI	9.09%(n=4)	11.76%(n=2)	7.14% (n=1)	30.76%(n=4)	16.66%(n=2)	13%
STI	9.09%(n=4)	Nil	Nil	46.15%(n=6)	8.33%(n=1)	11%
Mumps/orchitis	6.81%(n=3)	Nil	14.28%(n=2)	7.69%(n=1)	25%(n=3)	9%
Recurrent uRTIs	4.54%(n=2)	Nil	21.42%(n=3)	Nil	8.33%(n=1)	6%
Chronic Gastritis	4.54%(n=2)	Nil	Nil	Nil	Nil	2%
Hypertensive	2.27%(n=1)	Nil	Nil	Nil	Nil	2%
Asthmatic	2.27%(n=1)	Nil	7.14% (n=1)	Nil	Nil	2%
Normal BMI (18.5-24.9)	47.72% (n=21)	58.8%(n=10)	50%(n=7)	53.84%(n=7)	75%(n=9)	54%
Overweight (25-29.9)	36.36% (n=16)	29.41%(n=5)	35.71%(n=5)	38.46%(n=5)	75%(n=9)	34%
Obese (30 and above)	15.90% (n=7)	11.76%(n=2)	14.28%(n=2)	7.69%(n=1)	Nil	12%
No abnormality	77.27%(n=34)	76.47%(n=13)	78.57%(n=11)	100%(n=13)	83.33%(n=10)	77%
Unilateral varicocele	13.63%(n=6)	5.88%(n=1)	14.28%(n=2)	Nil	8.33%(n=1)	10%
bilateral (Varicocele)	9.09%(n=4)	11.76%(n=2)	7.14%(n=1)	Nil	8.33%(n=1)	8%
No abnormality	88.63%(n=39)	82.35%(n=14)	35.71%(n=5)	76.92%(n=10)	66.66%(n=8)	76%
Unilateral undescended testes	6.81%(n=3)	5.88%(n=1)	Nil	7.69%(n=1)	8.33%(n=1)	6%
Bilateral undescended testes	Nil	NIL	21%(n=3)	Nil	NIL	3%
Swollen tender testes	2.27%(n=1)	5.88%(n=1)	Nil	7.69%(n=1)	8.33%(n=1)	4%
Small sized Testes	2.27%(n=1)	5.88%(n=1)	35.71%(n=5)	7.69%(n=1)	Nil	8%
Hypospadias	Nil	Nil	7%(n=1)	Nil	8.33%(n=1)	2%
Drivers	20.45%(n=9)	11.76%(n=2)	28.47% (n=4)	15.38%(n=2)	Nil	17%
Farmers	11.36%(n=5)	35.29%(n=6)	21.42%(n=3)	7.69%(n=1)	33.33%(n=4)	19%
Shopkeepers	11.36%(n=5)	17.64%(n=3)	Nil	7.69%(n=1)	16.66%(n=2)	11%
Cook	11.36%(n=5)	Nil	14.28%(n=2)	Nil	Nil	7%
Laborer	9.09%(4)	29.41%(5)	7.12%	5(38.46%)	Nil	14%
PCO operator	9.09%(4)	Nil	Nil	Nil	Nil	4%
Painter	6.81%(3)	Nil	Nil	1(7.69%)	8.33%(1)	5%
Soldier	4.54%(2)	Nil	Nil	Nil	8.33%(1)	3%
Tailor	4.54%(2)	Nil	1(7.12%)	2(15.38%)	25%(3)	8%
Butcher	2.27%(1)	Nil	1(7.12%)	Nil	Nil	2%
Pharmacist	2.27%(1)	Nil	Nil	Nil	8.33%(1)	2%
Teacher	2.27%(1)	Nil	Nil	Nil	Nil	1%
Clerk	2.27%(1)	Nil	Nil	1(7.69%)	Nil	2%
Welder	2.27%(1)	Nil	1(7.12%)	Nil	Nil	2%
Cobbler	Nil	5.88%(1)	1(7.12%)	Nil	Nil	2%
Cigarette + Chars	27.27% (n=12)	23.52%(4)	14.28%(n=2)	23.07%(n=3)	16.66%(2)	23%
Cigarette Only	34.09% (n=15)	11.76%(2)	35.71%(n=5)	30.76%(n=4)	50%(6)	32%
Not addicted	29.54%(n=13)	58.82% (10)	42.85%(n=6)	38.46%(n=5)	5 (41.66%)	39%
Alcohol	9.09%(n=4)	1 (5.88%)	1 (7.12%)	Nil	Nil	6%
No Coital problems	24 (54.54%)	12 (70.558%)	6 (42.85%)	10(76.92%)	8(66.66%)	60%
Prolonged abstinence	13 (29.54%)	2(11.76%)	Nil	1(7.69%)	3(25%)	19%
Decreased Libido	5(11.36%)	1(5.88%)	5(35.71%)	1(7.69%)	Nil	12%
Erectile Dysfunction	Nil	Nil	3 (21.42%)	1(7.69%)	Nil	4%
Premature Ejaculation	2 (4.54%)	2(11.76%)	Nil	Nil	1(8.33)	5%
Antidepressants	15(34%)	5(29.41%)	6(42.85%)	3(23.07%)	5(41.66%)	34%
Amiodarone	1(2.27%)	1(5.88%)	Nil	1(7.69%)	1(8.33%)	4%
Cimetidine	6(13.63%)	1(5.88%)	3(21.42%)	3(23.07%)	1(8.33%)	14%
Sulfasalazine	Nil	Nil	1 (7.14%)	Nil	Nil	1%
Phenothiazines	2(4.54%)	Nil	Nil	1(7.69%)	Nil	3%
Spironolactone	Nil	Nil	Nil	Nil	1(8.33%)	1%
Alpha- blockers	2(4.54%)	1(5.88%)	Nil	1(7.69%)	1(8.33%)	5%
No medicine used	24(54.54%)	7(41.17%)	4(28.57%)	4 (30.76%)	3(25%)	42%

In this study the maximum number of infertile male were between 35 and 50 years of age. Asthenospermia was most commonly found in drivers 20.45% (n=9). Another factor was the addiction status with majority being addicted to cigarette 34.09% (n = 15). Obesity was found in 36.36% (n=16) of patients with asthenospermia. Other important factor associated with Asthenospermia was prolonged abstinence from sexual activity 29.54% (n=13). Chronic systemic illness was not commonly observed in these patients, UTI and STI being present in only 9.09% (n=4). Varicocele was present in 2.27 % (n=10) of patients with asthenospermia. Another study showed association between male infertility and drivers, Scrotal temperature increased significantly ($P<0.0001$) in driving posture after 2 h of driving, reaching a value 1.7-2.2°C higher than that recorded while walking. Increase scrotal temperature is associated with abnormal sperm parameters.¹⁶ There is evidence that a sedentary lifestyle, most likely through elevated scrotal temperature, can affect sperm production.¹⁷ Second common abnormality was oligospermia. Most of these were farmers 35.29% (n=6). It is possible that there exposure to pesticides while working in fields could have led to this problem. Raised BMI was observed in 29.41% (n=5), cigarette and chars addiction was seen in 23.52% (n=4).

Obesity is an important lifestyle factor that has been shown to be associated with poor semen quality.^{18,19} The mechanism by which obesity causes altered semen parameters is thought to be through an imbalance of reproductive hormone levels, as obese men have reduced sex hormone binding globulin and elevated estrogen levels. Altered metabolism of environmental toxins, sedentary lifestyle factors and increased risk of sexual dysfunction are also thought to contribute to reduced fertility in heavier men.¹⁹ In this study 34% were overweight and 12% were obese. Azospermia was observed in 13 patients, majority of them were taking antidepressants 42.85% (n=6), small sized testis were found in 35.71% (n=5) majority of them were drivers 28.47% (n=4). Among them 35.71% (n=5) were smoking cigarettes. In another study Tobacco smoking and cannabis consumption have been shown to reduce semen parameters.²⁰

Pyospermia were noted and 46.15% (n=6) were having STI's while 30.76% (n=4) had recurrent UTI's, making these two the major factor associated with it. Majority of them were laborer 38.46% (n=5). In another study Pyospermia is found on the semen analysis of up to 23% of men who are being investigated for infertility. The presence of significant numbers of white blood cells in the semen is correlated with poorer sperm parameters and diminished fertility. pyospermia is oftenly associated with underlying genitourinary infection. Treating these patients with different antibiotics regimens appears to reduce temporarily the

white blood cell count in the semen and improve the fertility rates.²¹

Oligoasthenospermia was most common in farmers 33.33% (n=4), drug addiction (cigarette) was present in 50% (n=6), prolonged abstinence was there in 25% (n=3) recurrent UTI was a problem in 16.66% (n=2). Another study showed that prolonged abstinence from sexual activity adversely effect sperm parameters. They observed that 5,983 normozoospermic samples showed a significant decrease in the percentage of sperm motility and normal morphology to mean values of 33.1% and 7.0%, respectively, as a result of sexual abstinence.²²

Varicoceles, a collection of dilated refluxing veins in the spermatic cord, are found in 11.7% of men with normal semen and 25.4% of men with abnormal semen.²³ The exact mechanism by which a varicocele can affect fertility is not well understood but theories include increased scrotal heating and altered testicular steroidogenesis.²⁴ In this study 10% had unilateral varicocele while 8% had bilateral varicocele. Cryptorchidism is failure of descent of the testes into the scrotum during fetal development. This may result in the testes being within the abdomen, inguinal canal, or other location. Both unilateral and bilateral cryptorchidism, are associated with impaired spermatogenesis and an increased risk of testicular tumours. In one other study undescended testis were reported in 7.8% of patients with male infertility.²⁵ In this study 9% of males were having cryptorchidism. Certain Medications taken for one purpose or another also effect fertility, In this study 34% were taking antidepressants. The effect of antidepressants on infertility is shown in study conducted by Aldhous.²⁶

CONCLUSION

Male infertility is an important aspect of health care, and semen analysis still remain the basic test and choice of investigation before embarking on any sophisticated techniques to investigate male patients with infertility. Healthy life style and awareness about the preventable causes of male infertility can make a difference in number of infertile male. Drug addiction, obesity and coital problems were major risk factors associated with infertility in this study. Gynae OPDs must have infertility clinics on weekly basis, where the couples and not the husbands or wives alone should be thoroughly evaluated.

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Bacteriological Profile and Antibiotic Susceptibility of Blood Isolates in Blood Stream Infections

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ABSTRACT

Objective: The current study was aim to analyse Bacteriological Profile and Antibiotic Susceptibility of Blood Isolates in Blood Stream Infections.

Study Design: Experimental study

Place and Duration of Study: This study was conducted at Department of Pathology, Frontier Medical & Dental College, Abbottabad from January 2010 to August 2011.

Material and methods: 1056 blood samples were collected aseptically. The positive blood isolates were identified by standard biochemical tests and their antimicrobial resistance patterns were checked using modified Kirby-Bauer method.

Results: Blood cultures were positive in 152 (14.39%) cases. Gram negative isolates were predominant with 104 (68.42%) cases, consisting, in decreasing frequency, of Salmonella typhimurium (39, 37.5%), Pseudomonas aeruginosa (23, 22.1%), Escherichia coli (18, 17.3%) and Klebsiella pneumoniae (14, 13.4%). Staphylococcus aureus accounted for 30 (19.7%) cases followed by coagulase negative Staphylococcus aureus (CONS) in 11 (7.23%) cases among gram positive isolates. Gram positive bacteria were highly resistant to amoxicillin while they were sensitive to cefuroxime and aztreonam. Among gram negative organisms, Escherichia coli & Klebsiella pneumoniae were sensitive to ofloxacin while Pseudomonas aeruginosa to ceftazidime.

Conclusion: Our study provides important information about the bacteriological profile and antibiotic resistance pattern of blood isolates in blood stream infections. It will help clinicians to choose an empirical antibiotic therapy to treat such infections.

Key Words: Blood Stream Infection, Blood Culture, Bacteriological Profile, Antibiotic Susceptibility

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INTRODUCTION

Blood stream infections (BSIs) are associated with significant morbidity and mortality. They can cause illnesses which ranges from self-limiting infections to severe life-threatening diseases requiring admission to intensive care units^{1,2}. They are caused by wide variety of organisms and this pattern depends on geographical location^{1,3}. Different foci within the body like respiratory, intra-abdominal and genitourinary areas, serves as a nidus for these infections^{4,5}. Incidence of these infections has considerably increased due to the use of indwelling medical devices, changing antibiotic resistance pattern of microorganisms and failure to follow infection control techniques by medical personnel^{2,5-8}.

Blood culture is the most important laboratory technique for the diagnosis of blood stream infections. It will help isolate the bacterial pathogens and determine their antibiotic sensitivities, which later helps in the formation of bacteriological profile and antibiotic resistance pattern of these pathogens which, subsequently, serves as a guide for the selection of appropriate treatment for these infections^{4,9}. Early initiation of treatment for blood stream infections significantly reduces the morbidity and mortality associated with these infections⁶. Therefore, blood culture is the mainstay of diagnosis and treatment of blood stream infections.

In most cases, empirical antibiotic therapy should be started to treat blood stream infections even before the results of blood cultures are available. This requires the knowledge of common bacterial pathogens prevalent in that area, based on blood culture results, to help clinician choose the right antibiotic therapy^{1,10}. Therefore, this study is carried out to analyze the frequency of various bacterial pathogens that are responsible for blood stream infections as identified by blood culture which would serve as a useful guide for

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clinicians in deciding upon empirical antibiotic therapy for these infections.

MATERIALS AND METHODS

This study was performed at Department of Pathology, Frontier Medical & Dental College, Abbottabad, from January 2010 to August 2011. A total of 1056 blood samples were collected.

All indoor and outdoor patients who presented with symptoms of blood stream infection were included in this study. Using strict aseptic technique, 2 ml (children) and 5-10 ml (adults) of blood was collected. Blood sample was inoculated into culture bottles containing soybean-casein digest broth, for both aerobes and anaerobes (from Becton, Dickinson & Company, USA). They were incubated for seven days. Negative cultures were observed for seven more days before issuing a negative report. For positive blood cultures, growth was identified by gram staining, colony morphology and using standard biochemical tests¹¹.

Modified Kirby-Bauer method was used to check the antibiotic susceptibility of isolated microorganisms as per CLSI guidelines¹². The antibiotics used were; amoxicillin (25µg), cefuroxime (10µg), cefpirome (30µg), cotrimoxazole (1.25/23.75µg), ofloxacin (20µg), aztreonam (30µg), ceftazidime (30µg) and imipenem (10µg).

RESULTS

Total 1056 blood samples were collected. Out of which, bacterial growth was present in 152 (14.39%) cases as shown in Figure 1. Therefore, blood culture positivity was 14.39%.

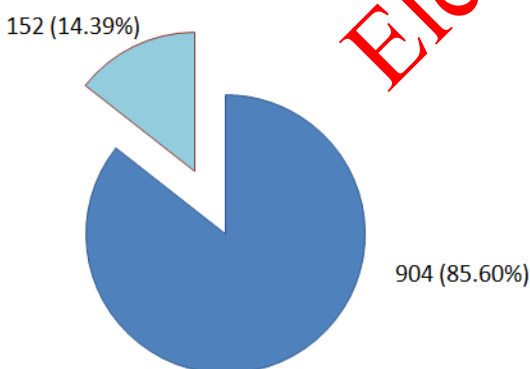


Figure 1: Frequency of blood isolates in the study sample

Bacterial isolates were present in 152 cases. Their prevalence according to gram staining was shown in Figure 2. Gram negative isolates were observed in 104

(68.42%) cases while gram positive isolates in 48 (31.57%) cases.

Distribution of the bacterial isolates is shown in Figure 3. Among gram positive isolates, *Staphylococcus aureus* was isolated in 30 (19.7%) cases followed by coagulase negative *Staphylococcus aureus* (CONS) and *Streptococcus viridans* which were isolated in 11 (7.23%) and 7 (4.6%) cases respectively. Among gram negative bacteria, *Salmonella typhimurium* was isolated in 39 (37.5%) cases followed by *Pseudomonas aeruginosa*, *Escherichia coli* and *Klebsiella pneumoniae* which were isolated in 23 (22.1%), 18 (17.3%) and 14 (13.4%) cases respectively.

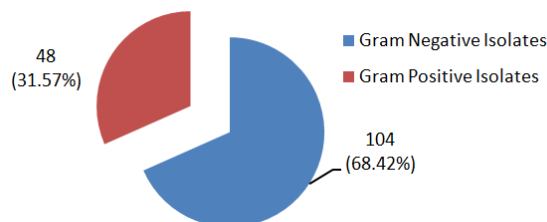


Figure No.2: Bacterial isolates in study sample based on gram staining.

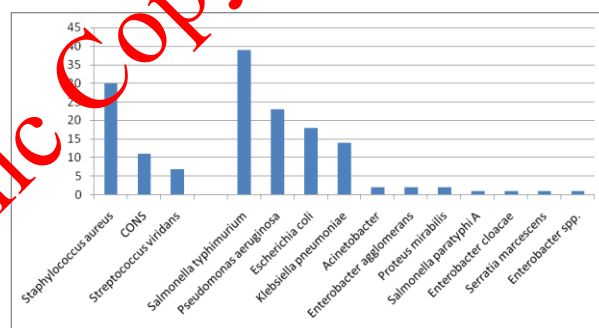


Figure No.3: Distribution of gram positive & gram negative bacterial isolates

The antibiotic susceptibility of different microorganisms is shown in Table 1 & Table 2. Gram positive bacteria were fully resistant to amoxicillin while they were sensitive to cefuroxime and aztreonam as shown in Table 1.

Table No.1: Sensitivity of gram positive blood isolates to different antibiotics

Antibiotic	Sensitivity
Amoxicillin	0.00%
Cefuroxime	70%
Aztreonam	60%
Co-trimoxazole	45%

Among gram negative organisms, *Escherichia coli* & *Klebsiella pneumoniae* were highly sensitive to ofloxacin while *Pseudomonas aeruginosa* to cefpirome and ceftazidime as shown in Table 2.

TableNo.2: Sensitivity of gram negative blood isolates to different antibiotics

	Amoxicillin	Ceftazidime	Aztreonam	Cefpirome	Ofloxacin	Imipenem
<i>Escherichia coli</i>	60%	54%	62%	-	80%	40%
<i>Klebsiella pneumoniae</i>	28%	30%	40%	65%	80%	-
<i>Pseudomonas aeruginosa</i>	-	84%	81%	90%	54%	94%

DISCUSSION

Blood culture positivity rate was 14.39% in our study. Studies conducted in India by Garg et al, and Gohel et al have reported culture positivity to be 20.5%, and 9.2% respectively ^{1,3}. Pandey et al have shown this rate to be 12.6% in their study which was conducted in Nepal ⁴. In Pakistan, according to Chaudhry et al and Latif et al, blood culture positivity rate was quite high, > 20% ^{13, 14}. This difference in the isolation rates was multi-factorial: many patients have used antimicrobials before visiting the hospital, some of them have acquired infections while their stay in hospitals and after surgery and they have used antibiotics before collection of blood samples for culture ^{1,4}.

Our study has shown the higher incidence of gram negative organisms. There were 104 (68.42%) cases of gram negative organisms while 48 (31.57%) cases of gram positive organisms. This is in accordance with other studies from the subcontinent which have shown the concurrent results ^{2, 4, 15}. Mahmood A has shown the same result in his study which was conducted in Pakistan ¹⁶.

There were 30 (19.7%) cases of *Staphylococcus aureus* followed by 11 (7.23%) cases of coagulase negative *Staphylococcus aureus* (CONS) and 7 (4.6%) cases of *Streptococcus viridans* respectively. This is in accordance with Diekema et al who have reported the incidence of *Staphylococcus aureus* to be 20% in their study ¹⁷. Pandey et al have reported the incidence of *Staphylococcus aureus* to be 15.94% in their study while Mehta et al have shown its incidence to be 13.86% in their study ^{2,4}. Contrary to our study, Garg et al have reported a higher incidence of CONS which is about 20.7% and much lower incidence of *Staphylococcus aureus* which was about 8.3% ³. CONS is a skin contaminant and because of highly aseptic technique used in sample collection, its incidence is low in our study ¹.

In our study, *Salmonella typhimurium* was present in majority of cases (37.5%) among gram negative isolates, followed by *Pseudomonas aeruginosa* in 22.1%, *Escherichia coli* in 17.3% and *Klebsiella pneumoniae* 13.4% cases. This is comparable to Pandey et al who have reported a higher incidence of *Salmonella* spp. in their study while the incidence of *Klebsiella pneumoniae* was 19.56% ⁴. Garg et al also reported the incidence of *Pseudomonas aeruginosa*, *Escherichia coli* and *Klebsiella pneumoniae* to be 16%, 11% and 7.3% respectively ³. Types of antibiotics used

as well as the bacteriological profile of blood isolates are different among different hospitals which could be responsible for this variation in the incidence of different microorganisms.

Our study has shown that gram positive organisms were highly resistant to amoxicillin (100%) while they were sensitive to aztreonam and cotrimoxazole. This is in accordance with Pandey et al and Garg et al who have shown in their study that the resistance of gram positive organisms to penicillin was 100% and 80.5% respectively ^{3,4}. In our study, ofloxacin has shown highest activity against *Escherichia coli* & *Klebsiella pneumoniae*. Pandey et al and Ayobola et al have reported the same finding in their study ^{4, 10}.

Epidemiology of blood isolates and their antibiotic resistance pattern will be helpful for clinicians to decide upon empirical antibiotic therapy, which has to be initiated early in the course of blood stream infections for the treatment to be successful.

CONCLUSION

Our study provides important information about the bacteriological profile and antibiotic resistance pattern of blood isolates in blood stream infections. It will help clinicians to choose an empirical antibiotic therapy to treat such infections.

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Frequency and Sensitivity of Micro-Organism in Post-Operative Wound Infections: A Quest for Microbes

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ABSTRACT

Objectives: To determine the frequency of common organisms involved in post-operative wound infection. To determine the sensitivity of micro-organism for different antibiotics.

Study Design: Prospective cross-sectional descriptive study

Place and Duration of Study: This study was carried out at Surgical Units of Civil Hospital Karachi from April to September, 2010.

Materials and Methods: 72 swab samples were collected from patients who had undergone operations. Samples were obtained from the hospital and processed in Civil Hospital Karachi lab (Microbiology Department).

Results: Out of 72 bacterial isolates found in post-operative wound infection, 30 (41.66%) were E.Coli, followed by Klebsiella species 14 (19.44%), pseudomonas aeruginosa 13 (1.38%), staphylococcus aureus 6 (9.72%), providentia species 1 (1.38%), proteus mirabilis 1 (1.38%), Actinobacter 1 (1.38%) and no growth 6 (9.72%). The result showed that the occurrence of infection was higher in the age group between 20 - 40 than any other group. There is no significant difference between male and female sexes in the occurrence of infection. Infection was more in the operation done under emergency circumstance than the elective ones. There was no significant association between infection, and co-morbidities and past history of wound infection. The sensitivity pattern of 4 main bacteria, Frequently found in the study i.e. E.coli, klebsiella, pseudomonas aeruginosa and s.aureus isolates, suggested that the organisms were more sensitive to imipenem, Amikacin sulphate, Ceftazidime, Ceferazone/Sulbactam and Piperacillin/Tazobactam than other groups of drugs.

Conclusion: The most common causative organism was E.coli, infection rate was higher among the patients operated in emergency and imipenem, Amikacin sulphate were found to be more sensitive.

Key Words: post-operative, wound infection, sensitivity, antibiotics.

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INTRODUCTION

Infection is one of the leading causes that are responsible for high percentage of morbidity and mortality in surgical patients. Infection of a wound may be defined as invasion of organism through tissues following a breakdown of local and systemic host defenses¹.

Post-operative wound infection after surgical operation may originate during the operation (primary wound infection) or may occur after the operation from sources in the ward or as a result of some complication (secondary wound infection)². Wound infections are the commonest and most troublesome disorder of wound healing³.

The introduction of antibiotics/antimicrobials and antiseptic techniques are considered to be an important and valuable success on the path leading to safe surgery. The antimicrobial agents also enable us to perform in many conditions that were thought to be unavoidable and impossible in the era that lacked the factors of antibiotics and antiseptics.⁴ The discovery of effective antibiotics and the adoption of antiseptic techniques and measures has been an important milestone in order to prevent infections. Even with all the development and advancement, post-operative wound infection have not been eliminated and is still a burning issue in Pakistan like certain other developing and also developed countries.

Wound infections after contaminated operations are usually caused by normal bacterial flora on the opened and incised mucus membranes.^{4,5}

Infection in a wound is basically a manifestation of unbalanced see-saw played between host and bacteria in which the plank leans on the bacterial equilibrium is in favor of bacteria.⁶

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The absolute prevention of surgical wound infections seems to be an impossible goal. Nosocomial infection is the second commonest cause of post-operative wound infection⁷ and cause discomfort, prolonged hospital stay, more day off work and increments cost of therapy for the patient.⁸

This study has been designed to determine the different factors and variables that have impact on producing post-operative wound infection and to analyze the antimicrobial sensitivity of commonly used antibiotics in the hospital.

MATERIALS AND METHODS

This is a prospective cross-sectional descriptive study conducted in 3 surgical units of Civil hospital Karachi from April to September 2010. Each surgical unit is a 40 bedded unit with admitting once a week.

All patients of more than 12 years of age were admitted. All patients with surgical site infection or a discharging wound post-operatively were included. Wound infection developed within 25 days of surgery was included. Wound infection was diagnosed and labeled with the presence of at least one of the signs and symptoms of infection i.e. fever, itching, pain and soreness, purulence and localized swelling around the area of the wound, a rising a total leukocyte count and bacterial growth on blood cultures.

Patients not giving informed consent, or having a wound infection but not having been operated in Civil hospital Karachi were excluded.

A pretested questionnaire was used to enter the information which included age, gender, co-morbid conditions such as diabetes mellitus, hypertension, tuberculosis etc., past history of wound infection, type of surgery, characteristics of wounds and organisms isolated with antibiotic sensitivity were recorded.

The statistics were reported after calculation by SPSS version 17.0 on computer.

The specimens of pus were collected from the patients by following the aseptic techniques with sterile cotton wool swab.

Several media and tests were used for the isolation, identification and testing the susceptibility of the isolates for common used antibiotics. The media used were Blood agar, McConkey agar, Chocolate agar, Nutrient agar, Mannitol salt agar, Simmons citrate agar, kligler iron agar, Mueller-Hinton agar Sulfide formation indole production, Motility test, Thioglycollate broth, Coagulase, Catalase, Urease, Oxidase Tests.

After overnight incubation (37⁰ C in ambient air 16-18 hours; upto 24 hours), the culture plates were examined for growth. Identification was performed both microscopically and macroscopically by using standard biochemical techniques.

RESULTS

A total of 72 samples were obtained from the patients of 3 general surgery units suffering from post-operative wound infection and the specimens were sent to the microbiology lab for culture and sensitivity report. The most common surgical procedure was exploratory lapotomy followed by appendectomies.

Table No.1: Age Distribution

Age	Frequency (%)	Percent
12-31	35 (48.6)	48.6
32-51	28 (38.8)	13.88
52-71	9 (12.5)	5.55
Total	72	100.0

Table No.2: Sensitivity Pattern Of Micro-Organism For Different Antibiotics

Antibiotics	Micro-organisms			
	E.coli (n=30)	Klebsiella Species (n=14)	Pseudomonas aeruginosa (n=13)	Staphylococcus aureus (n=6)
Imipenem	20	8	10	5
Amikacin	16	17	5	3
Augmentin	0	0	0	5
Ceftazidime	15	7	1	1
Oflaxacin	3	5	0	2
Sparfloxacin	5	5	7	2
Cefperazone/Sulbactam	19	9	13	0
Ceftizoxime	9	7	0	1
Ciprofloxacin	5	5	3	2
Pipercillin/Tozabactam	13	4	9	0
Ceftriaxone	2	1	3	1

The age groups were divided into 3 categories as shown in table-1. Majority patients (48.6%) were between 12-31 years of age. Gender distribution was almost equal. There were 37 (51.3%) males.

Fifty six (77.7%) patients with wound infection did not have any co-morbidities while 16 (22.2%) had co-morbidities. Out of these 16 patients, 9 had diabetes mellitus, 5 had hypertension, one had hepatitis C, 2 patients had hepatitis B and 2 had tuberculosis.

Out of 72, 67 (93.05%) had no past history of wound infection. Among the 72 surgeries which developed post-operative wound infection, 26 (36.11%) were elective surgeries and 46 (63.88%) were emergency surgeries.

The most common causative organism was *Escherichia coli* 30 (41.66%), followed by *Klebsiella* species 14 (19.44%), *Pseudomonas aeruginosa* 13 (1.38%), *Staphylococcus aureus* 6 (9.72%), *Providencia* species 1 (1.38%), *Proteus mirabilis* 1 (1.38%), *Acinetobacter* 1 (1.38%) and no growth 6 (9.72%).

Organism sensitivities is shown in table-2.

Following drugs are used as prophylaxis due to easy availability and economic conditions of our patients. Ceftriaxone, Amoxicillin clavulanate, Ciprofloxacin, Gentamycin and Metronidazole are given. This study shows that Imipenem and Amikacin were the most sensitive antibiotics.

DISCUSSION

Our study found *E. Coli* to be the commonest causative organism followed by *Klebsiella*, *pseudomonas* and *staphylococcus* respectively. Similar study conducted on 200 patients in Islamabad showed 70 (30%) were *e.coli*, followed by *klebsiella* species 50 (25%), *clostridia*-30 (15%) and *proteus mirabilis*-20 (10%). Infection was found to be most common among age group b/w 50-60 years.⁹ While another study conducted in the same hospital on 11 patients found *Staph. aureus* as the commonest organism followed by *E. coli*, *streptococcus* and *Pseudomonas*.

According to study held in civil hospital Karachi, Pakistan (Dow university of health sciences) in the year 2006; out of 11 infection wounds, 5(45.5%) were *S.aureus*, followed by *E.Coli*-3 (27.7%), *S.pyogens* 1(9.1%), *E.coli* and *pseudomonas aeruginosa* 2 (18.2%).¹⁰

A study conducted in Hyderabad on 112 infected wounds, found *E. Coli* to be the commonest organism followed by *klebsiella* species and *staphylococcus epidermidis*.¹¹ Penicillin derivatives (piperacillin and tazobactam) and Carbapenem (imipenem and meropenem) were the most sensitive antibiotics covering all the organism isolated in this study. Cephalosporins were found to be ineffective against the common pathogens.¹¹ In contrast our study found that Imipenem and Amikacin sulphate were the most sensitive antibiotics.

In Nigeria 60 infected wounds were examined, in 20 (33.3%) patients *pseudomonas* was isolated followed by *staphylococcus aureus* 13 (21.7%), *klebsiella* species 10 (16.7%).¹² According to study held in Jordan conducted on 115 infected wounds, 20 (27.8%) were *pseudomonas-aeruginosa*, *Ecoli*-18 (15.6%) and *staphylococcus aureus*-17 (14.7%) and 15 (13%) *Acinetobacter calcoaceticus*.¹³

In Mymensingh Medical College Hospital, total 74 clinical samples were taken. Bacterial growth was yielded in 43 samples and the distribution of isolates was as follows: *Pseudomonas* spp 16, *Esch.coli* 13, *Staphylococcus aureus* 08, *Klebsiella* spp. 03 and others 03. All the *Esch.coli* and *Klebsiella* isolates were resistant to amoxicillin.¹⁴ Ceftriaxone (65.6% and 100% respectively) and ciprofloxacin (71.4% and 100%) still appeared to be highly sensitive for both species. Over 93% strains of *Pseudomonas* were sensitive to Ceftazidime and aztreonam. Whereas, 100% of those strains were sensitive to cloxacillin. Over 50% of all isolates were sensitive to gentamicin but resistant to cefalexin and cotrimoxazole.¹⁴

In another study 516 bacterial isolates were obtained from 502 pus samples, collected from post operative wound infection. *Staphylococcus aureus* was the most frequently isolated bacteria followed by *Escherichia coli* than *Pseudomonas-aeruginosa* and *Klebsiella pneumoniae*. Majority of the isolates were resistant to ampicillin, ampicillin-clavulanic acid, cefuroxime, cefotaxime, fluoroquinolones and cotrimoxazole.¹⁵

CONCLUSION

This study concludes that inspite of modern Surgical and antiseptic techniques and prophylactic use of antibiotics, post-operative wound infection is still a major contributory factor to patient's morbidity. *E.coli* was found to be the most common causative organism. Type of surgery (elective and emergency) was an important factor.

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Surgical Fixation of Clavicular Fractures Outcome and Complications

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ABSTRACT

Objective: To determine the outcome of K-wire fixation of Clavicular fracture in terms of union rates and complication profile.

Study Design: Retrospective case series study.

Place and Duration of Study: This study was carried out at DHQ teaching hospital Abbottabad and Mansehra from March 2009 to Feb 2011.

Materials and Methods: Forty five adult patients with displaced mid clavicular fractures treated with K-wire fixation in a standard Supine position were included in this study.

Results: Out of 45 patients, non union occurred in only two, Implant failure occurred in the same two cases. Most of the complications were of minor nature consisting of superficial wound infection 2, delayed union 4 and pin prominence at insertion site 10. No major nerve or vascular injuries occurred.

Conclusion: Intra medullary K-wire fixation of displaced mid clavicular fracture with protection in early post operative period is a safe and simple procedure, achieving good union rates without major complications.

Key Words: Clavicle fractures, Operative Vs conservative treatment, K- wire fixation.

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INTRODUCTION

Clavicular fractures may consist of 2.6% to 10% of all adult fractures. Most clavicular fractures are situated in the middle part (81%) whereas lateral (17%) and medial (2%) are much less common.^{1,2} Most of these fractures are still treated non surgically as many early studies reported a low non union rate (less than 1 %) with conservative treatment.^{3,4} But this is not true in many cases as suggested in some recent studies that a number of patients with displaced mid shaft clavicular fractures may end up with non union, shoulder dysfunction, residual pain, neurological symptoms etc after non surgical management⁵. Some of these studies focusing on the non operative treatment of displaced midshaft clavicular fractures in the adult population described non union rates of 15% to 20%, objective shoulder muscle strength loss of 18% to 33 %, poor early functioning of the injured shoulder and up to 42% of patients with residual sequelae at six months after injury.^{6,7,8}

Owing to the finding of these and many others studies, there has been increasing interest in the operative treatment of clavicle fractures.^{9,10}

MATERIALS AND METHODS

Study included 45 patients with mid clavicular displaced fractures with age range of 14y to 60y (Table I). All of the patients chose their treatment option after getting the required information.

We used the same surgical technique in all 45 patients. Under general anesthesia; patients were placed in supine position with a pillow or sand bag adjusted between scapulae. A small incision was given over fracture site after close reduction. Fracture ends were secured with small clamps and a proper sized K-wire passed in retrograde fashion. Then reduction was done and fixed with antegrade K-wire fixation. K-wire was then bent and cut laterally and the wound closed. Arm rested in a polysling shoulder immobilizer for two weeks. Patient was discharged the next day, stiches were removed on the 10th day. Gradual movements were started after three weeks and incrementally increased with almost full range after six weeks. K-wire was removed any time after eight weeks. All patients were followed for up to 06 months. Radiographs were taken after ever two weeks for assessing radiological union.

RESULTS

Out of 45 patients, 20 received supporting and road traffic injuries, 10 received road traffic injuries and 15 received road traffic injuries due to falls in the age

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range of 14yr to 24yr, 25-50yr and 51-60yr respectively (Table 1).

We achieved good union rate of 95.5 % with only two cases developing non-union. This high success rate could be the result of good surgical technique involving less soft tissue disturbance and protected fixation particularly in early post operative period. Two cases of implant failure also occurred which were the same cases who developed non-union. Both of them had a severe fall in early post operative period. In one of the case the K-wire was found broken and in the other it was markedly bent. There was no nerve or vascular injury. Most of the complications were of minor nature. (Table 2).

Table No.I: Demographic Data of Study Population

No of patents	Age	Sex	Mode of injury
20	14-24	15 M 4 F	Sporting injury/ RTA
10	25-50	4 M 6 F	RTA
15	51-60	6 M 9 F	Falls and RTA Minor Falls

Table No.2: Complication Profile for Intramedullary K-Wire Fixation of Clavicular Fractures

Type of Complication	No
Major	
Nonunion	2
Major nerve injury	0
Major artery injury	0
Implant failure	2
Deep infection	0
Minor	
Superficial infection	2
Pin exposure	10
Delayed union	4
Temporary nerve injury	0

DISCUSSION

Most of the earlier studies reported very good results for conservative or non- operative treatment methods for clavicular fractures, showing non-union rates of just 0.4%.^{11,12} However many recent studies contradicted this traditional view and reported higher non-union rates and functional deficits, when non- operative treatments were compared with operative fixation of clavicular fractures.^{13, 14}

Open reduction and internal fixation of clavicular fractures can be done using either plates or

intramedullary pins. Plate fixation can provide immediate rigid fixation allowing early mobilization.¹⁵ However plate fixation may involve a greater risk to underlying neurovascular bundle. It may also give rise to cosmetic concerns by implant prominence and wound breakdown.¹⁶

Whereas intramedullary fixation has some potential benefits when compared to plate fixation. Intramedullary pins involve a relatively smaller incision, less periosteal stripping, better load sharing and obligatory removal after useful union, eliminating the long term concern for hardware presence.¹⁷

Owing to the close proximity of brachial plexus and major vessels, clavicle fixation was always considered as a hazardous undertaking. But fortunately no major nerve or vascular injury occurred in our series of patients. In contrast many of these neurological complications from either irritation or compression were more common in non surgically treated patients.¹⁸

Those developing the so called thoracic outlet syndrome may consist up to 29 % of patients treated conservatively and can be reduced significantly by opting for primary clavicle fracture fixation.¹⁹

Intramedullary K-wire fixation has not been widely recommended owing to studies showing a high percentage of complications, particularly high migration rates. But most of these complications were of a minor nature and included delayed union, skin erosion, pin exposure and prominence etc. No major nerve injury or even transient brachial plexopathy was reported which however seemed relatively more common with plate fixation.^{17,20}

The non union rate in our study was 4.4% (2 of 45) and is slightly better than that of plate fixation i.e 5%.¹³ P.J. Millett et al²¹ reported a non union rate of 8.6% (5 of 58) for intramedullary pin fixation. They tried to implicate limited rotational stiffness, fracture site violation and operative technique for that high non union rates. We in our patients ensured a post operative shoulder immobilization sling so as to gain some rotational stability for at least two weeks. Some studies reported a union rate of 3% which is slightly better than ours.²² While others using Rockwood pin, Plates and Knowle's pin showed even 100% union rates.^{23,24}

Two cases of implant failure also occurred in our study. Both had a significant fall within three weeks post operatively. In one of the patients, the K-wire was found broken and in second case there was extreme bending of the K-wire at fracture site. The most common minor complication was pin prominence at the site of insertion, most probably because of absence of any locking mechanism. Although some of the studies have shown migration rates and failure of K-wire of up to 50 %, we did not find the same, rather migration and prominence at insertion site after few weeks made its removal much easier.^{25, 26}

CONCLUSION

Intra medullary K-wire fixation of displaced mid clavicular fracture with protection in early post operative period is a safe and simple procedure, achieving good union rates without major complications.

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A Morphological Study of Atypical Uterine Bleeding

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ABSTRACT

Objective: To find out the Histopathological pattern of Endomyometrium in atypical uterine bleeding (AUB), also to study organic causes of AUB.

Study Design: A prospective, descriptive study

Place and Duration of Study: This study was conducted at the Departments of Pathology and Gynaecology and Obstetrics, Bolan Medical College Complex Hospital Quetta from January 2011 to January 2013.

Materials and Methods: Specimens were received as endometrial curettage and hysterectomy specimens from patients hospitalized in the dept. of Gynaecology and Obstetrics of BMC Complex Hospital Quetta. This study included 300 women's presenting with AUB, irrespective of age and parity. A detailed clinical history followed by physical examination was also carried out in each patients to exclude systemic causes like psychological upsets and early pregnancy states and also exclude general physical abnormalities. After grossing and H&E staining all the sections were studied by group of pathologists.

Results: A Total 300 cases were studied, including 100 endometrial curetting's and 200 uteri in patients of atypical uterine bleeding at Bolan Medical Complex Hospital Quetta. The ages of these patients ranged from 20-69 years. Maximum numbers of cases were in age groups 40-49 years. Chronic endometritis (7 out of 100) 7% and the cystic hyperplasia (9 out of 100) 9% were the most important causes of atypical uterine bleeding in endometrial curetting's. No case of endometrial carcinoma was diagnosed in this series. The histological study of hysterectomy specimen revealed multiple leiomyoma's (135 out of 200) 67.5% and adenomyosis (38 out of 200) 19% as the commonest causes of atypical uterine bleeding. (2 out of 200) 1% case of leiomyosarcoma and (1 out of 200) 0.5% case of choriocarcinoma were diagnosed suggesting a lower frequency of uterine malignancy in our study.

Conclusion: In conclusion leiomyoma's and adenomyosis are most important causes of AUB after 3rd decade of life. Fortunately the frequency of uterine malignancy (excluding cervix) including endometrial carcinoma is much low in our setup as compared to western studies..

Key Words: Abnormal uterine bleeding, Histopathological pattern, Endomyometrium,

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INTRODUCTION

Endometrium is a dynamic, hormonally sensitive and responsive tissue which constantly and rhythmically undergoes changes in the active reproductive life.¹ Abnormal uterine bleeding (AUB) may be defined as a bleeding pattern that differs in frequency, duration and amount from a pattern observed during a normal menstrual cycle or after menopause.² There are many conditions which may lead to abnormal uterine bleeding that occur at regular or irregular intervals in excessive or scant amount especially when prolonged.³ Some of these cases are the result of identifiable causes like systemic diseases including psychological upsets, endocrine disorders and early pregnancy states. Other conditions including errors in uterine development, infections, endometriosis and uterine neoplasms, like polyps, leiomyomas, and malignant tumors.^{4,5}

Uterine bleeding has also been associated with obscure causes like chronic symmetrical enlargement and idiopathic developmental hypertrophy of uterus etc.⁶ The uterine bleeding which is not associated with any organic cause in women of child bearing age belongs to a category known as dysfunctional uterine bleeding.⁵ Dilatation and curettage or endometrial biopsy is a useful and cost effective method of detecting intrauterine pathologies and very few lesions escape detection.⁷ In these cases a thorough clinical history, detailed physical examination and a correctly timed endometrial biopsy reveals conditions like irregular shedding, anovulatory cycle, inadequate proliferative phase and luteal phase insufficiency (inadequate secretory phase) etc.

This present study was carried out to determine the types and frequencies of endometrial pathologies in patient presenting with abnormal uterine bleeding at Bolan Medical Complex Hospital Quetta in the uterine biopsy material and hysterectomy specimens.

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MATERIALS AND METHODS

This study was carried out in the departments of Pathology and Gynaecology and Obstetrics at Bolan Medical Complex Hospital Quetta.

A total 300 specimens were included in this study. Out of 300 specimens 100 were Endometrial Curettings and 200 were hysterectomy specimens were received in pathology laboratory in the hospital.

A record of these patients was retrieved and patient's age, parity, a detailed clinical history was recorded. Other systemic causes of uterine bleeding like psychological upset and early pregnancy states were excluded. A thorough physical examination was also carried out in each patient to exclude physical abnormalities.

The endometrial biopsy material in these patients of abnormal uterine bleeding was immediately fixed in 10% formalin. After detailed gross examination of each specimen, the tissue was processed routinely and 3-4 um thick sections were prepared from paraffin embedded tissue. These sections were stained with haematoxylin and eosin (H&E). The slides were then studied carefully to elicit the cause of abnormal uterine bleeding.

The hysterectomy specimens, after washing to remove the blood, were also fixed in 10% formalin. The uteri were measured in length, lateral and anterior-posterior dimensions. The external examination was carried out to record the abnormalities in shape.

Sections were taken routinely passed, paraffin embedded and stained with haematoxylin and eosin (H&E). All the sections were then studied by a group of pathologists.

RESULTS

The results of analysis of endometrial biopsies in the cases of atypical uterine bleeding revealed the diagnosis of chronic endometritis in 7 out of 100 (7%) cases only, while cystic hyperplasia was observed in 9 out of 100 (9%) of endometrial curettings (Figure 3). 2 out of 100 (2%) cases revealed adenomatous hyperplasia. No case of uterine malignancy was diagnosed in the uterine curettings in this series (Table 1). The patients having abnormal uterine bleeding were scattered over all age groups (Figure 1).

The histological study of the hysterectomy specimens revealed multiple leiomyomas in 135 out of 200 (67.5%) and adenomyosis in 38 out of 200 (19%) as the most common causes of atypical uterine bleeding (Figure 4). Some of the uteri did not reveal any cause of bleeding. The other causes of atypical uterine bleeding like cystic Hyperplasia were 13 out of 200 (6.5%) and polyps 11 out of 200 (5.5%). 8 uteri were distorted with large size. There were 02 out of 200 (1%) cases of leiomyosarcomas and 01 out of 200 (0.5%) case of

Choriocarcinoma (Table 2). Most of the uteri removed were in the age group of 40-45 years (Figure 2).

Table No.1: The Histopathological Pattern of Endometrial Tissue in 100 cases of Abnormal Uterine Bleeding

Histological Pattern	Number	%age
Proliferative Phase	31	31%
Secretory Phase	45	45%
Tuberculous Endometritis	03	03%
Cystic Hyperplasia	09	09%
Adenomatous Hyperplasia	02	02%
Chronic Endometritis	07	07%
Retained products of Conception	03	03%
Total	100	100%

Table No.2: The Histopathological pattern of 200 Uteri removed for Abnormal Uterine Bleeding

Histological Pattern	Number	%age
Leiomyoma	135	67.5%
Adenomyosis	38	19.0%
Cystic Hyperplasia	13	06.5%
Polyps	11	05.5%
Leiomyosarcoma	02	01%
Choriocarcinoma	01	0.5%
Total	200	100%

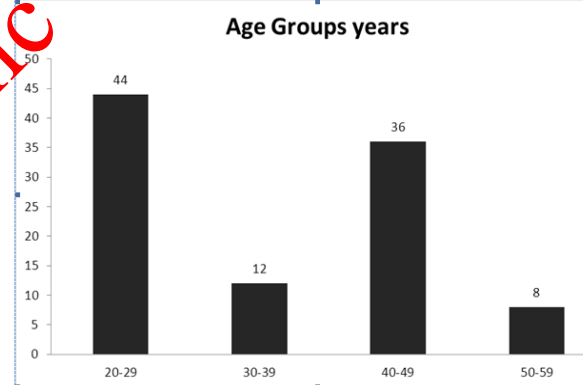


Figure 1: Age Group of Women of Endometrial Biopsy

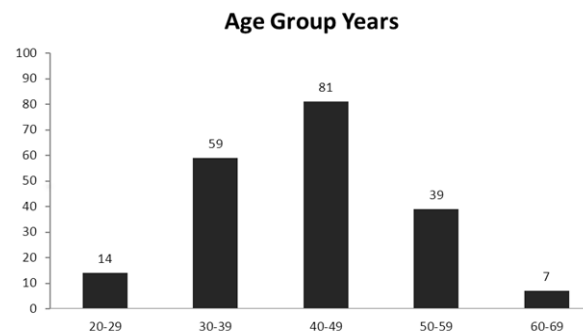


Figure No.2: Age Group of Women of Hysterectomy Specimens

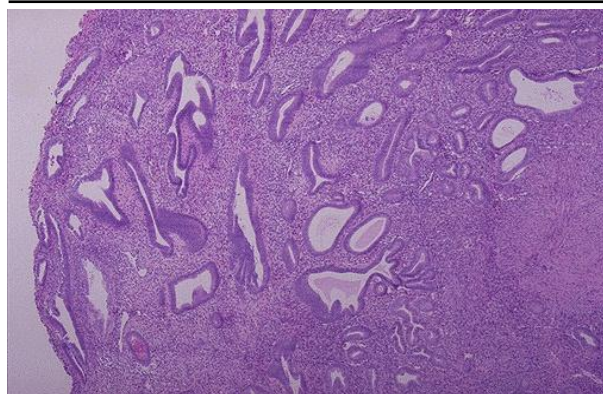


Figure No.3: Microphotograph showing Endometrium with Cystic Hyperplasia. (Haematoxylin & Eosin Stain x 100)

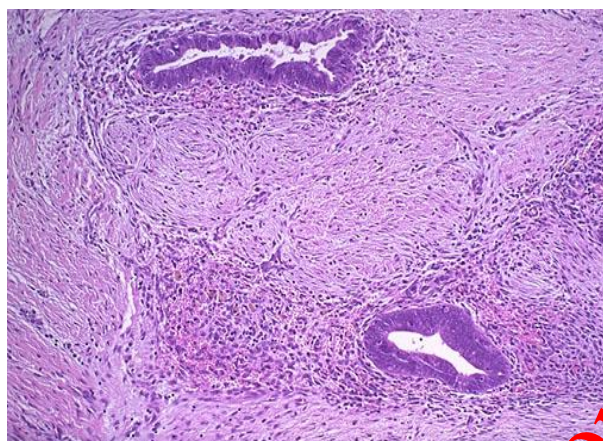


Figure No. 4: Microphotograph showing Adenomyosis (Haematoxylin & Eosin Stain x 100)

DISCUSSION

Abnormal uterine bleeding is a common gynaecological problem accounting for up to 20% of the visits to the gynaecologists.⁸ The main objective of endometrial curettage in Abnormal uterine bleeding to exclude the possibility of local intrauterine lesion such as incomplete abortion, uterine polyps, tuberculous endometritis and Carcinoma as a cause of bleeding.⁹ Our study revealed that all age groups were involved by Abnormal uterine bleeding, It was found to be more common in our women in twenties and pre-menopausal age groups, Subhankar D,¹⁰ also reported the same age group in India. These two age groups were involved due to Hormonal disturbances and development of leiomyomas/ adenomyosis which was revealed by the study of hysterectomy specimen in our study. Many women revealed endometrial curettings with normal histology like proliferative/ Secretory phases 45% but chronic endometritis in our study found to be not so common, as compare to other studies 07%,^{11,12} in these women chronic endometritis which is characterized by irregular fibrotic stroma and infiltration of chronic inflammatory cells. The possible cause in our setup

may be incomplete abortions which are fairly common and if not properly handled due to lack of adequate medical facilities. The cases of tuberculous endometritis are not so high as in other organs in our setup 03%, glandular cystic hyperplasia was diagnosed in 09% of patients with Abnormal uterine bleeding on endometrial curettings. Prolonged periods of anovulation with steady estrogen secretion may have a similar effect.¹³ Atypical hyperplastic pattern may also occur after prolonged anovulation in the Stein-Leventhal syndrome which regresses after therapeutic induction of ovulation¹⁴. Most of these patients respond to progesterone or by hysterectomy. The incidence of adenomatous hyperplasia was low in our study 2%.

We did not discover endometrial carcinoma on curettage in our series, which denotes the low frequency of malignancy in our country. This is similar to the findings of other workers in the sub-continent¹⁵. As expected most of the hysterectomy specimen revealed the presence of multiple leiomyomas. 67.5% which were also associated with adenomyosis 19% in many cases, both submucosal and intramural leiomyomas may lead to abnormal uterine haemorrhage. Beside leiomyomas, adenomyosis was found to be a common cause of abnormal uterine bleeding 19% in our setup. Our findings are in accordance with those of Zeeba S. The adenomyosis may be causing abnormal uterine bleeding due to increased uterine size contributed by fibrosis. This may lead to symptoms of pain, cramps and abnormal prolonged and profuse menstrual bleeding.

CONCLUSION

In conclusion leiomyomas and adenomyosis are most important causes of abnormal uterine bleeding after 3rd decade of life. Fortunately the frequency of uterine malignancy (excluding cervix) including endometrial carcinoma is much low in our setup as compared to western studies. To conclude, a significant number of endometrial samples on histopathology revealed changes, renderings of AUB. Endometrial causes of AUB are age related, therefore it is specially recommended in women of the perimenopausal age presenting with AUB, to rule out preneoplasia and malignancy.

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The Impact of Training and Development on Employee's Performance on Private and Public Hospitals in Lahore, Pakistan

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ABSTRACT

Objective: To find out the relationship between the training and development on employee performance in hospitals.

Study Design: Descriptive and quantitative, cross sectional study.

Place and Duration of Study: This study was carried out at National Institute of Business Administration and in private and public hospitals, Lahore from 5th February 2013 to 1st August 2013.

Materials and Methods: The independent variables are training and development and employee performance is dependent variable Hypothesis are proposed. Non-probability and simple convenience sampling used for research purpose. Data was collected from the respondents through questionnaires. About 100 Questionnaires were distributed and collected.

Results: The study states that there is a positive correlation between training and employee performance. The value of R^2 is 0.407 which means that 40.7 % variation in the employee's performance is brought by training and development programs. The value of B_0 is 1.85 which interprets that if there is no investment in training then employee performance will be 1.85. The value of B_1 is 0.407 which means that if there is 1 % change in training there will be 40.7 % change in employee performance.

Conclusion: The subjected study is directly related to the role of training in increasing the performance of employees and it is found that training plays an effective role in enhancing the capabilities of both new and current employees.

Key Words: Training and Development, Employee Performance, Hospitals

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INTRODUCTION

The main source of competitive advantage in a global market is knowledge, improved capabilities and skill of the talented workforce. Training has the valuable role to promote the organization goals by adding the interest of organization and their concerns^{1,2}

Now a day's the best ever factor in the world of business is training because training not only enhance the effectiveness and efficiency of employees but also increases the organizations performance². The performance of the employee depends upon many factors but the best factor is training because it increase the skill of the individual, which can be helpful in future to get promotion and also a valuable asset of the organization³.

Hospitals provide training to their employees so as to improve their skills and competencies to do a job in a better way. Firms invest in their workers for improving and building their skills to face and cope with the unexpected unstructured problems in the future in today's most uncertain scenario where nothing is

certain. In turn when employees feel the organization is putting efforts in them, they in turn also apply their best efforts in helping the organization to achieve its goals and show high performance on the job.⁴

The trainees are given real time case studies of real or imagined events in a hospital to study, analyze and give an opinion under the supervision of seniors⁵. The main purpose of training is to help the trainees think logically and try to develop their personality in such a way that in these type of circumstances they analyze alternative course of action⁶.

Achieving of specified goal within the prescribed sets of standard is called performance. The way to increase the individual's performance is competitiveness and productivity apart from effectiveness and efficiency⁷. Best performance means that how much your employee is aligned with the assignment given by the management. There are always expectations from employees that they will perform better and when they do so they are termed as good performers⁸.

MATERIALS AND METHODS

It has been observed in developing skills the literature review that training has its significant impact on

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employee performance as it helps in, knowledge, abilities, creativity, innovation and attitudes for the development of employees. The following framework has been designed and formulated in order to depict the relationship between training and employees performance.

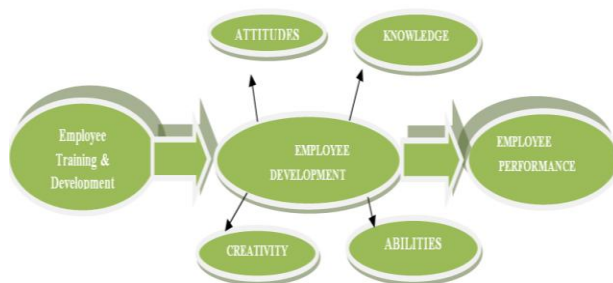


Figure No.1: Theoretical Framework

The independent variables are training and development and employee performance is a dependent variable Hypothesis are proposed.

Ho: There is no impact of training on employee's performance.

H1: There is a positive impact of training on employee's performance.

Target population is the employees of public and private sector hospitals, managers or Medical Superintendence of Lahore. I used non-probability and simple convenience sampling for my research purpose. Data was collected from the respondents through questionnaires.

The core area of this study is the Administration of the hospitals of all the public and private sector hospitals of Lahore and this area is chosen because there was no such study conducted before in this sector .100 questionnaires were distributed out of which 86 questionnaires were returned back. The response rate was 86%:

The validity and reliability of the research instrument is already tested and verified.

RESULTS

The questionnaire directly addresses the questions. Out of those 86 respondents 60 were men, 15 were women and the remaining 11 had not mentioned their gender.

Table No.1: Age and Gender

Gender						Age				
		Frequency	Percent	Valid Percent	Cumulative Percent		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	60	69.8	80	80	Valid	29-33 YEARS	12	14.1	14.1
	female	15	17.4	20	100		34-39 YEARS	35	40.7	55.3
	Total	75	87.2	100			39-44 YEARS	17	19.8	75.3
Missing	System	11	12.8				45 and Above	21	24.4	100
Total		86	100				Total	85	98.8	100
						Missing	System	1	1.2	
						Total		86	100	

The table 1 is clearly showing that there were total 86 respondents out of which 85 respondents have shown their age while 1 respondents age is missing. Following is mentioned the table showing the percentage of the respondents falling in each age bracket.

Following tables are showing the cross tabs for age and gender.

Table No.2: Gender & Age Cross Tabulation

Case Processing Summary							Gender * Age Crosstabulation					
	Cases						Count					
	Valid		Missing		Total		AGE				Total	
	N	Percent	N	Percent	N	Percent	29-33 YEARS	34-39 YEARS	39-44 YEARS	45 and Above		
Gender * Age	74	86.00%	12	14.00%	86	100%	male	7	29	9	14	59
							female	3	5	3	4	15
							Total	10	34	12	18	74

Table 2 is showing that valid percentage of respondents with respect to age and gender is 86 % and the missing percentage is 14 %.The above table is showing the number of respondents falling in each age bracket with respect to the gender.

Following Are the Statistics of Reliability Tests of This Study Valid in case processing summary 80 and excluded is only 6 and their percentages are 93% and 7 % respectively. The Value of Cronbach's Alpha Test Is 0.77.

Table No.3: Correlations

Correlations				Correlations			
		Trained employees are more efficient and effective as compared to the untrained employees?	Employee performance			Employee performance	Training and Development
Trained employees are more efficient and effective as compared to the untrained employees?	Pearson Correlation	1	.243*	Employee performance	Pearson Correlation	1	.644**
	Sig. (2-tailed)		0.029		Sig. (2-tailed)		0
	N	83	81		N	81	80
Employee performance	Pearson Correlation	.243*	1	Training and Development	Pearson Correlation	.644**	1
	Sig. (2-tailed)	0.029			Sig. (2-tailed)	0	
	N	81	81		N	80	81

Table 3 reveals the Relation of training and development with employee performance. Correlation is significant at the 0.05 level (2-tailed).

Employee performance is correlated with training and development and the model is significant even at 1% confidence interval. The Correlation between Training and Employee Performance Is 0.243. Correlation is even significant at the 0.01 level (2-tailed). The model is highly significant as the value of sigma is 0.000.

Ho: There is no impact of training on employee's performance.

H1: There is a positive impact of training on employee's performance.

If $\alpha = 0.05$ Then, H_0 Rejected Else H_1 Accepted

The sigma value (2-tailed) for training and development & employees performance is 0.000 which is clearly less than 0.05 so H_1 will be accepted. It reveals that training and employee performance are highly correlated. The correlation coefficient is 0.644 for performance.

Table No.4: Model Summary

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.644 ^a	0.415	0.407	0.41493		
a. Predictors: (Constant), Training and Development						
ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9.508	1	9.508	55.222	.000 ^b
	Residual	13.429	78	0.172		
	Total	22.937	79			
a. Dependent Variable: Employee performance						
b. Predictors: (Constant), Training and Development						
COEFFICIENTS						
Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.855	0.214		8.661	0
	Training and Development	0.484	0.065	0.644	7.431	0
a. Dependent Variable: Employee performance						

The value of adjusted R is showing that up to 40.7 % of employee performance is directly dependent upon the variable training and development .which means that 40.7% of the change in employee Performance is attributed to variable "training and development ".

The Multi Linear regression between variables "Performance", "Size" and "Age" can be represented by:

$$Y = B_0 + B_1X_1$$

$$\text{EMP per} = 1.85 + 0.4874T.D$$

Where:

Y = Employee Performance, X_1 = training and development.

DISCUSSION

Most of the past research has shown that there is a strong positive relation between training development and performance of the employee^{9, 10}. Our study states that there is a positive correlation between training and employee performance as $R^2 = 0.40.7$ thus we can say from this study that with the appropriate and proper utilization of human resource can be a source of high returns for a hospital without it is not possible for a hospital¹¹. Training is a platform for developing the employee's abilities and skills and taking the best out of them to achieve the organizations goals¹².

The value of B_0 is 1.85 which interprets that if there is no investment in training then employee performance will be 1.85. The value of B_1 is 0.407 which means that if there is 1 % change in training there will be 40.7 % change in employee performance.

Beside these variables the employee performance is also influenced by some other environmental variables like performance appraisal systems, job designs, corporate culture, organizational structure, power and politics prevailing in the organizations^{13,14}. If the employee's performance is declining in spite of the valid training programs then its due to the above mentioned variables one must take them into the light

to implement the training programs effectively¹⁵. It is often discussed that very less work has been done on investigating the link between training on employee's satisfaction to the job and organizational commitment. It does not has gained much attention by now¹⁶.

A research conducted in the hotel industry shows that it is cleared from both methods interview and questionnaire that there is a strong relation between training and employee performance⁴. It is also clear from the study that the managers and employee's in Lahore hotel industry are very much inclined and interested in being trained. The results showed that 70% employee of the hotel industry feel that training has helped them in improving their performance⁴. 75% think that promotion is only due to training. The results showed that the employee think that their path is clear after getting trained. Moreover 65% respondents in the survey think that their social interaction has increased after getting training and 60 % think that their scale has improved because of training. Research clearly shows that there is a direct relation between training and employee performance^{17,4}. The overall performance of an employee tends to increase after training. And the correlation between training and employee performance is positive¹⁸.

A study conducted in Pakistan by Hameed A & Waheed A depicted that employees are always a valuable asset to the firm and organizations are investing heavily to improve employee performance because they are the source of competitive advantage to the firms and help the firm to be successful³.

Training is a system through which the trainers get themselves skilled through learning and developing abilities enhancing their existing knowledge to new levels to carry out their job activities in the best way¹⁸.

Organizations consider the training program necessary for their growth and have planned reasonable training seminars for their employees time to increase the efficiency of the work that ultimately adds to the productivity¹⁹. The jobs that require man power have now been replace by machinery and now more skilled work force that has become the essence of today's jobs that needs extensive training to operate the machinery form time to time thus throwing light on the importance of training^{20,21}.

Hypothesis of the study have been duly tested by applying all of the related statistical techniques of SPSS 20, regression and correlation techniques is used to identify the direction of relationship between the two variables as dependent and independent.

The correlation table explains that the relation between training and employees performance is 64.4 % strong. All the relationships are significant at 1 % significance level for two tailed test.

The study states that there is a positive correlation between training and employee performance as $R^2 = 0.407$ thus we can say from this study that with the

appropriate and proper utilization of human resource can be a source of high returns for a firm without it is not possible for a firm.

We found that trainings and employee performance are highly correlated after acceptance of alternative hypothesis and the proposed model that training has a positive and significant impact on performance of the employee is proved²¹. Moreover training helps the employees to enhance their knowledge and to be up to date in their respective field of work and to prove themselves proficient and productive both for the organization and consequently for the employer, also Training helps employees in getting a promotion.

CONCLUSION

Training plays an effective role in enhancing the capabilities of both new and current employees. Training is a type of investment by the organization on its employees that brings huge returns for the organization in the future. Training has significant role to play on employee performance but there are also other dominant forces that influence performance and productivity of an employee. Research done previously argues that there exists a positive relationship between employee training and development and employee performance.

Training is an important tool for improving performance and source of professional competency. Bridging the gap between the desired goal and actual goal that what is happening and what should happen actually. Training is needed to fill up the gap in the performance of an employee. In any sector training is a key driver to build up the skills, abilities, behavior, and attitudes as all of these drivers help consequently to improve employee productivity and organizational performance in long term.

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ACKNOWLEDGMENTS

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