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Editorial

Dengue Awareness Campaign Crucial for Disease Prevention

Mohsin Masud Jan

Editor

According to the CDC, almost half of the world's population, about 4 billion people, live in areas with a risk of Dengue.

As Lahore struggles to survive a global pandemic, a nasty epidemic rears its head again, pushing the city's healthcare system to its limits. Dengue virus has begun its yearly round of inflictions, and the exponentially rising number of cases in the city is adding to the anxiety of both the public and healthcare officials.

As the tally crosses 700 and hospitals start filling up with new cases every day, the pressure continues to mount.

Each year upto 400 million infected with Dengue. 100 million people get sick from infection and 40 thousand die from severe dengue. In early stage, symptoms of Dengue and Covid are same.

Healthcare officials from two of Lahore's major public hospitals explain how the local hospitals are preparing to handle the rapidly worsening situation. We have separate units for dengue patients and are ready to take the load. Most patients of dengue fever do not require hospitalisation.

Dengue virus weakens a patient's immune system, thus, making them vulnerable to other infections.

The Covid-19 pandemic hit the country's healthcare system hard. However, the dengue epidemic wasn't unforeseen.

There are several steps that may be taken prior to the start of the dengue 'season' – July through October – before cases begin to pile up. Fumigation is crucial for timely curtailment of the mosquito-borne viral infection.

Vectors of dengue fever are female mosquitoes, mainly of the Aedes genus. These can also transmit other viruses such as Zika, yellow fever, and chikungunya. According to a study published in The Lancet, 776 cases of the chikungunya viral infection were reported in Pakistan between the years 2016 and 2018. Also, 147,200 dengue virus infections and 800 deaths were reported from 1995 to 2019 in Pakistan alone.

It would be difficult to quote an accurate figure since many dengue-positive patients do not require hospitalization. In most cases, a visit to the OPD (outpatient department) and home care is enough for recovery.

Even though the fumigation protocol and disease prevention have been low on the local government's priorities, the Complete Blood Count (CBC) test for dengue detection remains reasonably priced at Rs. 90 only. Private laboratories in and around Lahore confirm that any patient requiring a CBC test for dengue virus has to pay the minimal charges.

Awareness campaigns are crucial for disease prevention.

The previous government's efforts at managing dengue remain popular. No significant efforts have been made in recent times by the authorities to prevent the spread of dengue infection. At least no fumigation drive has taken place in our area this year.

It appears that too little, too late is the policy adopted by the city administration. At a personal level, if we have done something, it does not count because the community is still largely at risk. The government must identify areas with a history of high concentration of dengue cases and focus on cleanliness drives to reduce the number of infections each year.

Poor waste management and lack of proper water storage facilities in the city could exacerbate the situation. Last year, polio workers regularly visited to ensure that dengue SOPs were followed at household levels.

Urban areas across the country are at risk of infectious diseases. Intestinal infections along with dengue and Covid-19 are also spreading in the city. Overpopulation and poor sanitary conditions are adding to the problem at hand.

Hospital managements are doing everything they can to ensure that patients receive proper care. Failure to do so can lead to serious complications.

The Provincial Health Minister, Dr. Yasmin Rashid, warned the people to remain vigilant as dengue cases could see a spike. You must religiously follow the coronavirus and dengue virus protocols," she declared.

Doctors and pharmacists agree that prevention is better than cure, but in case one contracts dengue virus, they should follow some basic steps to help with recovery. Mild infections can be treated at home. Taking paracetamol to lower fever and keeping oneself hydrated can ease the severity of the symptoms until one fully recovers.

Original Article

Retinal Vein Occlusion with Hypertension

Frequency of Retinal Vein Occlusion (RVO) and its Association with Hypertension by Variability of Retinal Hemorrhages at Fundoscopy after Retinal Vein Occlusion in Patients with Hypertension

Muhammad Sibghatullah Fahad[1], Naeem Akhtar Katpar[2], Shabeer Ahmed Bhutto[2], Safdar Ali[2], Fayaz Ali Kalhoro[2] and Muhammad Yaqoob Shahani[3]

ABSTRACT

Objective: To find out the frequency of RVO and its association with hypertension by variability of retinal hemorrhages at fundoscopy after retinal vein occlusion in patients with hypertension.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Sindh Institute of Eye Hospital, Hyderabad from 28 December 2019 to 15 May 2019.

Materials and Methods: This study was performed on 89 patients in the age of >30 years < 70 years, and recently diagnosed central retinal occlusion cases were included. Hypertension diagnosis was confirmed and 89 patients were treated at the age of 35 years. By careful exam of the fundus of 90 D Volk Lens on Slit Lamp and fundus photography. The researchers initiated their work and an experienced ophthalmologist verified their final diagnosis. Statistical package for social science version 20 was used to analyze data.

Results: A total of 89 patients who have hypertension with retinal vein occlusion (RVO) have received fundoscopy. We discovered that age (OR =1.72, 95 percent CI: 1.27–2.34), hypertension (OR =2.56, 95 percent CI: 1.31–5.08), stroke history (OR =2.08, 95 percent CI: 1.01–4.45), and hypercholesterolemia (OR =1.84, 95 percent CI: 1.01–3.35) were significantly associated with RVO. Uncontrolled hypertension (OR =3.46, 95 percent CI: 1.72–6.94) and un-medicated hypertension (OR = 4.12, 95 percent CI: 2.01–8.46) were significantly linked with RVO in a sample of hypertensive patients.

Conclusion: Hypertension, a particularly modifiable risk factor, was the most strongly associated factor for RVO in our study.

Key Words: Fundoscopy, Retinal vein occlusion, Hypertension.

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INTRODUCTION

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The second most common vision-threatening retinal vascular disease, which results in blindness following hypertensive retinopathy, is retinal vine occlusion.[1] Retinal occlusion incidence is between 1.6% and 1.9%.[2,3] U.S., European, Asian and Australian population-based studies have shown that retinal occlusion (aged 30 or older) has been estimated at around 16,4 million by 2008,[4] a rise suspected of up to 16 million by 2020, and in Asia, just 21 billion by 2040.[5] Increasing age, systemic hypertension, and glaucoma 6 and hypermetropia are major risk factors.[6] Typically, retinal occlusion patients suffer from acute loss of one eye, with few patients having bilateral vision loss with visual field failures.[1,7]

As a result of the prevalence of diabetic retinopathy, retinal vein occlusion (RVO) ranks second. As a result of RVO, the macular edema or vitreous hemorrhage might induce visual impairment.[1,8] Pathogenesis of RVO is generally related to venous lumen compression caused by arterial hemodynamic changes or

inflammation.[9] According to numerous investigations, including cohort studies, the prevalence of RVO ranges from 0.3 percent to 1.6 percent, however few studies revealed that that RVO is connected with hypertension or diabetes and ophthalmic problems.[4,5,10–15]

The common fundus findings of the retinal vein occlusion are expansion and tortuosity of the retinal veins, hemorrhages in the form of dots and Flamm, swollen optic discs, spots of cotton, and macular edema and exudates of lipids.[16,17]

The findings of this research will assist clinicians in determining the frequency of RVO and its association with hypertension by the variability of retinal hemorrhages at fundoscopy after retinal vein occlusion in patients with hypertension.

MATERIALS AND METHODS

This cross-sectional research was done for six months from 28 December 2019 to 15 May 2019 with 89 patients in the Sindh Institute of Ophthalmology and Visual Studies at the Eye Hospital in Hyderabad. Those were >30 years of age <70 years, both male and female, recently case of hypertension for central retinal vein occlusion was diagnosed and the diagnosis confirmed by an occluding ophthalmologist consultant. Those with old Central Retinal Vein occlusion for 3 months, Hypertension patients, Central Retinal Vein occlusion, Hypermetropia in younger age below 30 years, conditions under which fundus findings are hard to judge because of media opacity (corneal dullness, vitreous haemorrhage, dense catarack)

Patients were enrolled for the study after approval of Synopsis, using a meticulous fundus test by 90 D Volk Lens on Slit Lamp and a Fundus Photography by means of the inclusion and exclusion criteria of the Sindh Ophthalmology and Visual Sciences Department in Eye Hospital Hyderabad. The initial testing work was done and an experienced ophthalmologist verified his final diagnosis.

The statistical package for the social sciences version 20 has been entered and analyzed. For continuous variables like age, mean and standard deviations were measured. In hypertensive, frequency and percentage were measured for clinical retinal hemorrhages following retinal vein occlusion. The logistic regression analysis was used and p <0.05 was found to be a significant level.

RESULTS

A total of 89 patients with the diagnosis of retinal vein occlusion (RVO) with hypertension were seen in the Sindh Institute of Ophthalmology and Visual Sciences Hyderabad to compare the variability in retinal hemorrhage after retinal vein occlusion in patients with hypertension. The minimum age was 33 years and the maximum age was 70 years with mean age + SD (range) 54.93 + 8.854 years.

In this research, females were 46 (51.6 percent) and males were 43. Patients were divided into three classes by age. The majority of patients (67.4%) were in the 51-70 age groups; 21(23.6%) were in the 41 to 50 years' age group and 8(9.0%) were in the 31 to 40 years age group.

There was a 0.6 0.1 percent prevalence of RVO in the Korean population over the age of 19. In both genders, the prevalence of RVO was similar (0.6 0.1 percent). 1.0 0.1% of participants older than 40 years of age were included in our analysis. The prevalence of both subtypes was the same, at 0.6 0.1%, but the prevalence of CRVO was substantially lower, at 0.1 percent (3 male and 6 female participants). Participants younger than 40 years of age had a low incidence of RVO, while those younger than 60 years of age had no CRVO.

Table No.1:Baseline characteristics of the patients (n = 89)

	Frequency	**%**
Mean age ± SD (range)	54.932 ± 8.854 (33 to70 years)	-
Gender		
Male	43	48.31%
Female	46	51.6%
Age (in groups)		
31-40 years	8	9%
41-50 years	21	23.6%
51-70 years	60	67.4%
Laterality of Eyes		
Right eye	56	63%
Left eye	33	37%
Risk factor		
Diabetes Mellitus	40	45%
Hypertension	49	55%
BCVA		
>6/18	6	6.74%
6/18 – 6/60	25	28%
<6/60	58	65%
Duration		
<1 Month	58	65.1%
1-2 Months	22	24.7%
2-3 Months	9	10.1%

Table No.2: Outcome of RVO patients for a different type of retinal hemorrhages in hypertension (n= 89)

Outcome	**Retinal Hemorrhages**		**Total**
	Yes	No	**n = 89**
Dot blot hemorrhages			
Hypertension (n = 49)	46(90.5%)	3 (7.5%)	49(55%)
Flame shaped hemorrhages			
Hypertension (n = 49)	29(65.5%)	20 (38.5%)	49(55%)

Table No.3: Comparison of characteristics between participants with and without retinal vein occlusion (n = 89)

	RVO(n=56)		Non RVO (n=33)	Standard error	P value
	Weighted estimated value	Standard error	Weighted estimated value		
Age, y	62.7	1.2	44.3	0.9	<0.0001
Sex, % female	52.5	4.3	50.5	0.3	0537
HbA1c,%	6.11	0.2	5.8	0.0	0.006
Diabetes, %	14.6	3.5	7.7	0.2	0.011
Pulse pressure	51.0	1.42	40.9	0.1	<0.0001
Systolic blood pressure, mm Hg	133.4	1.9	117.3	0.2	<0.0001
Diastolic blood pressure, mm Hg	82.5	1.3	76.5	0.1	<0.0001
Body mass index, kg/m2	24.4	0.2	23.6	0.0	0.006
Fasting glucose, mg/dL	103.1	1.9	96.4	0.2	0.015
Hypertension, %	70.2	3.8	25.6	0.4	0.009
History of stroke (%)	7.5	1.8	1.2	0.1	
History of cataract operation, %	2.1	0.9	0.8	0.1	0.017
Refractive errors (SE) _	0.9	0.2	0.4	0.2	<0.0001

Table No.4: Logistic regression analyses of associations between potential risk factors and retinal vein occlusion (n = 89)

	Univariate analysis			Age-adjusted multivariate analysis			All-adjusted multivariate analysis		
	OR	95%CI	P	OR	95%CI	P	OR	95%CI	P
Age (per 10 y)	2.07	1.86–2.30	<0.001				1.72	1.27–2.34	<0.001
HbA1c (per 1%)	1.24	1.06–1.46	0.009	1.00	0.72–1.38	0.975	0.98	0.54–1.79	0.994
Diabetes	2.03	1.17–3.54	0.012	0.88	0.50–1.57	0.675	0.54	0.20–1.50	0.216
Pulse pressure (per 1mm Hg)	1.05	1.04–1.06	<0.001	1.01	0.99–1.02	0.171	0.99	0.97–1.02	0.480
Body mass index (per 1 kg/m2)	1.06	1.02–1.10	0.002	1.05	1.01–1.10	0.019	1.01	0.94–1.09	0.876
Fasting glucose (per 1 mg/dL)	1.01	1.00–1.01	<0.001	1.00	0.99–1.01	0.659	1.01	0.99–1.02	0.445
Hypertension	6.86	4.80–9.80	<0.001	2.99	1.94–4.60	<0.001	2.58	1.31–5.08	0.004

RVO is linked by Hypertension and antihypertensive medication. Participants with managed hypertension were not more likely to have RVO than those without (a OR = 2.03, 95 percent CI: 0.94–4.41). In contrast, persons with uncontrolled hypertension, including those in stages 1 and 2, had significantly greater RVO than those without hypertension (stage 1 hypertension, a OR = 2.76, 95 percent CI:1.14–5.51) and stage 2 hypertension, a OR = 6.84, 95 percent CI: 2.36–19.83).

For example, hypertension management and antihypertensive medication are associated with RVO in Table 4. Patients with hypertension controlled by medication had a risk of RVO of 1.51 (95 percent confidence interval: 0.72–3.17; patients with hypertension uncontrolled had a risk of 1.02 (95 percent confidence interval: 0.35–3.00). The frequency of RVO was present in 56 (63%) in this study out of 89 patients.

In this study, the majority of RVO patients were found to be more commonly affected i.e. 49 (65%). The study consists of one type, i.e. one group of hypertension RVO is hemorrhagic in flame form, with 29 (55% of total patients) being hypertensive.

While the HTN as a risk factor indicated a hemorrhage of 37 (92.5%) dot-blots and 29 (72.5%) flammable bleeding among 40(45% of total patients) patients with HTN.

This study compared different types of retinal hemorrhaging with the test chi square, X2 tab value for two samples = 5,991 and p< 0,05 which i s considered significant in patients with retinal vascular occlusion (RVO) with hypertension.

In 49 hypertensive patients, the blot hemorrhage was measured as 1.7 in chi-square, flame-shaping hemorrhages in 29 hypertensive patients, and 43 high-patients and the calculated value was 4.26 in a chi-square examination. The best correction of the RVO patients' visual acuity BCVA on the 1st visit in this study is 6/18 in 6.74%, 6/18/60 in 28%, and 6/60% in 65%.

The symptoms in RVO patients were 65.1% less than one month, 24.7% within one to two months, and 10.1% between two and three months. In this study, 65.1% were seen.

DISCUSSION

In a study in Korea, Joo Yong Lee et al,[18] identified RVO patients in several age groups on 557 patients. 4.1% of people were younger than 40 years, 16% were between the ages of 40 and 49, 60% were between the ages of 50 and 70 and 18.3% were 70 years and older. In our sample, 9% were between the ages of 31 and 40 years, while 23,6% were between the ages of 41 and 50 years and 67,4% between the ages of 51 and 70 years. The findings of both studies were similar in some way, except that the research of Joo Yong Lee also included patients under the age of 30.

It has been reported that the prevalence of RVO is 1.6 percent in Australia's Blue Mountains Eye Study (BMES) and 0.8 percent in the Beaver Dam Eye Study (BDES) Several epidemiological research on RVO among non-white groups have been published in the last several years.[8,10] According to the Singapore Malay Eye Study (SiMES),[12] the Beijing Eye Study (BEES),[11] the Hisayama Study (HS),[13] CIEMS (Central India Eye and Medical Study),[14] and the Singapore Epidemiology of Eye Disease Study (SEEDS),[14] the prevalence of RVO in Asian populations older than 40 years was 0.7 percent (SEEDS).[5] There was no significant gender difference in the prevalence of RVO in adults 19 years of age, or in adults >40 years of age (0.6 percent of adults had BRVO, and 0.1 percent had CRVO). As compared to earlier studies, our prevalence estimates are modest.

A substantial association was found between RVO and hypertension, hypercholesterolemia, and stroke history, according to our studies. Except for the SiMES, hypertension has consistently been found as an RVO risk factor in numerous earlier research.[12] RVO patients have been found to have a greater stroke risk in recent research.

Tyler Hyungtaek Rim et al,[19] have stated, in a Korean analysis, that 83.2 percent of the risk factor for RVO was hypertension. Although 55% of patients with the risk factor hypertension and 45% of the risk factor for hypertension were identified in our study. The disparity between our research and Tyler H, who also selected hyperlipidemia, chronic renal failure, acute MI, stroke, is due to our selection of only two risk factors. But our research is well correlated with Tyler's study although there are few variations.

A research by Tyler Hyungtaek Rim et al,[19] concluded that 56.3% of all RVO patients involved in his study were female and 43.7% were males, with 51.7% being female and 48.3% being male. Both studies show a higher RVO incidence among women in comparison with men. This indicates a small gap in gender participation between the two studies.

E. Ramadevi et al,[20] in their retinal vein occlusions analysis - A clinical trial carried out in India showed that 51% of patients in the right and left eyes were affected by the right eye, compared to 47,000 in the left eye, in the left eye compared to 63,000 in the right eye and in the connection eye May be the sample size differs in laterality; in our case the sample size is greater than E. Ramadevi.[20]

In his research, Hayreh SS et al,[17] found that more than 60 percent of the eyes had moderate to no retinal haemorrhages, and 7 to 16 percent had serious retinal blood haemorrhage by splitting it into two classes i.e. non ischemic and ischemic RVO. Altogether 1% did not have retinal blocks, 42% had moderate retinal bleeding and 22% had serious retinal blooms, and 12% in the ischaemic RVO had mild retinal bleeding. 53% had serious bleeding. Although the occurrence or absence of retinal bleeding in RVO has been compared in our sample with two forms, namely 37% of the blotted bleeding in ic RVO and 46% of the blood in hypertensive RVO, 28% of the haemorrhage of the flame kind in ic RVO. The two experiments are similar in that both depict the appearance of retinal blemishes in RVO. Hayreh SS classified the retinal bleeding into mild, moderate and grave, as the retinal haemorrhages are split into three different forms seen in RVO.

Feibai B et al,[7] studied retinal vein occlusion in Nigeria and showed that the best correction of patients in the visual acuity was in patients >6/18 in three (8.82 percent), in patients 6/18-6/60 in 7(20.58), and in patients <6/60 in twelve(70.58) i.e. that most patients had BCVA less that 6/60 while BCVA was >6/18 in six(6.74%), in two patients (28 percent) and in one of them <10 in twelve (28%) Feibai B and al6 in one of them Despite the fact that our sample is greater than that study, this study corresponds well to our study.

E. Ramadevi et al[20] reported in their report that RVO symptoms were less than one month for 31,3%, 19,6% for 1-2 months, 25,5% for 3-5 months and 23,5% for 6-12 months, while RVO symptoms were less than one month for 65,1%, 24,7% for 1-2 months and 10,1% for 2-3 months. In the study, RVO and al[7] showed the period in 31, 3% of patients. Difference is that E. Ramadevi included patients who show symptoms for up to 1 year while patients with a period of symptoms for up to 3 months have been selected from our sample.

CONCLUSION

This research concluded that in patients with retinal vein occlusion (RVO) associated with Hypertension a large number of different forms of retinal hemorrhogen is present. It has been shown that dot blot haemorrhages are correlated with hypertension or high pressure in both the retinal vein occlusion, although in hypertensive patients they were significantly higher. Hypertension, a particularly modifiable risk factor, was the most strongly associated factor for RVO in our study.

Author's Contribution:

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

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Original Article

Fundoscopic Comparison of Retinal Hemorrhages After Retinal Venous Occlusion in Patients with Diabetic Mellitus

Naeem Akhtar Katpar[1], Muhammad Sibghatullah Fahad[2], Darikta Dargahi Shaikh[1], Shabeer Ahmed Bhutto[1], Safdar Ali[1] and Fayaz Ali Kalhoro[1]

ABSTRACT

Objective: To compare variability of retinal hemorrhages at fundoscopy after retinal vein occlusion in patients with Diabetes Mellitus.

Study Design: A cross-sectional study

Place and Duration of Study: This study was conducted at the Sindh Institute of Eye Hospital, Hyderabad from 1st January 2019 to 31 December 2019.

Materials and Methods: There are 89 patients aged 30 to 70 years or more, both male and female in this study. Patients with newly diagnosed central retinal occlusion were included. Diabetes mellitus was verified in 89 of the patients, and they were all under the age of 35 when they were treated. Utilizing Slit Lamp photography and a close examination of the fundus of a 90 D Volk Lens (RETINAL CAMERA-TRC-50EX). Initiated by the scientists, and later confirmed by an expert ophthalmologist, their ultimate diagnosis was correct. Version 20 of the Stata statistical programme for social science has been entered and tested by the researchers.

Results: A total of 89 diabetics with retinal vein occlusion (RVO) had fundoscopy. Patients ranged in age from 54.93 years old on average plus 8.854 years on the standard deviation (33 to 70 years). In this study, there were somewhat more women than men: 46 women (51,6%) and 43 men (48.31 percent).

We found a link between retinal haemorrhage and diabetes mellitus in patients with retinal vein blockage in this study. Dot blot haemorrhages occurred in 37 diabetic patients, while flame formation haemorrhages occurred in 29 diabetic patients.

Conclusion: This research concluded that in patients with retinal vein occlusion (RVO) associated with diabetes mellitus a large number of different forms of retinal hemorrhogen is present. It has been shown that dot blot haemorrhages are correlated with diabetes or high pressure in both the retinal vein occlusion, although in diabetic patients they were significantly higher. In retinal vein occlusions with diabetes, flame-like bloods were also observed but were more frequent in diabetic patients.

Key Words: Fundoscopy, Retinal vein occlusion, Diabetes Mellitus.

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INTRODUCTION

Retinal vine occlusion is the second most prevalent vision-threatening retinal vascular disorder to lead to blindness after diabetic retinopathy.[1] The prevalence of retinal occlusion ranges from 1.6% to 1.9%.[2,3]

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The number of people with retinal occlusion (aged 30 or older) has been estimated at roughly 16.4 million in the United States, Europe, Asia, and Australia, with an increase of up to 16 million expected by 2040.[4,5] Major risk factors include growing old, systemic hypertension, diabetes mellitus, and glaucoma 6 and hypermetropia.[6] Patients with retinal occlusion typically have a sudden loss of vision in one eye, with only a few also experiencing loss of vision in both eyes as well as visual field defects.[7,8]

The common fundus findings of the retinal vein occlusion are expansion and tortuosity of the retinal veins, haemorrhages in the form of dots and flamm, swollen optic discs, spots of cotton and macular edoema and exudates of lipids.[9,10]

This study has been conducted with diabetes Mellitus to identify retinal haemorrhage cases in the occlusion of the retina based on fundus findings.

MATERIALS AND METHODS

From 1st January 2019 to 31 December 2019, researchers conducted a cross-sectional study at Sindh Institute of Eye Hospitaller Hyderabad on 89 patients aged 30 to 70 years or more, both male and female. Patients with newly diagnosed central retinal occlusion were included. Diabetes mellitus was verified in 89 of the patients, and they were all under the age of 35 when they were treated. Utilizing Slit Lamp photography and a close examination of the fundus of a 90 D Volk Lens (RETINAL CAMERA-TRC-50EX). Initiated by the scientists, and later confirmed by an expert ophthalmologist, their ultimate diagnosis was correct. Version 20 of the Stata statistical programme for social science has been entered and tested by the researchers.

According to the inclusion and exclusion criteria of Eye Hospital Hyderabad's Sindh Ophthalmology and Visual Sciences Department, patients were enrolled in the study after approval of Synopsis, and underwent an in-depth fundus examination with a 90 D Volk Lension Slit Lamp and a Fundus Photography examination (RETINAL CAMERA-TRC-50EX). The first round of testing was completed, and a board-certified ophthalmologist later confirmed his final diagnosis with additional tests.

Version 20 of the social sciences statistics package has been entered and examined. With respect to a continuous variable like age, the means and SDs were calculated. Following retinal vein blockage, the frequency and percentage of clinical retinal haemorrhages were assessed in diabetic patients. Result. Chi square tests and p 0.05 were used to compare different types of diabetic retinal haemorrhage.

RESULTS

A total of 89 patients with diabetes mellitus who had retinal vein occlusion (RVO) were examined with fonoscopy at the Sindh Institute of Ophthalmology and Visual Sciences in Hyde to compare the variability in retinal haemorrhage following RVO in diabetic patients. The average age + SD (range) was 54.93 + 8.854 years, with a minimum age of 33 and a maximum age of 70.

Females made up 51.6 percent of the sample, while males made up 43 percent. Females had a lower percentage than males (48.31 percent).

The patients were separated into three age groups. The majority of patients (67.4%) were between the ages of 51 and 70; 21 (23.6%) were between the ages of 41 and 50; and 8 (9.0%) were between the ages of 31 and 40. Most case in this study had RVO on their ght side of 56 (63%), while 33(37%) had RVO on the left.

In this study, the majority of RVO patients were found to be more commonly affected i.e. 49 (55%), whereas the 40(45%) of patients were more commonly affected i-e 49 (50%). Diabetes Mellitus was also affected.

The study consists of two types, i.e. diabetes Mellitus RVOs, 46 (93.9%), 43 (87.7%) and hypertension RVOs is hemorrhagic in flame form, with 49 (55% of total patients) being hypertensive.

While the diabetes as a risk factor indicated a hemorrhea of 37 (92.5%) dot-blots and 29 (72.5%) flammable bleeding among 40(45% of total patients) patients with diabetes.

This study compared different types of retinal haemorrhaging with the test X^2 (chi square), X^2 tab value for two samples = 5,991 and p< 0,05 which is considered significant in patients with retinal vascular occlusion (RVO) with diabetes mellitus.

Ini37 diabetic patients, the blot haemorrhage was measured as 1.7 in chi square, flame-shaping haemorrhages in 29 diabetic patients and in 43 high-patients and the calculated value was 4.26 in a chi square examination. The calculation was based on a calculation of 1.7 in the Chi square.

The best correction of the RVO patients' visual acuity BCVA on 1st visit in this study is 6/18 in 6.74%, 6/18/60 in 28% and 6/60% in 65%.

The symptoms in RVO patients were 65.1% less than one month, 24.7% within one to two months, and 10.1% between two and three months. In this study 65.1% were seen.

Table No.1: Baseline characteristics of the patients (n = 89)

	Frequency	%
Mean age ± SD (range)	54.932 ± 8.854 (33 to70 years)	-
Gender		
Male	43	48.31%
Female	46	51.6%
Age (in groups)		
31-40 years	8	9%
41-50 years	21	23.6%
51-70 years	60	67.4%
Laterality of Eyes		
Right eye	56	63%
Left eye	33	37%
Risk factor		
Diabetes Mellitus	40	45%
Hypertension	49	55%
BCVA		
>6/18	6	6.74%
6/18 – 6/60	25	28%
<6/60	58	65%
Duration		
<1 Month	58	65.1%
1-2 Months	22	24.7%
2-3 Months	9	10.1%

Table No. 2: Outcome of RVO Patients for Different Type of Retinal Hemorrhages in Diabetes Mellitus (n = 89)

Outcome	Retinal Hemorrhages		Total n = 89
	Yes	No	
Dot blot hemorrhages DM (n = 40)	37 (92.5%)	3 (7.5%)	40 (45%)
Flame shaped hemorrhages DM (n = 40)	29 (72.5%)	11 (27.5%)	40 (45%)

Table No.3: Different types of retinal hemorrhages after RVO in Diabetes Mellitus (n = 89)

Retinal hemorrhages (in RVO)	Diabetes mellitus	Calculated / test value
Dot blot	37	1.7
Flame shaped	29	4.25

DISCUSSION

Joo Yong Lee et al.[11] studied 557 individuals in Korea and found that RVO affected people of various ages. 4.1% of the population was under the age of 40, 16.6% were between the ages of 40 and 49, 60.0% were between the ages of 50 and 70, and 18.3% were over the age of 70. Our sample included 9 percent of people in their 30s and 40s, 23.6% in their 41s and 50s, and 67.3 percent in their 50s and 70s. Both investigations came to similar conclusions, with the exception of the fact that Joo Yong Lee's study covered individuals younger than 30.

Tyler Hyungtaek Rim et al,[12] have stated, in a Korean analysis, that 83.2 percent of the risk factor for RVO was hypertension, 65.2 per cent was found to have diabetes mellitus excluding a certain number of other minor risk factors. Although 55% of patients with the risk factor hypertension and 45% of the risk factor for diabetes mellitus were identified in our study. The disparity between our research and Tyler H, who also selected hyperLipidemia, chrónico renal failure, acute MI, stroke, is due to our selection of only two risk factors. But our research is well correlated with Tyler's study although there are few variations.

Researchers E. Ramadevi and colleagues[13] examined retinal vein occlusions. The results of an Indian clinical research showed that 51% of patients in the right and left eyes were impacted by the right eye, compared to 47,000 in the left eye, and in the connection eye compared to 63,000 in the right eye. Possibly, the sample size differs in laterality, as ours is larger than E. Ramadevi's.[13]

Over 60% of the eyes had moderate to no retinal haemorrhages, and 7 to 16% of the eyes had major retinal blood haemorrhages, according to Hayreh SS et al,'s research.[10] Around 1 percent had no retinal blockages, 42% had severe retinal bleeding, 22% had serious retinal blooms, and 13% had mild retinal bleeding in ischemic RVO. About 53% of the patients were suffering from life-threatening haemorrhage. There was no difference between diabetes and hypertension RVO when it came to retinal bleeding, while diabetic RVO had 28% more haemorrhages of the flame type than hypertensive RVO when it came to blotted bleeding. Both trials show the emergence of RVO-related retinal imperfections. As retinal haemorrhages are divided into three different kinds in RVO, Hayreh SS defined the retinal bleeding as mild, moderate, and severe.

Patients >6/18 in three (8.82 percent) had the best visual acuity correction, patients 6/18-6/60 in seven (20.58) had the best correction, and patients 6/60 in twelve(70.58) had the worst visual acuity correction, meaning that most patients had BCVA less than 6/60 while BCVA was >6/18 in six(6.74 percent), in two patients (28%), and in one of them 10 in twelve (28%).[7] However, despite the fact that our sample size is larger, this research closely resembles our own.

Researchers E. Ramadevi and colleagues[13] found that RVO symptoms appeared within one month in 31.3 percent of patients, 19.6 percent in the first two months, 25.5% in the third month and 23.5 percent in months six to 12 while RVO symptoms appeared within a month in 65.1 percent of patients and were found to be less than a month in 65.1% of those patients. RVO and found that 31.3% of patients had the period. However, E. Ramadevi included patients who had symptoms for up to one year, while our sample consisted of patients who had symptoms for no more than three months.[13]

CONCLUSION

Patients with retinal vein occlusion (RVO) and diabetes mellitus have a wide variety of retinal hemorrhogens, according to our findings Diabetic patients had significantly more dot blot haemorrhages, which have been linked to both retinal vein occlusion and diabetes. In retinal vein occlusions with diabetes, flame-like bloods were also observed but were more frequent in diabetic patients.

Author's Contribution:

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

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Original Article

Anti-Inflammatory Role of Low Level Laser Therapy and Zinc Oxide in Wound Repair: A Comparative Study in Rats

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ABSTRACT

Objective: Wound healing is a widely studied subject, and efforts are being made worldwide to make wound healing more effective. We carried out a study to assess the anti-inflammatory role of low level laser therapy and zinc oxide in wound repair.

Study Design: Random sampling technique study

Place and Duration of Study: This study was conducted at the Karachi Campus of Isra University. The study was carried out for duration of 6 months, from June 2020 till December 2020.

Materials and Methods: 18 Albino rats were selected through random sampling and divided into three groups. Each group was given a normal daily diet along. An equal incision was made into all the rats of the group of the same size. Intervention was then carried out in which Group A received topical saline solution hence acting as the control group, Group B was given Low Level Laser Therapy (LLLT), and Group C was given Zinc Oxide topically. Histological tissue was attained on the 3rd and 7th day for analysis. Data was analyzed using SPSS with one-way ANOVA followed by post-Hoc tukeys test being applied.

Results: Reduction in the Neutrophil and Lymphocyte count was seen in Group B (Day 3: 19.65±2.30, Day 7: 8.55±5.1) and Group C (Day 3:23.00±8.30, Day 7: 18.44±3.34), however Group B in which LLLT was the interventional agent demonstrated the most favorable result. Significant difference was obtained when comparing group B to A on day 3 (<0.01) and 7 (<0.001), as well as when Group B was compared to Group A on day 3 (0.01) and day 7 (<0.001).

Conclusion: Our study concludes that both LLLT and Zinc Oxide improve wound healing through their anti-inflammatory actions; however, LLLT showed more favorable results.

Key Words: Anti-Inflammatory Role, Level Laser Therapy, Zinc Oxide, Wound Repair

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INTRODUCTION

The Human body is a magnificent specimen which we have gone onto study for centuries now yet have encountered hindrance in fully understanding each and every part of it and finding solutions that can prolong the human life. The body derived of many organs, is covered by the skin which is the largest organ serving as a covering to our nerves, vessels, muscles, and other organs.

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Like all other cells in our body, the skin constantly renews and multiplies itself thereby staying relevant and performing its physiological function to the maximum capacity. Furthermore, if the skin gets damaged in any way, it too heals like the rest of the body. This process is known as wound healing which is a process by which the skin attempts to heal itself. The mechanism of wound healing has been recognized as important to health since the beginning of mankind[1]. Wound healing is a complex reaction which can be divided into 3 phases, inflammatory phase, proliferative phase, and the remodeling phase. A haemostatic phase occurs just before the inflammatory phase, in which platelet aggregation and clot formation occurs to prevent further bleeding. Inflammatory phase is characterized by in which neutrophils, lymphocytes, and macrophages are recruited and arrive to the site of wound to remove any microorganism that can utter harm to the body[2-3]. Proliferation phase begins next in which production of collagen, ground substance, angiogenesis, and re-epithelialization of the wound takes place[4-6].This is what is called the formation of

granulation tissue. Finally, the maturation phase is the last phase of wound healing in which maturation and remodeling of collagen and closure of the wound takes place[7-8]. Wound healing isn't always a successful process and can lead to complications such as delayed wound healing, hypertrophic scar, keloids, and even infection of the wound[9-11]. Another consequence of improper wound healing is the formation of a scar. Evidence is present which suggest that the main culprit for scar formation is due to prolong inflammatory phase during the process of wound healing[12-13]. Many attempts have been made to improve wound healing by reducing the inflammatory phase of wound healing. This can be done by substances or materials that have anti-inflammatory properties. Low Level Laser therapy (LLLT) has come out as a strong candidate in promoting wound healing due to its anti-inflammatory action[14]. Similarly, Zinc oxide is also taken into consideration due to its properties[15]. Wound healing is a major cause of concern worldwide and studies are continuously ongoing to find ways to make wound healing as quick and efficient as possible without any complications. Considering this, a study was conducted to assess the anti-Inflammatory role of LLLT and zinc oxide in wound repair.

MATERIALS AND METHODS

After taken the necessary steps in attaining approval from the Institutional review board (IRB), an interventional study was conducted at the Karachi campus of Isra University. The study was carried out for duration of 6 months, from June 2020 till December 2020. 18 albino rats were selected on the basis of random sampling technique. These rats were acquired through the animal house of Al-Tibri Medical College. Each albino rat that was included in the study needed to weight 150-250gms which was done through an electronic weigh scale. The rats were then divided into groups of three, with each group consisting of six rats. The following parameters were set for each group

Group A: Control Group received normal saline (0.9%) solution topically once daily for 7 days.

Group B: Therapeutic Group that received Low Level Laser Therapy 4j/cm^2 for once daily for 30 seconds for 7 days.

Group C: Therapeutic Group that received 20% Zinc Oxide solution once daily for 7 days.

Before performing the intervention, the wound was surgically created in the dorsal area of their back. Anesthesia was given in the form of chloroform and their backs were shaved and clean before a sharp sterilized scalpel was used to make a cutaneous wound that had a dimension of 1.5x1.5cm^2. Confirmation of the measurement of the incision was done using a plastic scale. All rats had a normal daily diet throughout the study.

To analyze the histology of the tissue, sample was taken on the 3rd and 7th day. The tissue extracted from the wound site was fixed using formalin solution, after which it was sectioned using a microtome. Further processing was done using the H&E staining. The slides were examined under a light microscope at magnification of 100x and 400x to count the number of inflammatory cells via reticule count, with a total five number of boxes being taken into account for the cell count. The number of neutrophils and lymphocytes were identified and then counted.

Data was then analyzed using SPSS Version 20.0. Data analysis was done using one-way ANOVA test followed with post-Hoc tukeys test. A p value of ≤0.05 was considered to be significant**.**

RESULTS

Neutrophil Count

Group B and A: Mean ± SD of neutrophil count at 400x magnification on day 3 in Group B was 19.65±2.30 and in Group A was 39.85±6.40. Significant difference was seen in Group B compared to Group A (p<0.01). Mean±SD of neutrophil count at 400x magnification on day 7 in group B was 8.55±5.1 and in group A was 33.36±4.4. Significant difference was seen in Group B compared to Group A (P<0.01). (Table 1) (Figure 1)

Group B and C: Mean±SD of neutrophil count at 400x magnification on day 3 in Group B was 19.65±2.30 and in group C was 23.00±8.30. Significant difference was seen in Group B compared to Group C (p<0.01). Mean±SD of neutrophil count at 400x magnification on day 7 in group B was 8.55±5.1 and in Group C was 18.44±3.34. Significant difference was seen in Group B compared to Group C (p<0.01). (Table 1) (Figure 1).

Table No.1: Level of Significance when comparing Neutrophil Count between Groups on Day 3 and 7

Comparison of Groups	Day 3 level of significance	Day 7 Level of Significance
B vs A	<0.01	<0.001
B vs C	<0.01	<0.001

P value≤0.05

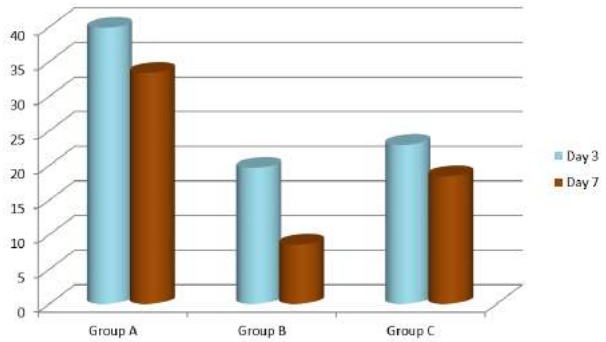

Figure No.1: Number of Neutrophil Count in each Group on 3rd and 7th Day

Lymphocyte Count:

Group B and A: Mean ± SD of Lymphocyte count at 400x magnification on day 3 in Group B was 69.73±1.20 and in Group A was 33.59±2.65. Significant difference was seen in Group B compared to Group A ($p<0.001$). Lymphocyte count on day 7 in Group B was 38.34±1.03 and in Group A was 54.73±1.53. Significant difference was seen in Group B compared to Group A ($p<0.001$). (Table 2) (Figure 2)

Group B and C: Mean±SD of Lymphocyte count at 400x magnification on day 3 in Group B was 69.73±1.20 and in Group C was 49.82±0.92. Significant difference was seen in Group B compared to Group C ($p<0.001$). Lymphocyte count on day 7 in Group B was 38.34±1.03 and in Group C Was 40.45±0.95. Significant difference was seen in Group B compared to Group C ($p<0.001$). (Table 2) (Figure 2).

Table No.2: Level of Significance when comparing Lymphocyte Count between Groups on Day 3 and 7

Comparison of Groups	Day 3 level of significance	Day 7 Level of Significance
B vs A	<0.01	<0.001
B vs C	<0.01	<0.001

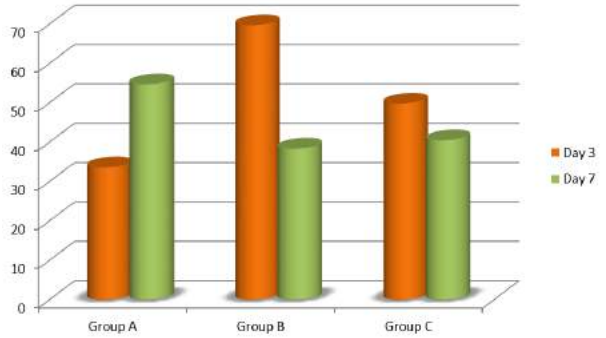

Figure No2: Number of Lymphocyte Count in each Group on 3rd and 7th Day

DISCUSSION

Wound healing if done without any complications, can lead to the formation of a perfectly normal and healthy skin. However, this is not always seen and researchers have worked tirelessly to find ways as to improve wound healing. LLLT seems to be a good candidate. Our study has shown that LLLT can actually reduce the number of neutrophil and lymphocyte count in wounded tissues. LLLT indeed does show significant increase in skin as well as scar tissue recovery, through the presence of anti-inflammatory properties[16]. Another study also showed that LLLT can reduce the levels of pro-inflammatory cytokines and increase the levels of anti-inflammatory cytokines thereby reduces the inflammation cells and inflammation period. This in turn helps to increase collage fibers and form a well-made granulation tissue component in the wound[17]. Another study conducted by Franciane et al (2014), showed that LLLT-treated groups demonstrated decrease in the inflammatory cells number, while simultaneously increasing collagen deposition. He showed that irradiation by laser at 3 and 4 J/cm^2 caused a reduction in the inflammatory process; these findings are in line with our study in which there is also a reduction in the inflammatory cell count[18]. Zinc Oxide was another substance part of our study and also went onto show commendable results by reducing the number of white blood cells in the wound tissue. Zinc Oxide is used in modern medicine for its many properties such as antimicrobial and wound healing[19]. In our study zinc oxide promoted wound healing by reducing both the neutrophil and lymphocyte count. In another study conducted by Cangul et al (2006) also showed the zinc oxide reduced inflammatory cell count, however, in that particular study it was compared to topical tripeptide-copper complex which reduced the inflammatory cell count more than zinc oxide[20]. Similar results can be highlighted in our study. Both LLLT and zinc oxide successfully promoted wound healing by promoting anti-inflammatory activity which can be evident by seeing the reduction in neutrophil and lymphocyte count on the respective days, but LLLT came out to be the superior agent when both of the two study groups were compared. There are many other anti-inflammatory agents that promote wound healing which can be further studied in the future and compared with our parameters[21-24]. Wound development and its healing is inevitable, therefore we must be prepared to tackle it in a way which make the process as smooth as possible by reducing the inflammatory phase and forming near perfect skin or a favorable scar tissue.

CONCLUSION

Low level laser therapy and zinc oxide successfully managed to lower the neutrophil and lymphocyte count during wound healing, this was done by their anti-inflammatory properties. However, LLLT group was more effective in reducing the inflammatory cells.

Author's Contribution:

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Original Article

Perception of Radiation and their Associated Risk among Medical Students

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ABSTRACT

Objective: To determine the perception of radiation and its risk among medical students.
Study Design: A cross-sectional study
Place and Duration of Study: This study was conducted at the Shahida Islam Medical and Dental College, Lodhran, Punjab for duration of six months from 01.01.2021 to 30.06.2021.
Materials and Methods: A self-administered questionnaire was given to them to fill after taken informed and written consent as well as being assured of the anonymity of the inclusion. Data was analyzed using SPSS Version 21.0, with Chi-square test being applied and the level of significance being kept at ≤0.05.
Results: A total of one hundred and fifty questionnaires were received in which the mean age of the participants were 23.45±0.23. Ninety-three (62%) students were females, and fifty-seven (38%) were males. An increase in awareness and knowledge were seen in increasing years, with final year students having most knowledge. Statistically significance varied from question to question. Significant difference (P-value: ≤0.024) was seen when students were asked if they have a great understanding of the radiology subject and its use in medicine.
Conclusion: Overall knowledge of radiation is inadequate and must be reinforced in students and early clinical integration must be done so that they can protect themselves and the patients as well as make rational decision will be ordering imaging for radiation of radio therapy in the future.
Key Words: Radiation, Medical Students, Exposure, Risk

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INTRODUCTION

Radiation has become a very significant tool in modern health care profession. Throughout the vast world of medicine, radiation has more or less left its mark. The most common use of radiation is in radiation therapy and diagnostic imaging. Diagnostic imaging helps the practitioner in diagnosing various illnesses, conditions, and tumors that other clinical or biochemical tests may be deemed inconclusive. Diagnostic imaging that uses radiation includes X-ray, MRI, CT-Scan, and more[1-4]. Furthermore, radiotherapy has also now become a vital treatment modality in the treatment of a wide array of cancers throughout the body.

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Radiotherapy is a very unique and specific treatment method that kills specific malignant cells, however, it must be noted that different cancers of the body respond differently to treatment through radiation [5]. Although radiation utilization in modern medicine is a breakthrough, it comes with its risks. Healthcare workers are frequently at the risk of radiation exposure. Medical imaging alone in 1980 accounted for 15% of the average annual radiation exposure received by the US population, however, most concerning is the fact that this percentage reached to 50% in 2006 [6]. Protection from radiation is an essential aspect in medicine practice, proper guidelines, protocols, and techniques must be taken care of while performing any procedure which requires radiation albeit even if it is at the smallest of dose [7]. Failure to limit radiation exposure, or have knowledge regarding the protocols and techniques while using radiation equipment can lead to serious side effects[8-10]. Medical students are taught about radiation and its vast utilization in the field of medicine. They are also exposed to radiation during their clinical rotations in general wards. It is necessary that students of medical sciences who are in their clinical years must have ample knowledge about radiation and its associated risk so that they can take the necessary precautions and protect themselves as well as their batch mates. Keeping this in mind, a cross-sectional study was conducted to assess the perception of radiation and their associated risk in medical students.

MATERIALS AND METHODS

After taking the necessary steps of acquiring Institutional review board (IRB) approval, a cross-sectional study was conducted on the MBBS students of Shahida Islam Medical and Dental College, Lodhran, Punjab for duration of six months. A total of one hundred and fifty students from third, fourth, and fifth year were taken in this study. A questionnaire was particularly designed for this study. All of the students were randomly selected and were informed about the study, and only after informed and written consent were the included in the study. All the students were assured of their anonymity during the study. After data was collected from the students, data was analyzed using SPSS Version 21.0. Frequency of students was calculated and the Chi-Square test was applied for statistical significance, the P-value was set at ≤0.05.

A total of one hundred and fifty questionnaires were received, ninety-three students were female, while the remaining fifty-seven were males. The mean age of the students in the study was 23.45±0.23. Figure 1.1 shows the percentage of male and female that took part in the study.

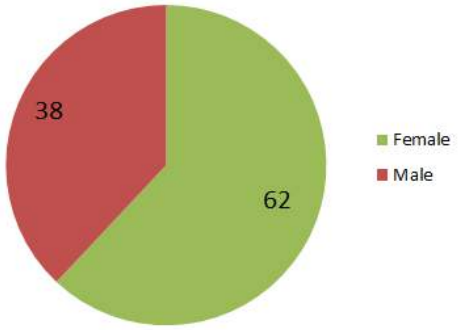

Figure No.1: Percentage of gender distribution among the patients

RESULTS

Table No.1: Shows the results of the questionnaire filled by the medical students of the respective years.

		3rd Year			4th Year			5th Year			
		Agree	Neutral	Disagree	Agree	Neutral	Disagree	Agree	Neutral	Disagree	P-value
1	I have a great understanding of the radiology subject and its use in medicine	4	6	40	10	10	30	25	5	20	0.024
2	I have a good knowledge of medical physics	8	10	32	12	8	30	29	6	15	0.745
3	I am totally aware about the multiple fields of diagnostics concerning radiology	22	8	20	33	2	15	40	4	6	0.064
4	I am well educated about the preventive measures and compliance for radiation protection	12	8	30	25	10	15	37	5	8	0.004
5	I am well aware about the modalities using radiology	10	7	33	24	6	20	40	3	7	0.0541
6	I am well educated about the hazards of radiation exposure	22	10	18	27	6	17	38	4	8	0.021
7	I have a complete knowledge of medical ethics, which should be incorporated in radiology	19	6	25	24	10	16	42	2	6	0.043
8	I have a knowledge about the modalities that are responsible for the most radiation dose	11	5	34	19	2	29	30	6	14	0.05
9	I have a strong understanding of radiation and their risk factors	23	9	18	31	4	15	41	3	6	0.021
10	I know how to prepare the patients for different radiological procedures without causing any harm to the patient	12	4	34	35	5	10	38	7	5	0.075
11	I am aware of the side effects of radiation exposure	14	7	29	33	7	10	42	4	4	0.056

Chi-square test applied

DISCUSSION

The medical community has an oath to serve and provide services to the community. Radiation is important in health and disease, possibly with proper use and prevention of misuse of overuse [11]. Doctors, paramedical staff, and the medical students all need to be aware of the associated risks when it comes to radiation. Recent studies have demonstrated lack of understanding of medical radiation among different

groups of health care providers[12]. We conducted a similar student to the ones mentioned; however, this was carried out among medical students. Results showed an increase in knowledge concerning radiation from third year students to final year students; this finding is similar to another study which showed the same trend [13]. Final year students had the most knowledge concerning radiation and their associated risk. This finding is different to another study that showed that overall medical students had a low knowledge of radiation dosage and its associated risks[14]. Variation in the level of significance was seen in question, with some being statistically significant whereas others having no significant difference. However, it can be confirmed that final year students possess the most knowledge. This seems very obvious due to them acquiring more training and being in the senior most year of medicine and studying more than others. Overall if we consider the results, albeit final year have more knowledge of radiation and its risks, the overall results if spanned across all groups show that the knowledge is very limited. Similar finding was seen in a study conducted on fourth year and final year students in a private medical college of Karachi, which showed that the majority of the students have limited knowledge of aspects of radiation, its sources, risk factors involved, and the protection deemed from it [15]. This is a cause for concerning as other studies have also proved the limited know how and depth of understanding of radiation in students [16-17]. Efforts must be put in place to find a solution to tackle this lack of information. More teaching needs to be carried out in the subject of radiology early on in the medical education of these students, so that they can develop rich knowledge from an early stage [18]. There is a strong need for educating the medical students about radiation exposure and risk; this can be done through presentation and particular seminars focusing only on radiation. Clinical integration must also be started in the early years so that better understanding of the equipment, dosing, protection, and ethics can be enforced in the students. This implementation of early on teaching of radiation will cement the importance of radiation among students, who as future doctors will be of the dangers of radiation exposure, risk of multiple medical imaging, and can be able to make careful decision while ordering tests that utilizes radiation [19].

CONCLUSION

Overall the perception of radiation and its risk is the highest among final year students, however, if taking all the participants it is still low. Further efforts are needed to expand the knowledge of radiation and its risks to doctors and patients.

Author's Contribution:

Concept & Design of Study:	Zaheer Hussain Memon
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Revisiting Critically:	Zaheer Hussain Memon, Jawad Mumtaz Sodhar
Final Approval of version:	Zaheer Hussain Memon

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

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Original Article

Validity and Reliability of Periodontal Parameters Measurements

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ABSTRACT

Objective: The purpose of this study was to evaluate the validity and reliability of periodontal parameters measurements.

Study Design: Cross-sectional Study

Place and Duration of Study: This study was conducted at the periodontology Khyber college of Dentistry Peshawar Pakistan from January 2020 to March 2020 for a period of 03 months.

Materials and Methods: A total of 10 patients with 288 variables for five different periodontal parameters were examined. The study inclusion and exclusion criteria were followed. Two investigators (A and B) carried out the whole process. 'A' was the principal investigator/ intra examiner who measured the periodontal parameters and 'B' Co-investigator recorded all the readings. Five periodontal parameters including Pocket depth (PD), gingival recession (GR), bleeding on probing (BOP), plaque and calculus were measured.

Results: Pocket depth and gingival recession were recorded as numeric data so ICC (Intra class correlation coefficient) was carried out for these variables whereas Kappa score was carried out for categorical data (BOP, plaque and calculus). The ICC and Kappa values were statistically significant and were in the range of strong correlation for intra examiner.

Conclusion: The reproducibility recorded for calculus score and gingival recessions was 100%, 97% for plaque score, 95% for pocket depth measurement, and 91% for bleeding on probing and were statistically significant but it requires training and calibration with inter examiner.

Key Words: Periodontal parameters, Validity, Reliability

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INTRODUCTION

Calibration process is purely a comparison of measurement values. Calibration of a process gives consistency in readings by reducing the chances of errors and thus increases its validity[(1)].

Intra examiner calibration or intra rater reliability is the degree of agreement among repeated administrations of a diagnostic test performed by a single rater/ examiner[(2)]. The term reliability in research is defined as "the degree at which the measurements should be consistent at different times and with different examiners" [(3)].

Productive treatment planning in periodontology needs detailed investigative evidence and a comprehensive periodontal examination. In periodontics, comprehensive periodontal examination is an essential part of investigation [(4)]**.** Measurements of periodontal parameters can be analyzed more effectively and precisely in the patient's mouth [(5,6)]. Periodontal parameters are regularly measured in periodontal treatment process for the evaluation of presence or absence of disease, diseases severity, and disease progression, prognosis of the disease and construction of a treatment plan [(7,8)]**.** Comprehensive periodontal examination has been the standard for years in periodontal treatment plan [(9)] **.** However the dexterity of an operator may vary from operator to operator and may result in shortcoming during the measurement of periodontal parameters [(10)]**.** To restrain from these shortcomings validity and reliability should be practice to reduce the chances of errors. Assessment of patients for various periodontal parameters showed good agreement and validity [(11, 12)]**.**

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Therefore, the purpose of this study is to evaluate the reproducibility and validity of an intra-examiner for different periodontal parameters. These periodontal parameters include; Pocket depth, gingival recession, bleeding on probing, plaque and calculus.

MATERIALS AND METHODS

The data source was patients randomly visiting to the department of periodontology Khyber college of Dentistry Peshawar Pakistan. A total of 10 patients with 288 variables for five different periodontal parameters (Pocket depth (PD), gingival recession (GR), bleeding on probing (BOP), plaque and calculus) were examined. Patients with periodontal disease were included if they were presented with teeth 16, 11, 26, 36, 41 and 46. Patients who were systemically compromised and not willing to participate in the study were excluded. The study was allowed by the institution. Basic aim was to validate and reproduce the calibration process of a single examiner i-e intra examiner. The examiner was trained with another expert examiner prior to conduct the calibration process. This was in order to reduce the chances of error and differences in measurement levels of an individual. All the 10 patients were briefed about the procedure before examination. Each patient was examined for all periodontal parameters twice in a single day with a break of 20 to 30 minutes. The readings were recorded by co-investigator. The co-investigator explained all the procedure, nature of the examination and purpose of the examination to the patient. After the willingness of the patient the procedure was started.

Plaque assessment: At first, the plaque score was recorded both visually and with the help of '15 UNC (University of North Carolina) color-coded probe on all the four surfaces of the included teeth i-e Mesial, Buccal, Distal and Lingual. The patient was given a disclosing agent in the form of a chewing tablet and was asked to chew

it for a minute and then rub his tongue all over the teeth. The stained plaque was visually recorded on all the four surfaces of the teeth. The patient was asked to rinse his/her mouth and after 10 minutes break the plaque was again recorded with the help of a dental explorer on all the four surfaces of the teeth.

Calculus assessment: After plaque score, calculus score was recorded on all the four surfaces of the teeth including Mesial, Buccal, Distal and Lingual. Calculus was 1st recorded visually and then after a 10 minutes break it was recorded with the help of a dental explorer.

Pocket depth measurement: Pocket depth was recorded after the detection of plaque and calculus on six sites of each included tooth i-e Distobuccal, Midbuccal, Mesiobuccal, Distopalatal/Lingual, Midpalatal/Lingual and Mesiopalatal/Mesiolingual using 15 UNC color-coded probe. The probe was gently inserted into the gingival crevice or pocket along the long axis of the tooth until resistance felt. The pocket depth is the distance from gingival crevice up to the base of the pocket where resistance is felt.

Table No.1: Validity of Pocket Depth Measurement for Intra examiner

Variables (Pocket Depth)*	ICC	Variables (Pocket Depth)*	ICC
PDMB16R1 / PDMB16R2	0.967	PDMB11R1 / PDMB11R2	0.893
PDMIB16R1 / PDMIB16R2	0.814	PDMIB11R1 / PDMIB11R2	0.753
PDDB16 R1 / PDDB16R2	0.955	PDDB11 R1 / PDDB11R2	0.955
PDMP16R1 / PDMP16R2	0.957	PDMP11R1 / PDMP11R2	0.957
PDMIP16R1 / PDMIP16R2	0.911	PDMIP11R1 / PDMIP11R2	0.911
PDDP16R1 / PDP16R2	1.000	PDDP11R1 / PDP11R2	1.000
PDMB26R1 / PDMB26R2	0.945	PDMB36R1 / PDMB36R2	0.953
PDMIB26R1 / PDMIB26R2	0.980	PDMIB36R1 / PDMIB36R2	0.980
PDDB26 R1 / PDDB26R2	0.964	PDDB36 R1 / PDDB36R2	0.918
PDMP26R1 / PDMP26R2	1.000	PDML36R1 / PDML36R2	0.984
PDMIP26R1 / PDMIP26R2	0.719	PDMIL36R1 / PDMIL36R2	0.959
PDDP26R1 / PDDP26R2	0.904	PDDL36R1 / PDDL36R2	0.973
PDMB41R1 / PDMB41R2	0.800	PDMB46R1 / PDMB46R2	0.824
PDMIB41R1 / PDMIB41R2	0.690	PDMIB46R1 / PDMIB46R2	0.757
PDDB41R1 / PDDB41R2	0.822	PDDB46R1 / PDDB46R2	0.971
PDML41R1 / PDML41R2	1.000	PDML46R1 / PDML46R2	0.975
PDMIL41R1 / PDMIL41R2	1.000	PDMIL46R1 / PDMIL46R2	0.800
PDDL41R1 / PDDL41R2	1.000	PDDL46R1 / PDDL46R2	1.000

ICC coefficients (P- value <0.001)

* PD= Pocket Depth, MB= Mesiobuccal, MIB=Midbuccal, DB=Distobuccal, MP=Mesiopalatal, MIP=Midpalatal, DP=Distopalatal, ML=Mesiolingual, MIL=Midlingual, DL=Distolingual, R1=Rater 1, R2=Rater 2, Teeth number 16,11,26,36, 41, 46 (FDI dental numbering system)

Bleeding on probing was recorded while recording the pocket depth. Bleeding on probing was observed for four main sites i-e; Mesial papilla, Distal papilla, buccal surface and palatal/lingual surface. Bleeding on probing was recorded after 10 seconds of the probe insertion. Sometimes in disease severity the bleeding occurs as we insert the probe while in some cases where the disease was in passive state we have to wait for 10

seconds after the probe insertion to see the signs of bleeding.

Gingival recession: After completion of the pocket depth measurement, the included teeth were recorded for the gingival recession on all the six sites of the involved tooth. Gingival recession is the distance from the cement enamel junction to the gingival margin. The combined value of pocket depth and gingival recession is the total Clinical attachment loss (CAL).

Table No.2: Validity of Gingival Recession Measurement for Intra examiner

Variables (Gum Recession)*	ICC	Variables (Gum Recession)*	ICC
GRMB16R1 / GRMB16R2	1.000	GRMB11R1 / GRMB11R2	0.960
GRMIB16R1 / GRMIB16R2	0.943	GRMIB11R1 / GRMIB11R2	1.000
GRDB16 R1 / GRDB16R2	1.000	GRDB11 R1 / GRDB11R2	1.000
GRMP16R1 / GRMP16R2	0.962	GRMP11R1 / GRMP11R2	1.000
GRMIP16R1 / GRMIP16R2	0.987	GRMIP11R1 / GRMIP11R2	1.000
GRDP16R1 / GRP16R2	0.985	GRDP11R1 / GRP11R2	1.000
GRMB26R1 / GRMB26R2	0.911	GRMB36R1 / GRMB36R2	1.000
GRMIB26R1 / GRMIB26R2	1.000	GRMIB36R1 / GRMIB36R2	1.000
GRDB26 R1 / GRDB26R2	1.000	GRDB36 R1 / GRDB36R2	1.000
GRMP26R1 / GRMP26R2	1.000	GRML36R1 / GRML36R2	1.000
GRMIP26R1 / GRMIP26R2	0.938	GRMIL36R1 / GRMIL36R2	1.000
GRDP26R1 / GRDP26R2	1.000	GRDL36R1 / GRDL36R2	1.000
GRMB41R1 / GRMB41R2	1.000	GRMB46R1 / GRMB46R2	0.947
GRMIB41R1 / GRMIB41R2	1.000	GRMIB46R1 / GRMIB46R2	1.000
GRDB41R1 / GRDB41R2	1.000	GRDB46R1 / GRDB46R2	1.000
GRML41R1 / GRML41R2	1.000	GRML46R1 / GRML46R2	1.000
GRMIL41R1 / GRMIL41R2	1.000	GRMIL46R1 / GRMIL46R2	0.917
GRDL41R1 / GRDL41R2	1.000	GRDL46R1 / GRDL46R2	1.000

ICC coefficients (P- value <0.001)* GR= Gum Recession, MB= Mesiobuccal, MIB=Midbuccal, DB=Distobuccal, MP=Mesiopalatal, MIP=Midpalatal, DP=Distopalatal, ML=Mesiolingual, MIL=Midlingual, DL=Distolingual, R1=Rater 1, R2=Rater 2, Teeth number 16,11,26,36, 41, 46 (FDI dental numbering system.

After recording all these parameters, patient was asked to take a break for 20 to 30 minutes and then again he/she was examined for all these parameters. The plaque and calculus was recorded first because of the reason that pocket probing may alter the plaque and calculus which can mislead their presence or absence. All the data was handled very confidentially by the co-investigator during the procedure so as to avoid any biasness. The data was recorded on the periodontal charts specifically designed for periodontal patients. This data was later shifted to SPSS for kappa and Intra class correlation coefficient (ICC) measurements.

RESULTS

Pocket depth and gingival recession were recorded as numeric data so ICC (Intra class correlation coefficient) was carried out for these variables whereas Kappa score was carried out for categorical data (BOP, plaque and calculus). The ICC ($p<0.001$) and Kappa (>0.6) values were statistically significant and were in the range of strong correlation for intra examiner. The results were acceptable and in strong correlation of reproducibility for the intra examiner on the basis given in table-3.

Table No.3: Summary of Intra Examiner Calibration Results for Periodontal parameters

	Bleeding on probing	Plaque	Calculus	Pocket depth	Gingival recession
Kappa Score	91% Excellent 8% Moderate	97% Excellent 2% Good	100% Excellent	-----	-----
ICC Score	-----	-----	-----	95% Excellent 5% Strong	100% Excellent

The results of intra examiner calibration as shown in table-3 confirmed the strong acceptable level of reproducibility. With the exception of very few variables which were also falling in the moderate to good acceptance levels, all others were in excellent acceptance level.

DISCUSSION

Periodontal parameters include clinical pocket depth (CPD), gingival recession, bleeding on probing (BOP), plaque score and calculus score. Measurement of Periodontal parameter plays an important role in identifying disease progression, severity, and effects of periodontal therapy for different clinical studies[13,14] and are currently the most commonly used and the most revealing parameters[15]. Measurements of these parameters are very important in diagnosing periodontal diseases but subjected to the limitations of manual assessment of these parameters. Periodontal probes are used to detect these periodontal parameters. They are primarily used to detect periodontal pocket depth and

gingival recession. In addition to the measurement of these two prime parameters, periodontal probes are also used to detect or locate plaque/calculus and bleeding tendencies. Despite being the most accepted tool worldwide periodontal probing has its limitations. Errors may occur which could be patient related; calculus on the tooth/root surface, presence of overhang restorations, poorly designed crown margins, or operator related; such as incorrect angulation of the probe, the amount of pressure applied to the probe, delusion of the reading on probe and recording the data roughly[16,17]. Differences in the measurement of these periodontal parameters appear to be apparent not only between different examiners but also with a single examiner[18]. Therefore, intra examiner or inter examiner calibration should be performed to minimize the chances of errors while measuring these parameters.

In our study it was observed that reproducibility recorded for calculus score and gingival recessions was 100%, 97% for plaque score, 95% for pocket depth measurement, 91% for bleeding on probing and were statistically significant. The results were due to the reason that intra examiner was trained and calibrated with an external examiner. A time interval of 20 to 30 minutes was introduced to exclude a possible bias due to examiner memory so that the second measurement could not be influenced by the first measurement and it also provided adequate rest to the patient in between different recordings. To minimize the effect of bias and for the authenticity and validity of the data, periodontal parameters were recorded for two times with an appropriate time interval. Some authors believe that calibration process is related to the operator's experience[19,20] while other authors believe that experience is not the most important factor in measuring reproducibility[21]. Intra examiner agreement for calibration process permitted highly reproducible repeated measurements which states positivity of the calibration process[22]. The results of intra examiner from present study were statistically significant when compared to other studies for pocket depth[23], gingival recession[24], bleeding on probing[25], plaque score and calculus score[26].

In this article, our methods pertain to calibration studies focused on reproducibility in site level periodontal parameters. We demonstrate the need to adjust variance estimates of reliability measures for the within subject of site level agreement. Failure to account for the dependence among site level agreement results in an erroneous precision in the resulting reliability estimates.

In conclusion, validity and reliability of periodontal parameters measurement is important in clinical practice to for appropriate diagnosis and decision making.

CONCLUSION

The reproducibility recorded for calculus score and gingival recessions was 100%, 97% for plaque score, 95% for pocket depth measurement, and 91% for bleeding on probing and were statistically significant but it requires training and calibration with inter examiner.

Author's Contribution:

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Original Article

Hand Washing Among the Primary School Students

To Evaluate the Knowledge, Attitude and Practice of Hand Washing and to Determine the Factors Involved in Poor Hand Washing Among the Primary School Students of Bannu

Sami ul Haq[1], Muhammad Bilal Shah[2], Syed Sajid Munir[3], Sadaqat Ali[4] and Fatima Ali[5]

ABSTRACT

Objective: To evaluate the knowledge, attitude and practice of hand washing and to determine the factors involved in poor hand washing among the primary school students of Bannu.

Study Design: Descriptive Cross-Sectional Study

Place and Duration of Study: This study was conducted at the in various primary school students of Bannu, KPK, Pakistan from December, 2019 to March, 2020 for a period of 04 months.

Materials and Methods: A sample of 200 subjects was selected by consecutive sampling technique. Total 4 schools were selected. Two schools from public sector and two from private sector were selected through convenience sampling. Study tool was a questionnaire. Data was analyzed by descriptive analysis plan.

Results: Out of 200 students 169 were males and 31 were females. 55 % of the students wash their hands before eating and 60.5% of the students wash their hands after using toilet. 47.5% of the students use soap for handwashing while 52.5 % of the students reported that they do not use soap. Frequency of handwashing practice was less in those students whose parents were not formally educated. Also, percentage of handwashing was more in those students whose maternal education was high. Almost all of the students did not know about the WHO method of hand washing. Majority of the students (85%) reported that they dry their hands with towel.

Conclusion: Education is an important factor regarding handwashing behavior. Interventions regarding handwashing should be carried out to improve handwashing behavior. Maternal education in this case will be very important. Also, most of the schools are lacking facilities of hand washing, so facilities for handwashing should be provided.

Key Words: Handwashing, Hygiene, KPK.

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INTRODUCTION

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Most commonly the germs spread on the hands of children and they suffer from various diseases like cold, flu and diarrhea. Hand washing keeps the germs away from the children[1]. Therefore, Hand washing is defined as any method that removes or destroys micro-organisms on hands[2].

If we talk about Islam religion, then we come to the point that Islam religion has given a lot of importance to hand washing and hygiene. "O you who believe! When you intend to offer the prayer, wash your faces and your hands (forearms) up to the elbows, wipe your heads, and (wash) your feet up to the ankles. If you are in a state of Janaba (i.e. had a sexual discharge) purify yourself." (Quran 5:6) Half faith of Islam is cleanliness. (Sahih Muslim 223)

It also carries immense importance regarding disease control and prevention. Washing hands with soap highly reduces the rates of intestinal parasites reinfections. Without handwashing there will be parasitic infections which leads to anemia so proper handwashing significantly decreases the prevalence of anaemia[3]. Handwashing also highly reduces the

prevalence of diarrhea and acute respiratory infections among the children[4].

There are different aspects that affect handwashing. Social norms have great influence on the behavior of hand washing. The difference in gender may also affect the handwashing behavior[5]. Also, education has great impact on handwashing behavior[6]. Regarding behavior of hand washing most of the children shows positive approach towards hand washing. The children like the handwashing but they do not have any facilities at their school[7]. Having good knowledge and attitude of handwashing does not indicate that there will be good practice also[8]. Regarding school attendance, most of the students do not come to school due to the lack of latrine facilities[9]. A particular study reported that intervening a hand hygiene practice among school students significantly reduces the illness and so absenteeism[10]. Lack of resources namely soap and water as well as inadequate sanitation facilities may be the main reasons why children do not practice hand washing properly[11].

Information from this study will serve as base line data for feature school-based hygiene intervention programs in Bannu schools.

MATERIALS AND METHODS

Descriptive Cross-Sectional study conducted in various primary school students of Bannu, KPK, Pakistan for 3 months duration from December 15,2019 to March 15, 2020.

Sample Size: A sample of 200 subjects was selected by consecutive sampling technique. Selection of students was from total four schools. Two schools from public and two from private sector were selected.

Sampling Technique: The selection was through non-probability convenience sampling.

Inclusion Criteria: All the students of the primary schools selected in Bannu district were eligible for inclusion in the study

Exclusion Criteria: All the refusals or those students who were absent were excluded from the study.

Data Collection Procedure: The Study tool was a questionnaire. Verbal as well as written consent was taken from the principals of all the selected primary schools and confidentiality of the data was ensured. Questionnaire was filled by doing face to face interview from the students in their own native language. The variables in the questionnaire were demographic variables and variables related to knowledge attitude and practice. The demographic variables were age, gender, father's education, father's occupation and address. Gender was grouped into male and females. Knowledge attribute was about is hand washing good for health, is hand washing keeps germs away from the body and is hand washing saves us from diseases. Attitude attribute was about what they think about the importance of hand washing. Practice attribute was about practicing hand washing. What were they using for hand washing? Questions were asked about frequencies of hand washing per day, method of hand washing, and how to dry hands after washing.

Data Analysis: Frequencies and percentages were calculated for nominal data and data were analyzed by descriptive analysis plan through IBM SPSS version 22 (IBM SPSS Corp., Armonk, New York).

RESULTS

Frequencies and percentages were calculated of all the variables. Out of total 200 students 31 (15.5%) were females and 169 (84.5%) were males. (Fig 1) Estimate of paternal literacy was approximately 82% (164), 18% (36) were not formally educated. (Fig 2) Regarding maternal education 135 mothers out of the sample was uneducated and the percentage of hand washing practice was 23 %. Only 14 subjects have maternal education was up to 8th grade and the percentage of hand washing was 84 %. Out of the 200 sample only 6 has maternal education up to matric (10th grade), and the percentage of handwashing was 95%. (Fig 3) 56% of the students whose fathers are not formally educated, do not practice hand washing at school. The percentage is less in those students whose fathers are educated, which is 15% overall. 110 (55%) of students in the samples wash their hands before eating. (Fig 4) 125 (60.5%) wash their hands after using washroom. (Fig 4) 121(60.5%) students wash their hands after sports activity. (Fig 4). 95 (47.5%) of the students reported that they use soap for hand washing and 105 (52.5%) didn't use soap at all at school. (Fig 5)

167 (83.5%) reported to have good hand washing practice at school while 33(16.5%) were classified as not having good hand washing practices at school. Out of these 16.5%, 8 (4%) were not having good hand washing practice at school just because they didn't have time. 5(2.5%) have the problem that no one reminds them. 1(0.5%) thought they were not practicing good hand washing because no one else did it, while the remaining 19 (9.5%) reported that washroom didn't have the necessary facilities.

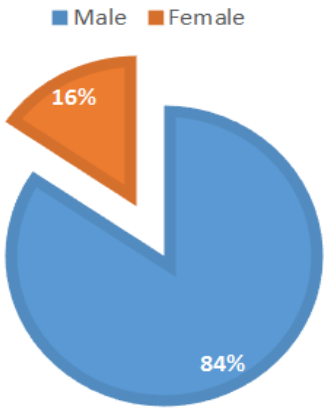

Figure No.1: Male female ratio.

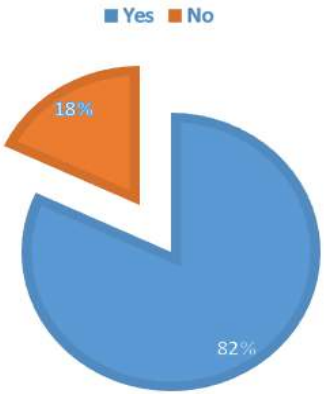

Figure No.2: Paternal literacy.

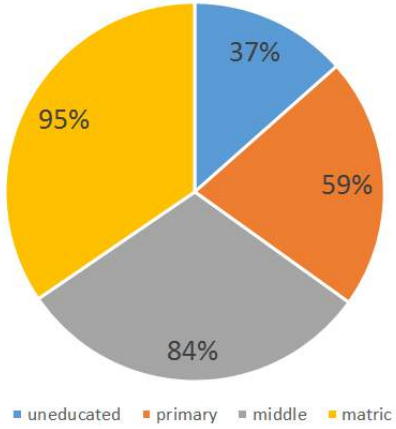

Figure No.3: Hand washing Practice

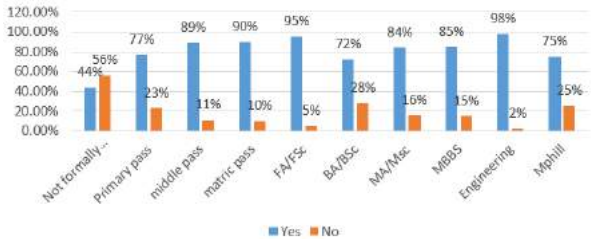

Figure No.4: Percentage of hand washing at school vs paternal education

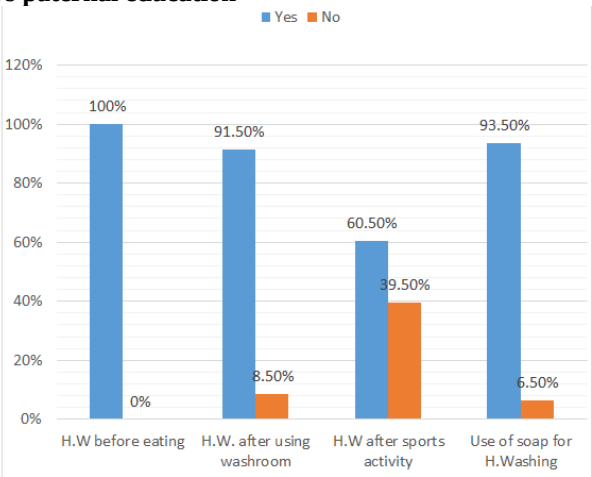

Figure No.5: Percentage of use of soap for hand washing at school

All of the students didn't know proper method of hand washing according to WHO. As in case of drying hands after hand washing, 170 (85%) of the students surveyed dried their hands with towel, 12 (6%) dry their hands through air and 18 (9%) didn't dry their hands after hand washing.

DISCUSSION

This study was compared with KAP study on hygiene among school students in Angolela, Ethiopia[12]. In our study 84.5% were males and 15.5% were females, while the percentage of Angolela study were 49% females and 51% males. The paternal literacy was 82% in our study and 67.5% according to Angolela study[12]. The percentage of children who reported the importance and practice of hand washing before meals in our study was 100% while in Angolela study this percentage was 99% approximately 59% of the students wash their hands after using washroom in our study while in Angolela study, this percentage was only 14.8%. A study conducted in a turkey reported the percentage of handwashing before eating is 61% while the percentage in our study is 55% which is less[13].

A cross sectional study conducted in china reported the percentage of using soap during handwashing is 30% while in our study this percentage is 47.5%[14].

A study conducted in Bogota Colombia reported that 82.5% of students wash their hands after using toilet[15]. 93% of the students reported the use of soap for hand washing in our study while the study conducted in Angolela was only 36.2%. A study in Bogota Colombia (Colombian school children) reported that only 7% of the students reported having clean water and soap regularly available at school[15]. A UNICEF study conducted in Ethiopia found that less than one third of the schools had water points and only 5% had hand washing facilities none of which had soap[16]. In our study 9.5% students reported that washroom did not have any necessary facilities.

CONCLUSION

In our study handwashing practice in those students were less whose fathers were not formally educated. So, interventions for education should be carried on which will indirectly improve the handwashing practice. Another important finding in our study was maternal education. Handwashing practice was high among those students whose mothers were educated. Therefore, improvement of female education will also increase the percentage of handwashing practices among children. Keeping the importance of education some awareness campaign must be held.

Most of the schools are lacking cleansing material and running tap water. So, schools administration should provide facilities for handwashing.

Author's Contribution:

Concept & Design of Study:	Sami ul Haq
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Revisiting Critically:	Sami ul Haq, Muhammad Bilal Shah
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Antibacterial Effects of Grapes Seed Extract on Methicillin Resistant Staphylococcus Aureus and Extended Spectrum Beta Lactamase Producing Escherichia Coli and its Comparison with Linezolid and Meropenem

Ali Nawaz Bijarani[1], Muhammad Owais Ismail[3], Zahida Memon[3], Faisal Afridi[4], Shabana Qabulio[2] and Akhtar Ali[3]

ABSTRACT

Objective: Antibacterial effects of grapes seed extract on methicillin resistant staphylococcus aureus and extended spectrum beta lactamase producing escherichia coli and its comparison with linezolid and meropenem.
Study Design: It is a Pre-Clinical (in-vitro) study
Place and Duration of Study: This study was conducted at the Ziauddin University, Karachi from January 2020 to October 2020 for a period of 10 months.
Materials and Methods: Patients age were 10 to 80 years, both genders, showing signs and symptoms of bacterial infections were selected. All clinical samples were collected in the form of pus, urine, blood, tracheal aspirations, patients admitted in surgical and medical wards, intensive care units and outdoor patients, who were attending clinics. All these samples were transported to Clinical Microbiology Laboratory, Ziauddin hospital, North Nazimabad campus and then culture and sensitivity test were performed there. Sample showing double growth and contamination on agar plates were excluded from study.
Results: Total 80 samples were collected. 40 samples were Methicillin Resistant Staph Aureus (MRSA) and 40 samples were Extended Spectrum Beta Lactamase Producing Escherichia Coli (ESBL E Coli). Female to male samples ratio of 1.35:1. Methicillin Resistant Staph Aureus commonly found in pus swab 15(37.5%) and 21(52.5%) ESBL Producing E Coli found in urine samples. Anti-bacterial activity of Grapes seed extracts observed against Methicillin Resistant Staph Aureus at different levels of concentration 37(92.5%), 37(92.5%), 37(92.5%), 40(100%) and 40(100%) at different dilutions at 20 mg/ml, 30 mg/ml, 40 mg/ml and 40 (100%) respectively. While less resistance was observed of Methicillin Resistant Staph Aureus at different concentration level of Grapes seed extracts. More resistance was observed of Grapes seed extracts against ESBL E coli at different concentration reported about 97-100%. While sensitivity of ESBL E coli was observed only in 3 sample at different concentration level of Grapes seed extracts about 2.5%. Compare the results of sensitivity of GSE with linezolid and meropenem against ESBL E coli and found significant p value <0.05.
Conclusion: The grape seed extract has shown excellent antimicrobial activity against methicillin resistant Staph aureus and resistant strains of ESBL producing E. coli.
Key Words: Grapes seed extract, Methicillin Resistant Staphylococcus Aureus, Escherichia coli

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INTRODUCTION

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The ruthless abuse of antibiotics is continually causing an increase in the resistant bacterial strains to one or more than one drug which we name multidrug resistant (MDR) bacteria.[1] The discovery of methicillin-resistant Staphylococcus aureus (MRSA) which is resistant to certain penicillin and cephalosporins along with methicillin in 1960s can be quoted as one other example of MDR bacteria.[2] The resistance and

sensitivity of the organism towards one or more drugs changes the scenario of treatment and over all outcome of the treatment of patient and the MDR definitely have a solid negative impact on the mortality rate of the patients as compared to the single drug resistant or susceptible strains.[3] Therefore, in many fields including tissue engineering ,biotechnology and microbiology a continues endeavor is being carried out over discovery of new elements/substances for targeting MDR bacteria.[4] Natural and plant based products have old roots in the basis of treatment in various infections[5]. These natural products include the antibacterial effect of cranberry extract, honeydew, black pepper extract, honey, grape seed extract (GSE), and coral Hibiscus extract, which has also been authenticated by many studies.[6] In recent days natural/plant based derivatives for various bacterial infections are easily available in the market giving us a fair and clear idea that natural products are very easily accepted by the patients and the body with no or least resistance as compared to the laboratory based synthetic products.[7] In this study, we studied the effect of grape seed extract on Methicillin Resistant Staphylococcus aureus and Extended Spectrum beta lactamase producing Escherichia coli and its comparison with Linezolid and Meropenem. From the screening test, only GSE showed good antibacterial effect.[8] Hence, the aim of this study was to access the antibacterial activity of GSE towards MDR bacteria such as Methicillin Resistant Staphylococcus Aureus and Extended Spectrum beta lactamase producing Escherichia coli and its comparison with Linezolid and Meropenem as they cause severe nosocomial infection, and look into the exact mechanism of the antibacterial effect of Grape Seed Extract[9].

MATERIALS AND METHODS

It is a Pre-Clinical (in-vitro) study conducted in Ziauddin University from January 2020 to October 2020. All samples were collected from Ziauddin University. Patients age were 10 to 80 years, both genders, showing signs and symptoms of bacterial infections were selected. All clinical samples were collected in the form of pus, urine, blood, tracheal aspirations, patients admitted in surgical and medical wards, intensive care units and outdoor patients, who were attending clinics. All these samples were transported to Clinical Microbiology Laboratory, Ziauddin hospital, North Nazimabad campus and then culture and sensitivity test were performed there. Sample showing double growth and contamination on agar plates were excluded from study.

Herbal Extraction and Authentication: Grapes Seed was purchased from commercial market, Karachi and stored at room temperature. Authentication (95627) were done from Botany department, Karachi University. Extraction procedure were done at Pharmacognosy department, ZU Karachi. The final preparation was stored at normal room temperature and used for experimental work.

Preparation of Grapes Seed Extracts: Fully ripe grapes were purchased from a commercial market, Karachi. The grapes were crushed and seeds separated. The seeds were washed well using clean water and dried in oven at 60oC. The seeds then powdered in a grinder. 20g of grape seed powder was added to a conical flask containing 100 ml of ethanol and stirred well. The flask was left aside for 48 hours and occasionally stirred. The content of flask was filtered through Whatman and also evaporated to dryness in oven a 50oC. After the grape seed extract had been obtained, different concentrations of grape seed extract (20, 30, 40, 50 and 60 mg/ml) were prepared by mixing the grape seed powder with dimethyl sulfoxide (DMSO) and stored at 4°C in air tight bottles for further studies.

RESULTS

Total 80 samples were collected. 40 samples were Methicillin Resistant Staph Aureus (MRSA) and 40 samples were Extended Spectrum Beta Lactamase Producing Escherichia Coli (ESBL E Coli). The 80 samples of specimens were processed in culture plates and the pathogens were isolated and identified by standard biochemical tests. Out of 80 samples included in this study 46(57.5%) were female and 34(42.5%) samples were male; female to male samples ratio of 1.35:1. There was wide variation of age ranging from a minimum of 10 year to 79 years. The mean age was 45.71±11.83 years (Table No.1). In our study Methicillin Resistant Staph Aureus commonly found in pus swab 15(37.5%) and 21(52.5%) ESBL Producing E Coli found in urine samples (Table No.1). Most Commonly MRSA 13(32.5%) was found in indoor specially in surgical department, while ESBL producing E coli 12(30%) were found in medical ward admitted patients (Table No.1). In our study, we observed meropenem 100% sensitive against Extended Spectrum Beta Lactamase Producing Escherichia coli sample as compare to Methicillin Resistant Staphylococcus Aureus 5(15%) samples. While resistance was observed in Methicillin Resistant Staphylococcus aureus 34 (85% samples), while Linezolid 37(92.5%) were sensitive in Methicillin Resistant Staphylococcus aureus. While resistance was observed in Extended Spectrum Beta Lactamase Producing Escherichia coli 40 (100%) samples. (Chart No.1). In our study, best anti-bacterial activity of Grapes seed extracts observed against Methicillin Resistant Staph Aureus at different levels of concentration 37(92.5%), 37(92.5%), 37(92.5%), 40(100%) and 40(100%) at different dilutions at 20 mg/ml, 30 mg/ml, 40 mg/ml and 40 (100%) respectively. While less resistance was observed of Methicillin Resistant Staph Aureus at different

concentration level of Grapes seed extracts. (Chart No.2).

Our study shows more resistance were observed of Grapes seed extracts against ESBL E coli at different concentration reported about 97-100%. While sensitivity of ESBL E coli was observed only in 3 sample at different concentration level of Grapes seed extracts about 2.5% (Chart No.3). Compare the results of sensitivity of GSE with linezolid and meropenem against ESBL E coli and found significant p value <0.05. In our study more resistance activity was observed of Grapes Seed Extract against ESBL E coli at different concentration. While sensitivity of ESBL producing E coli were observed only in 3 sample at different concentration level of Grapes seed extracts (Chart No.4).

Table No.1: Variable

Variable	MRSA	ESBL E Coli
Gender		
• Male	21(52.5%)	15(37.5%)
• Female	19(47.5%)	25(62.5%)
Age in years		
• 10-30 years	7(17.5%)	9(22.5%)
• 31-50 years	11(27.5%)	10(25%)
• 51-70 years	16(40%)	15(35%)
• >71 years	6(15%)	7(17.5%)
Samples Sources		
• Blood	9(22.5%)	8(20%)
• Pus	15(37.5%)	5(12.5%)
• Tracheal Asp	11(27.5%)	6(15%)
• Urine	5(12.5%)	21(52.5%)
Department		
• Surgical ward	13(32.5%)	5(12.5%)
• ICU/CCU	11(27.5%)	9(22.5%)
• Medical Ward	6(15%)	12(30%)
• Gynae/Obs	5(12.5%)	6(15%)
• Outpatients Department	5(12.5%)	8(20%)

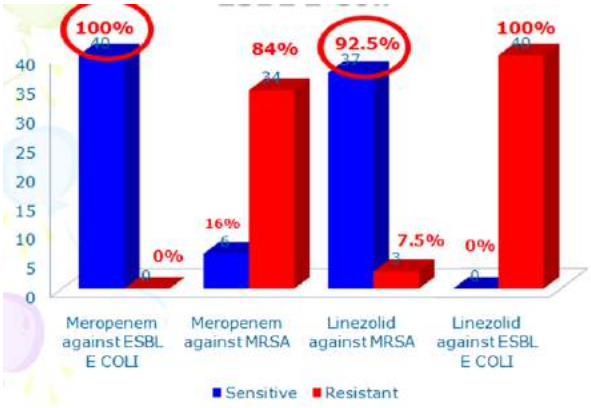

Chart No.1: Antibiotic susceptibility of MRSA and ESBLA E Coli

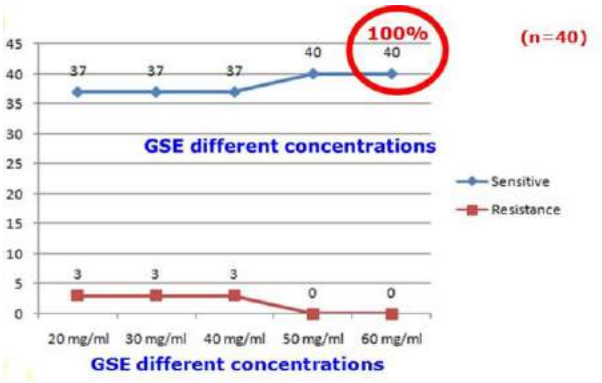

Chart No.2: Sensitivity of Anti-bacterial activity of GSE against MRSA

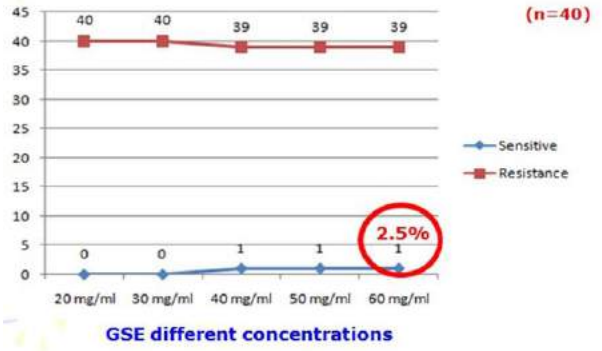

Chart No.3: Sensitivity of Anti-Bacterial activity of GSE agaisnt ESBL E Coli

	Plant EXTRACT	STANDARD DRUGS	P VALUE
ESBL E Coli	GSE 60mg/ml 2.5%	Meropenem 100%	<0.05
	GSE 60mg/ml 2.5%	Linezolid 0%	Not significant
MRSA	GSE 60mg/ml 100%	Meropenem 16%	<0.05
	GSE 60mg/ml 100%	Linezolid 92.5%	Not significant

Chart No.4: Comparison of Sensitivity of GSE with linezolid and meropenem against Anti-Bacterial activity of GSE agaisnt ESBL E Coli

DISCUSSION

Multi-drug resistance (MDR) is becoming common day by day, because of the undue usage of antibiotics by the quakes and local general practitioners leading to the new pandemics.[10] The development of antibiotics since 1960's provided the sign of relief in the treatment of many emerging antimicrobial infections.[11] But the excessive and undue usage of these drugs is almost going to lead us to facing pre- antibiotic era due to development resistance.[12] The development of drug resistance is found against one or more than one drug called multi drug resistance MDR favoring the need of

further studies to be carried out to find out the new substances which can help treating the MDR bacterial infections.[13] Methicillin resistant staphylococcus aureus and beta- lactam resistant E. coli are one of the most suitable examples in regard to MDR bacteria.[14] In our study we have tried to focus on the plant based Grape seed extract for the treatment as it has ability to interfere the resistance and can also increase the efficacy of β-lactam agents.[15] The basic aim of this study was to find out that wither the grape seed extract can be used for treating beta lactam resistant E. coli and MRSA and its comparison with linezolid and meropenem used for the same purpose.[16]

In this study, we extracted the grape seed extract by standard method of extraction and used it in 80 patients with high female to male ratio as 1.35:1, which is almost similar to various previous studies[17]. The mean age of MDR bacterial infections found in our study was 45.71±11.83 years from the range of 10-79 years which is similar to as elicited by Dale, A., Pandey at al.[18] In our study we reported MRSA isolation from pus and wound samples, while ESBL E.coli from the urine samples which is also supported by Beytur, A., Yakupogullari at al.[19] Most Commonly MRSA 13(32.5%) was found in indoor specially in surgical department, while ESBL Producing E coli 12(30%) were found in medical ward admitted patients, this kind of specific association of the organisms to medical and surgical indoors is also reported in certain previous studies.[20]

Oliva, A., Costantini at al. in their study reported ESBL producing E. coli to be more sensitive to meropenem similar to the results of our study in this regard stated as Meropenem is 100% sensitive in Extended Spectrum Beta Lactamase Producing Escherichia Coli and more resistant to Methicillin Resistant Staphylococcus aureus 34(85% samples), while Linezolid 37(92.5%) were sensitive in Methicillin Resistant Staphylococcus aureus and more resistant to ESBL producing E. coli 40(100%) according to our study.[21] The concentration of the natural product extract (grapes seed extract) also matters a lot as according to this study, best anti-bacterial activity of Grapes seed extracts was obtained at different levels of concentration 37(92.5%), 37(92.5%), 37(92.5%) samples were 20 mg/ml, 30 mg/ml, 40 mg/ml and 40 (100%) each were sensitive at 50mg/ml and 60mg/ml respectively. While less resistance was observed of MRSA at different concentration level of Grapes seed extracts.[22] About 97-100% resistance was reported for Grapes seed extracts against ESBL E coli at different concentration levels. which is somewhat in accordance with WHO 2008.[23]

Hence the plant based natural extracts like grape seed extract can be considered as a good alternative of the antibiotic therapy according to our study and can prove to be a source of decrement in the economic load of antibiotic usage. Furthermore, we stress the use of antibiotics according to the respective doctor's prescription and after the culture and sensitivity report of the patient to reduce the chances MDR bacterial production. AMR and expensive antibiotics are becoming a significant economic burden[24]. We support the use of grape seed extract for the treatment of MDR bacterial infections according to the results of our study.

CONCLUSION

The grape seed extract has shown excellent antimicrobial activity against methicillin resistant Staph aureus and resistant strains of ESBL producing E. coli in comparison to linezolid and meropenem and so it can be used as a potential substance to treat the MDR bacterial infections alone.

Author's Contribution:

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

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Original Article

Difference of Online and Traditional Physiology Teaching

The Difference Between Zoom Online and Traditional Physiology Teaching in Undergraduate Physical Therapy and Biotechnology & Biological Sciences Students During COVID-19 Pandemic

Sadaf Fatima, Sulail Fatima, Sara Rafique, Sassi Kanwal, Mohammad Sultan and Abdul Aziz

ABSTRACT

Objective: To find the students' preference between zoom online and traditional face to face Physiology teaching in undergraduate physical therapy and biotechnology & biological sciences during the COVID-19 pandemic.
Study Design: Cross Sectional study
Place and Duration of Study: This study was conducted at the Sohail University from April 2021 to June 2021 for a period of 02 months.
Materials and Methods: The study participants included 100 Physical therapies and 94 Biotechnology & Biological sciences students. A questionnaire was distributed to each student. The questionnaire included 17 items regarding online and traditional teaching. The students were asked to select a response for each item on the questionnaire including the preferred teaching method from zoom online, traditional, or both. The data were presented in terms of percentage for the individual items, preference in theory, and the overall preferred teaching method.
Results: The students gave the opinion that the presence of teacher (82.1%), asking the queries to the teacher (80.2%), giving feedback to the teacher (78.3%), and interest in learning (76.4%) were more important aspects for traditional teaching. Regarding the zoom online lectures, accessibility to the internet hindered online teaching (84%) and online teaching led to more distraction (67.9%). Moreover, a high majority of students (79.2%) preferred the traditional method for theory. The overall preference for the traditional method (83%) was higher as compared to online (2.8%) and both methods (14.2%).
Conclusion: The majority of physical therapy and Biotechnology & Biological sciences students had a preference for traditional teaching methods in Physiology.
Key Words: COVID - 19, Physiology, Traditional Teaching, Online teaching

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INTRODUCTION

COVID-19 is considered a pandemic due to its severity and spread worldwide [1, 2]. As the disease spreads through coming in contact with the affected persons, social distancing was recommended by healthcare professionals[3].

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To control the spread of disease, lockdown restrictions were implemented all over the world[4]. During the first wave of COVID-19 pandemic, all educational institutions were closed for traditional teaching[5]. Traditional teaching methods involve direct interaction of teacher and students[6]. These methods are commonly employed in medical teaching and as well as in other programs[7]. The online teaching methods are considered as a supplementary method of teaching instead of a replacement of face-to-face teaching technique[8, 9]. Due to lockdown for an indefinite period, the mode of teaching changed from traditional to online methods[10, 11].

Physiology is a basic science subject that is taught in foundation years of healthcare-related professions including physical therapy and biological sciences[12]. The Physiology teaching is complex as it is based on making students understand the normal functions and mechanisms of the human body[13]. The knowledge of

Physiology learned in the initial years is required to be applied in the understanding of clinical subjects in later years[14].

In 2020, after the declaration of COVID-19 as a pandemic, all educational institutions in Pakistan including medical universities were closed for traditional teaching[15] from March 2020 to September 15, 2020. During this period, the Physiology teaching for biological sciences, biotechnology, and physical therapy students was shifted from traditional to online recorded lectures[16, 17]. Both faculty and students faced many challenges in accepting this change[18] but ultimately, they had to adapt as there were no chances for reopening of educational institutes for students and the lockdown period was extended[10]. The colleges and universities opened on 15th September 2020, after which the practical classes took place on campus and the session ended. The exams were also delayed due to another lockdown in November 2020.

In 2021, the medical universities and health care institutes opened on 1st February in Pakistan. The session started between February and March. As the COVID-19 pandemic continued, the Higher Education Commission issued a notification narrating that 50% of the students can attend classes on campus and the other 50% to take online classes. The same rule was followed by the college of rehabilitation sciences and the department of biotechnology & biological sciences at Sohail University. The online lectures were conducted on zoom[19, 20]. The lectures were conducted in such a way that half of the class was present on campus, while the half attended these lectures live on zoom.

Several studies have been published on the challenges of online teaching in medical education, the advantages and disadvantages of online teaching, and student's perception of online teaching in general. In this study, we collected data from physical therapy, biological sciences, and biotechnology students' regarding their perception of traditional and online Physiology teaching on zoom and also about the preferred teaching method.

MATERIALS AND METHODS

The study design was cross-sectional. This study was conducted at the college of rehabilitation sciences and the department of biotechnology& biological sciences, Sohail University. The study participants were 194 undergraduate students including 100 students from physical therapy and 94 from Biotechnology and Biological sciences. The sample size was calculated from the Raososoft Sample size calculator. The sample size was calculated keeping 194 population size, 5% margin of error, 95% confidence interval, and 50% response distribution. The minimum recommended sample size was found to be 130. Out of which, 106 gave consent to participate in the study.

The duration of the study was 3 months, from April 2021 to June 2021. The study was approved by the Ethics review board of Jinnah Medical and Dental College/Sohail University. After getting ethical approval, the participants were enrolled in the research study. Informed consent was obtained from each participant. Participants were briefed about the purpose of the study. A questionnaire was distributed to each student who gave consent to participate in the study. The questionnaires were collected and the data was analyzed.

To study the perceptions of students regarding the comparison of zoom online lectures and traditional Physiology teaching in the COVID - 19 pandemic, a questionnaire was distributed to undergraduate students studying rehabilitation sciences, biological sciences, and biotechnology. The questionnaire included 17 items from online and traditional teaching. The questionnaire used in our study was developed by Vala[6] et al. in which evaluation of e-learning classes in medical students during the COVID-19 pandemic was studied. The questionnaire was modified. Some questions were added and some were removed. The students were asked to select a response for each item on the questionnaire. The undergraduate students provided their perceptions on online and traditional teaching. They also selected a preferred teaching method between traditional classes, online zoom classes, or both.

The data was analyzed using SPSS version 22. Descriptive statistics were used for the analysis of data. Data were expressed in terms of percentage for each item, preference in theory classes, and the overall preferred teaching method.

RESULTS

The mean age of students was 18.4± 0.5 years (male 35% & female 65%). Figure I showed the comparison of individual items 1 to 5. Figure II showed the comparison of individual items 6 to 15 based on the preference of traditional, zoom online, or both teaching methods. Fig III showed the preferred teaching mode for theory lecture and Figure IV showed the overall recommended teaching method.

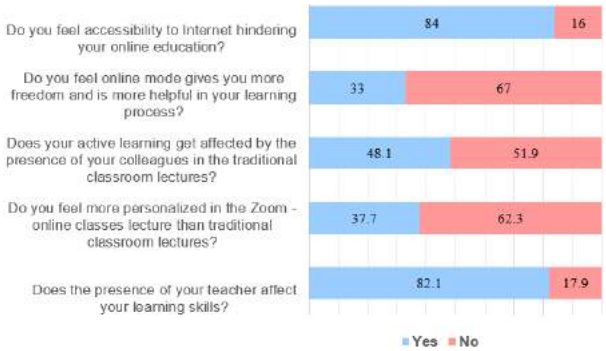

Figure No.1: The comparison of individual items 1 to 5 in physical therapy and biotechnology & biological sciences students

Figure 1 showed the individual items 1 to 5 and the percentage of these items that students selected in the form of Yes and No. In items 1 and 5, the students selecting the yes response had a higher percentage. In items, number 2, 3, and 4 most of the students selected the 'No' response.

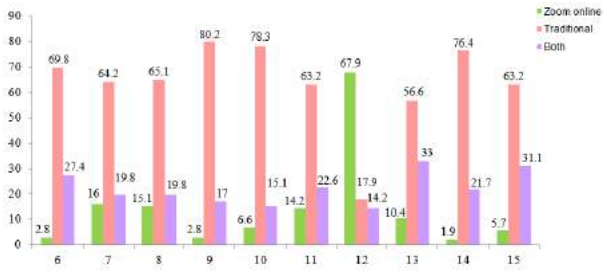

Figure No.2: The comparison of individual items based on teaching methods in physical therapy and Biotechnology& Biological sciences students

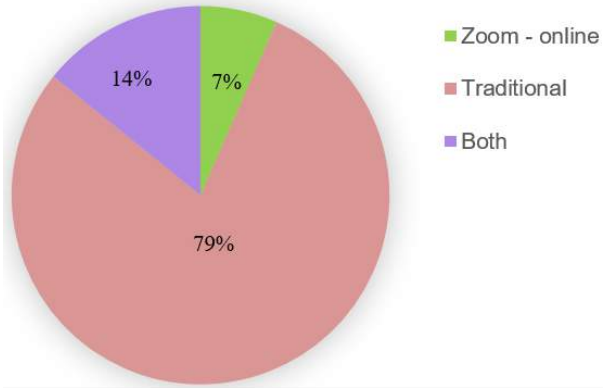

Figure No.3: The comparison of preference of teaching method in theory in physical therapy and Biotechnology &Biological sciences students

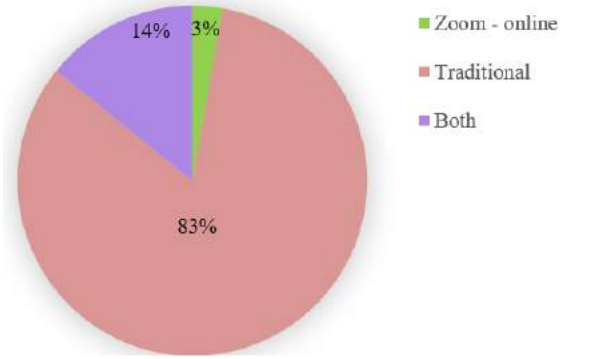

Figure No.4: The recommended teaching method in Physical therapy and Biotechnology & Biological students

In figure 2, the x-axis showed the item numbers and the y axis showed the percentage of individual items that students selected for their preferred teaching method. In most of the items in this section, the students preferred the traditional teaching method. The individual items include the importance of the presence of the teacher in class, time for understanding the lecture, asking queries from the teacher, giving immediate feedback to the teacher, interest in learning, studying at own pace, collecting the study material, and retention of information for assessment.

Figure 3 showed the percentage of preference of teaching method for theory. The majority of students preferred the traditional teaching method.

In figure 4, the percentage of recommended teaching methods as traditional, zoom online, and both are shown. Traditional teaching method has got the highest percentage.

DISCUSSION

In this study, the perception of Biotechnology &Biological sciences and physical therapy students regarding the live online Physiology teaching and assessment in the COVID-19 pandemic was studied. In Figure, I, the majority of students selected the 'Yes' option for items 1 and 5. Item 1 was related to the accessibility of the internet hinders online classes. Students were in favor of the presence of a teacher for learning Physiology. Items 2 and 4 of the questionnaire were related to the online classes giving freedom and if students felt more personalized with online classes. The majority of students selected the option 'No' for items 2 and 4.Item 3 was regarding the presence of colleagues affecting the students learning. The response of 'Yes' (48.1%) and 'No' (51.9%) was very similar. In the majority of items our study results were different from that of Vala[6] et al. In item 1, our students selected the option 'Yes' while in the study of Vala[6] et al. majority of students selected the 'No' option. In items 2, 3, and 4, the majority of our students selected the response 'No' while the subjects in the study conducted by Vala[6] et al. selected the 'Yes' response. The response of our students was similar to Vala[6] et al. in item 5. Our study results in this section reflect that majority of students approved traditional teaching as compared to zoom online teaching. Our study finding is the same as reported by Qamar[21] et al.

In figure II, students selected traditional teaching in items 6, 7, 8, 9, 10, 11, 13, 14, and 15. Item 6 and 7 of the questionnaire was related to concentration and motivation in learning. Item 8 was regarding the understanding of lectures. Item 9 was regarding asking the queries to the teacher and item 10 was related to giving immediate feedback to the teacher. Item 11 explored the teaching method which helped students to study at their own pace. Item 13 was related to the collection of study material. Item 14 was regarding the interest in learning and item 15 was related to retention of knowledge for assessment. The study was done by Abbasi[22] et al. and Hameed[23] et al. mentioning that students did not prefer e-learning over face-to-face teaching. The study done by Hameed[23]et al. recommended blended learning for medical education in the future. The study done by Ansar[24] et al. reported

that students' dissatisfaction with e-learning and also identified some critical defects in the system. Item 12 was related to distraction in online classes. Baczek[25] et al. suggested that to conduct online teaching, a well-planned and active approach is required. In all items of this section, our study results were similar to the study performed by Vala[6]et al. in item numbers 6,7,9,10,12, and 14. Our students preferred traditional while the participants by Vala[6] et al study preferred online teaching mode for the item 8, 11 and 13. Iqbal[26] reported that E-learning considered being an alternative to traditional teaching during COVID-19 pandemic because 'something is better than nothing. Mahboob[27] et al. reported that student engagement in the classes and interaction in online classes was a major issue that affected the learning of students. Sanders[28] et al. mentioned that to conduct online classes successfully, the available technology, the experience of teachers in conducting online classes, and the instructional strategies adapted by tutors are important factors. The study done by Alves[29] et al. reported the internet connectivity issues were there for students attending online classes. For the teachers, excellent computer skills, good subject knowledge, and proficient delivery of lectures were required.

In figure III, our students selected the traditional teaching method for theory classes, and in figure IV; the recommended teaching method was Traditional. These findings were similar to study done by Vala[6] et al. but the percentage of students selecting Traditional (79.2%) for theory and (83%) for the overall recommended teaching method was much higher in our study as compared to Vala[6] et al. where students selected traditional for theory classes (40.8%) and (59%) as the overall recommended method.

CONCLUSION

The majority of physical therapy and Biotechnology & Biological sciences students preferred traditional teaching methods for Physiology teaching. To conduct zoom online sessions, faculty need to be trained and proper student engagement techniques need to be applied.

Author's Contribution:

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Final Approval of version:	Sadaf Fatima

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

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Original Article

Antenatal Exercises in Pakistan

Knowledge Attitude and Practices Regarding Significance of Exercise during Pregnancy Among Health Care Providers in Karachi, Pakistan

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ABSTRACT

Objective: To assess the knowledge, attitude and practice of Health Care Providers (HCP) regarding antenatal exercises in Pakistan.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Sobhraj Maternity Home, Karachi from January till April 2020.

Materials and Methods: A convenience sample of 152 HCP was taken. Informed consent was obtained. A goggle survey was conducted along with physical survey for this study. Practitioners who participated, obstetricians n= 65(42.8%), gynecologist n=44(28.9%) and remaining n= 43(28.3 %) general practitioners filled a questionnaire. For every response descriptive statistics were computed.

Results: Most of the practitioners (97%) believed the beneficence of exercise during pregnancy however only 25.7% were found to have an adequate knowledge regarding benefits of exercise during pregnancy. In addition to it 65% of them believe that pregnant woman should be provided with the advice regarding exercise in any form such as verbal or pamphlets during antenatal visits. Majority of the practitioners (72%) were found to be unaware of the recommendations by international organizations.

Conclusion: Since there seems to have a mismatch in knowledge and practice of HCP in this regard, all possible efforts should be taken for exercise promotion in pregnancy to ensure healthy mother and baby.

Key Words: Health Care Providers (HCP), Knowledge, Attitude, Practice, Exercise, Pregnancy

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INTRODUCTION

Much has been studied, understood and written, on the benefits of exercise and physical activity on the physiologic and psychological aspect of human life.[1] Despite the abundant information available at our disposal, sedentary lifestyle and unhealthy dietary habits are prevalent among pregnant woman worldwide.[2]

On the other hand, woman who actively participated in regular antenatal exercises happen to lower the risk of gestational diabetes and gestational hypertension.[3] Furthermore, it leads to a reduction in excessive gestational weight gain, prevents urinary incontinence during pregnancy and postpartum. [4,5]

According to the publish researches only 15% of pregnant woman exercise at a recommended level.[6] Pregnant woman report that their lack of knowledge and fear of 'something going wrong' during pregnancy prohibits them to exercising at will and that counselling during antenatal visits would ease their engagement. [7] Recent researches cohere to the fact that healthcare practitioners (HCPs) have the most importance role in influencing pregnant woman regarding physical activity credence. [8] American College of Obstetricians and Gynecologist (ACOG) specify activity, like walking, to be divided as five times per week for 30 minutes, or three times per week for 45 minutes which further goes on to support decreased risk of coronary events in woman. [9] Exercises such as yoga can lead to increase in newborn infant weight, reduce overall labor discomfort, pain during labor and decrease the rate of cesarean section. [6]

Pakistan is a country with limited resources, facing social and economic challenges when it comes to primary antenatal care. The 2017-2018 Pakistan Demographic Health Survey (PDHS) revealed that 86%

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of woman who gave birth in last five years received antenatal care from a skilled provider (HCPs, nurse, midwives and lady health visitor). [10] These visits can be utilized for effective counselling for antenatal exercises. Thus, HCPs should effectively counsel on the importance of physical activity by promoting exercise and bridging the information gap on the importance of physical activity during antenatal period and beyond. Although encouragement to exercise among woman with an uncomplicated pregnancy should be integral for prenatal and antenatal care, scarce knowledge is available about the views of HCPs in Pakistan. Therefore, the present study was conducted to enhance understanding and knowledge of antenatal exercises among healthcare practitioners, gynecologists, and obstetricians. The data obtained by this study will facilitate future stake holders and policy makers to implement positive changes in the attitude of antenatal care providers in Pakistan.

MATERIALS AND METHODS

A cross sectional survey study was conducted at Public sector hospital Karachi named as Sobhraj Maternity hospital from January till April 2020 to determine the knowledge of health care providers regarding the benefits of exercise during pregnancy. A non-probability convenience sampling technique was used. The Sample size was calculated by using WHO sample size calculator while keeping proportion of knowledge (p) =0.94, margin of error (d) =0.05, confidence level (CL) =95% and sample size (n) =136 HCPs from reference study. [5]

Participants currently practicing at hospitals and birth centers in Karachi with at least two years of working experience were invited to participate. Health practitioners having a fellowship, degree and certification from developed country or practiced in a developed country healthcare settings in last five years were excluded. Moreover, health practitioners having attended continuing medical education (CME) related to exercise during pregnancy in last two years were also excluded. We invited 182 health practitioners satisfying the eligibility criteria, among which 152 health practitioners (HP's) mostly obstetrician (n=84) and gynecologist (n=44) and some other specialists (n=24) filled the questionnaire. Anonymity and confidentiality of the study participants were maintained. The participation was voluntarily and no incentives were provided. Ethical approval was obtained Ethical review committee of Karachi Medical and Dental College.

Each participant filled a questionnaire validated by the experts**.** The questionnaire consisted three part. The first part of the questionnaire consisted of ten questions inquiring attitude of HCP's towards exercise in pregnancy with response option as strongly agree, agree, disagree and strongly disagree. The second part consisted of sixteen items asking benefits of exercise with response option as yes or no. The last part consisted of eleven questions identifying practice pattern of HCP's towards exercise during pregnancy. The questionnaire was administered physically (n=120) as well as electronically through goggle survey (n=32) due to COVID 19 pandemic restrictions. The data was analyzed using SPSS version 25 (IBM). Descriptive statistics were performed and categorical values were presented as frequency percentages.

RESULTS

A total of 152 health practitioners were enrolled in the current study. Statements reflecting the attitudes of participants regarding exercise in pregnancy are mentioned in Table 1.

Table No 1: Attitude of Healthcare Providers towards Exercise during Pregnancy

Statements	Strongly Agreed	Agreed	Disagreed	Strongly Disagreed
Exercising during pregnancy is beneficial.	51(33.6%)	94(61.8%)	6(3.9%)	1(0.7%)
Counselling patients to exercise during pregnancy is not an integral part of prenatal care.	11(7.2%)	42(27.6%)	85(55.9%)	14(9.2%)
No individualized recommendations regarding exercise during pregnancy should be given.	6(3.9%)	102(67.1%)	36(23.7%)	8(5.3%)
Exercise program should not be recommended to sedentary non complicated pregnant women.	3(2%)	48(31.6%)	82(53.9%)	19(12.5%)
Encouragement to continue exercise program in all trimesters of pregnancy for chronic exercisers.	23(15.1%)	101(66.4%)	23(15.1%)	5(3.3%)
During pregnancy women must not engage in any exercise program of strength building.	22(14.5%)	79(52%)	45(29.6%)	6(3.9%)
Moderate intensity exercise is recommended during pregnancy.	12(7.9%)	118(77.6%)	21(13.8%)	1(0.7%)
Risk of giving birth to low birth weight babies is enhanced by doing exercise in pregnancy.	3(2%)	33(21.7%)	104(68.4%)	12(7.9%)
There is possibility of poor obstetric outcomes for women who exercised during pregnancy.	13(8.6%)	119(78.3%)	14(9.2%)	6(3.9%)

Table No.2: Practice pattern of Healthcare Providers towards exercise during Pregnancy

Practice related questions	Frequency (n)	Percentage(%)
Does your pregnant patients receive advice about exercise?		
Yes	91	59.9%
No	61	40.1%
Who is responsible for giving this advice?		
Yourself	67	44.1%
Nurse/Others	29	19.1%
N/A	56	36.8%
When this advice is given?		
Initial Visit	59	38.8%
Follow-up Visits	38	24.8%
N/A	55	36.2%
Are informational pamphlets provided on pregnancy and exercise?		
Never	74	48.7%
Seldom	39	25.7%
Always	39	25.7%
Does exercise histories are taken?		
Never	38	25%
Seldom	50	32.9%
Always	64	42.1%
Does each pregnant patient receive an individualized exercise program to follow?		
Never	54	35.5%
Seldom	53	34.9%
Always	45	29.6%
Do you know about 2002 ACOG guidelines related to pregnancy and exercise?		
Very Aware	12	7.9%
Aware	67	44.1%
Unaware	73	48%
For exercise recommendations who you refer your pregnant patients?		
Personal Trainer	30	19.70%
Bio kinetics	5	3.3%
Physiotherapist	43	28.3%
Other	74	48.7%
Which exercise type you recommend?		
Walking	84	55.3%
Running	38	25%
Cycling/ Aerobics	2	1.4%
Do not Recommend	28	18.45
Does certain types of exercise you advice to avoid?		
Yes	116	76.3%
No	36	23.7%
Given opportunity are you interested in attending workshop on exercise during pregnancy?		
Yes	124	81.6%
No	28	18.4%

More than half responded in affirmation on the statement that exercise in pregnancy is beneficial and 66% of them agreed that exercise promotion is essential. Around two third (66.4%) subjects were in favor of continuation of routine exercise during pregnancy and 52% recommended that participation in strength training program should be avoided. Additionally, 77.6% participants emphasized that during pregnancy exercise on moderate intensity should be done. Furthermore, to assess participant's view regarding the perceived benefits of exercise during pregnancy sixteen statements were inquired regarding different conditions as demonstrated in Figure 1. Most of the study participants hold the opinion that exercise in pregnancy is beneficial as it decreases the risk of gestational diabetes and increases the fitness level. More than sixty percent (61.8%) also responded

positively that it helps in weight management and improves musculoskeletal status.

The Table 2 showed results of practice pattern of health practitioners towards exercise during pregnancy. Around sixty percent (59.9%) of practitioners give advice to their patients about exercise during pregnancy. Moreover almost half of the participants never provide any help tool like pamphlet or any hand out in this regard. On questioning study subjects regarding their awareness about 2002 ACOG guidelines for pregnancy and exercise only around eight percent (7.9%) subjects were very well aware, more than two fifth (44.1%) only aware, while slightly less than fifty percent (48%) were unaware. Overall awareness about the guidelines was found adequate in 52% practitioners. Importantly, eighty one percent (81%) practitioners were interested in attending workshops and CPD's to improve their knowledge.

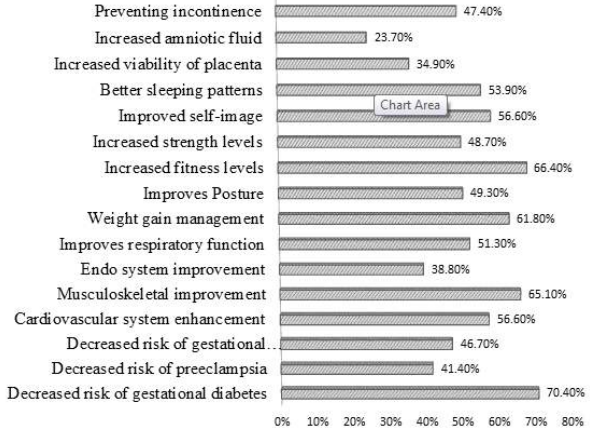

Figure No. 1: Benefits of Exercising during Pregnancy

DISCUSSION

In Pakistan around 38.4% of reproductive age women are overweight. [11] According to the Pakistan's economic survey 2018-2019 the country's current literacy rate is 60% in which women lags behind. [11] This indicates that numerous pregnant women seek medical guidance and help to maintain a healthy pregnancy from health care providers and thus their recommendations are the most trusted source of knowledge, especially for new mothers. The current study reflected that majority of HP strongly agree that exercise in pregnancy is beneficial for the patient and they should advice regarding its initiation and continuation in pregnancy as shown in similar studies. [5] Slightly more than half of the participants in our study were against the idea of participation in strength training program and seventy two percent of HP hold the opinion that women should continue only moderate exercise during pregnancy. Seventy percent of the participants agreed that exercise decreases the risk of diabetes. Importantly, the study reflected that almost fifty percent of providers never provide any tool such as pamphlets to promote exercise and only slightly higher percentage of HP were found to be aware about ACOG guidelines regarding pregnancy and exercise.

Substantial amount of participants in our study considered exercise as a beneficial form of physical activity during pregnancy but only a small percentage had adequate knowledge of the benefits.[12] These results were found to be in alignment with a study conducted on the impact of physical activity during pregnancy and postpartum on chronic disease risks [13] which also suggested that antenatal exercises had a promising impact on numerous factors. Many practitioners included in our study encouraged their patients to do antenatal exercise on their initial visit. However, due to lack of essential knowledge on the subject, more than half of these health workers do not provide supporting materials to help the women. A similar pattern was observed in a study conducted by Melanie Hayman [14] which concluded that even though health practitioners play an instrumental role in encouraging physical activity among pregnant women, they may lack the necessary knowledge to provide the required guidance. Nevertheless, a study by the ACOG strongly suggests a thorough clinical evaluation of a pregnant women before recommending any physical exercises.[15] In the study conducted only a small percentage of our participants encouraged and provided essential knowledge regarding antenatal exercises to their patients. Most of these women would end up relying on the psychosocial norms and practices portrayed by the society. Nonetheless, a study published in 2011 assessing the knowledge, attitude and practice of women with respect to antenatal exercises in Brazil presented that women had a positive attitude towards physical activities and were reasonably equipped in knowledge of antenatal exercises as well. [16]

CONCLUSION

The overall assessments of our study brought to view the lack of antenatal exercise knowledge among health care practitioners who were in close correspondence with pregnant women. The study confirms that substantial amount of health workers have inadequate knowledge regarding antenatal exercises and they do not encourage women to participate in such exercises. The stake holders such as Society of Obstetrics and Gynaecology Pakistan to publish the guidelines to aid the understanding of the physicians on this important aspect. Since majority of the participants showed interest in attending workshops to increase their knowledge, necessary steps should be taken in this regard.

Author's Contribution:

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

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Original Article

Caesarean Delivery Under Spinal Anaesthesia

Post-Dural Puncture Backache (PDPB) in Parturients Undergoing Caesarean Delivery Under Spinal Anaesthesia: A Cross Sectional Study

Salman Athar Qureshi[1], Faiqa Qurban[1], Maryam Naeem[2], Maimoona Hanif[2], Sadaf Altaf[3] and Muhammad Ahmed Faran[1]

ABSTRACT

Objective: To determine the incidence of lower backache associated with spinal anesthesia given after cesarean delivery.

Study Design: Cross-Sectional Study

Place and Duration of Study: This study was conducted at the Department of anesthesia, Gujranwala Medical College, Gjuranwala from December 2020 to June 2021.

Materials and Methods: In this cross sectional study, 300 patients / subjects were included from 20 to 40 of age, who were given spinal anesthesia before the cesarean section. While all the patients who were given any other type of second anesthesia as well after the spinal anesthesia during the course of the study, were excluded. All the patients were interviewed after 24 hours of spinal anesthesia and then after one week when coming for follow-up in the obstetrics out-patient department to examine and diagnose any backache related to spinal anesthesia. Primary outcome was the calculation of incidence of PDPB – backache after spinal anesthesia in patients of caesarian delivery. Outcome was stratified for age, BMI, first pass success and change of needle direction and post stratification chi square test was applied.

Results: Among these 300 female, frequency of PDPB was recorded in 14.3% (n=43) of the cases whereas 85.7% (n=257) had no backache related spinal anesthesia. Among patients diagnosed having PDPB (backache), data analysis showed that in 29 (67%) cases more than one attempts were made to insert the needle in the spine. (p value 0.00001).

Conclusion: Post-dural puncture backache (PDPB) can be among the common adverse effects of spinal anesthesia used for any type of surgery. Old age, obesity, multiple attempts to pass the spinal needle, bloody CSF and change of space after failure of 1st attempt were some factors significantly associated with backache related to spinal anesthesia.

Key Words: backache, spinal anesthesia, LSCS, cesarean section, PBPB

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INTRODUCTION

The compliant of lower back pain (LBP) is very commonly tackled by obstetricians during the pregnancy and also after the delivery of the baby.

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Various surveys have shown that around half of the pregnant population is present in the medical outpatient departments with backache. This LBP is observed for 6 or more months after the delivery of the baby and its incidence varies from 5% to 40%. Previously its etiology was poorly understood, but now few studies are available trying to identify the risk factors of this back ache. Some studies have shown that it may be related to the spinal anesthesia.

A study included around eleven thousand women and reported that the LBP occurred after delivery more frequently among those who were given spinal anesthesia during delivery as compared to those women who were not given spinal anesthesia (19% vs 11%). They showed a significant association of spinal anesthesia with the back pain of the parturient. Most of these studies were just surveys in the form of questionnaires for the evaluation of backache, and were single center study, and most of the confounding

variables were not controlled. In another study, in which patients of caesarian delivery with spinal anesthesia were included, 9.7% had lower back pain and 32.6% parturients manifested headache.

To date, national-level data and large-scale studies are not available regarding the incidence of post-dural puncture backache (PDOB) among the parturients with Vaginal delivery and Cesarean Delivery, this study addressed this gap, and on the basis of the hypothesis that parturients with spinal anesthesia are on a higher risk of developing PDPB, designed this study to explore the link between spinal anesthesia and PDPB.

MATERIALS AND METHODS

This cross-sectional study was conducted in the department of anesthesia, Gujranwala Medical College, from December 2020 to June 2021. The study population consisted of women undergoing cesarean section with spinal anesthesia. The objective of the study was to determine the incidence of lower backache or PDPB associated with spinal anesthesia given during cesarean delivery

In this study, 300 patients / subjects were included from 20 to 40 of age, who were given spinal anesthesia before the cesarean section. While all the patients who were given any other type of second anesthesia as well after the spinal anesthesia during the course of the study, were excluded. Similarly, patients with symptoms of raised intracranial pressure, those with abnormal spinal bonny structure like scoliosis, infection in the site of spinal anesthesia, patients with coagulation disorders, those with previous history of persistent backache were excluded from the study. Non-probability consecutive sampling was used for the enrollment of cases in the study.

All the patients undergoing cesarean section with spinal anesthesia and meeting the study criteria were selected as subjects of the study. For the purpose of spinal anesthesia disposable 25G spinal needle was used with patient in seated position. 25 µg of fentanyl and 75 mg of lidocaine 5% was used. Spinal anesthesia was given by an unbiased consultant anesthetist unaware of the details of the study, in the presence of the primary investigator. Sample size estimation was done using the WHO sample size calculator by taking an expected incidence rate of backache after spinal anesthesia given for caesarian section of 30% and the confidence interval of 95%.

All the data collected from each of the patient included some of the demographic details like age, weight, height and BMI. During the procedure of spinal anesthesia, first pass success was noted. If first pass success was negative, change of space for needle insertion was also noted by the primary investigator. All the patients were interviewed after 24 hours of spinal anesthesia and then after one week when coming for follow-up in the obstetrics out-patient department to examine and diagnose any backache related to spinal anesthesia.

Patient was in a sitting position, and midline approach was used to enter the L3–L4 or L4–L5 inter-vertebral space. First pass success was noted along with change if space if done after an unsuccessful first attempt of dural puncture.

In an attempt to insert the spinal needle in the subarachnoid space, only one skin puncture done with no change in the direction, was considered as first pass success. PDPB – Post-dural puncture backache was defined in terms of continuous pain in the back with tenderness around lumbar area close to the area of spinal needle insertion with not radiating. The presence of backache was recorded along with various factors associated with PDPB were analyzed.

All the data was entered in the data analysis software SPSS-20 software. Frequency and percentage was calculated for various age groups, presence of obesity, first pass success, change of direction of needle, and presence of blood in CSF. Primary outcome was the calculation of incidence of PDPB – backache after spinal anesthesia in patients of caesarian delivery. Outcome was stratified for age, BMI, first pass success and change of needle direction and post stratification chi square test was applied, and p value of $\leq$0.05 was taken significance.

RESULTS

In this cross sectional study, 300 female patients of age 20 to 40 years who had caesarian section through spinal anesthesia were included to diagnose PDPB – backache after spinal anesthesia.

Among these 300 female, frequency of PDPB was recorded in 14.3% (n=43) of the cases whereas 85.7% (n=257) had no backache related spinal anesthesia. Figure no 1 shows a pie chart regarding the incidence of PDPB among our female population included in the study.

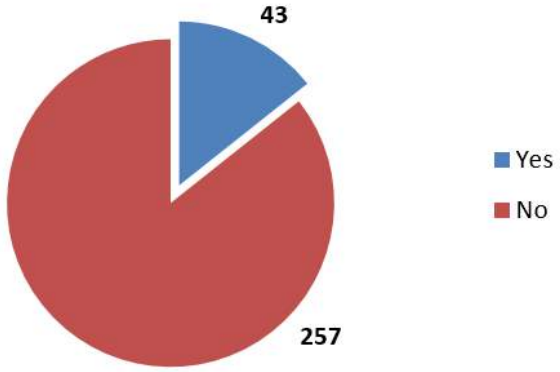

Figure No.1: showing the frequency of post-dural puncture backache among the patients of caesarian section who had spinal anesthesia

Various risk factors / variables were stratified to see the effect of these on the outcome. Age was grouped into 20 to 30 years and 30 to 40 years. BMI was categorized into less than 30 and more the 30. Any female with BMI of more than 30 was labeled as having obesity. Primary outcome was analyzed in related to the first pass success and change of direction of needle using chi square test.

Among the 43 patients diagnosed having PDPB (backache), data analysis showed that in 29 (67%) cases more than one attempts were made to insert the needle in the spine, while first pass success was observed in rest of the 14 cases. (as shown in table no.1) p value was significant.

Among these 43 patients diagnosed having backache due to spinal anesthesia, 31 (72%) were having obesity while the rest of the 12 cases were having BMI less than 30, showing the the majority of the patients in our study with backache were obese. (as shown in table no.1) p value was significant.

Among these 43 patients diagnosed having backache due to spinal anesthesia, CSF draining inside the spinal puncture needle was blood in 25 cases (58.1%) while the remaining 18 cases had a clear CSF. (as shown in table no.1) p value was significant.

Table No. 1 showing the significance of various risk factors related to PDPB

Age				**P value**
	PDPB Present (%)	**PDPB Absent (%)**	**Total**	
20-30	15 (8.3%)	166 (91.7%)	181	0.0002
31-40	28 (23.5%)	91 (76.5%)	119	
BMI (presence of obesity)				
Upto 29.9 - Not obese	12 (6.2%)	193 (93.8%)	205	0.0002
≥30 – Obesity	31 (20.8%)	118 (79.2%)	149	
First pass success				
Yes	14 (6.5%)	204 (94.5%)	215	0.0001
No	29 (34.5%)	55 (45.5%)	84	
CSF (cerebrospinal fluid)				
Clear	18 (6.7%)	243 (93.3%)	261	0.00001
Bloody	25 (64%)	14 (36%)	39	

DISCUSSION

Post-dural puncture backache (PDPB) is continuous pain around the spinal puncture area without any kind of radiation of pain. The paraspinal muscular relaxation with stretching of spinal ligaments and/or localized tissue trauma can lead to PDPB. Acute cases of post spinal backache mostly resolve in 7 days. Studies have estimated the effect of needle type, size, design, and use of introducer in spinal needles on post-dural back pain for neuraxial block has been studied. Few of the studies had no difference in PDPB related to needle size and shape. The previous studies about the effect of the introducer needle on back pain showed no significant difference.

The post-dural puncture needle backache can be due spinal anesthesia and it is a major reason of the refusal for spinal aesthesia among females undergoing cesarean delivery. In our study, we investigated the incidence of backache over the first 24 hours after the spinal anesthesia and within the first week of the surgery. Our study reported the incidence of PDPB to be 14.3%, out of total 300 female, 43 females reported backache after caesarian from spinal delivery.

The incidence of PDPB in the literature ranges from 2% to 29% in adults. In a study conducted by Haghighi et al., the incidence rate of backache within the first day, week of surgery was 16% and 9%, respectively. The study conducted by Homairi H et al. reported the incidence of post spinal anesthesia backache in cesarean delivery cases to be 46.5%. Our study reported it to be 14.3%, but it should be done on a larger scale and in various cities and hospitals.

In another similar study, mean age was 20.0 ±5.4 years and post spinal anesthesia backache was reported by 10 patients (5%) in initial 24 hours and in 19 patients (9.5%) over the first week, and significant association was seen between age and backache (P=0.01). Severity was accessed using visual analogue scale (VAS), which was 3.5 ± 0.5. In our study, we didn't collect data regarding the severity of backache. Age, female in labour, previous spinal anesthesia, diabetes, hypothyroidism, body habitus, bony deformity, experience of the provider, occurrence of paranesthesia, contact of spinal needle with bone, duration of surgery, these factors were not associated with lower backache. Our data analysis showed that incidence of backache was higher in a relatively older age group. It was also reported that this backache was significantly associated with body mass index (BMI), quality of spinal landmarks, number of skin punctures and spinal needle redirections, intervertebral space level change, need for taking over by second anesthesia provider, bloody cerebrospinal fluid, presence of PIH and intravenous fluid administered. Our study also showed most of these factors to be significantly with PDPB in our study.

In a study, various needles were compared in terms of complications like backache and headache. Incidence of backache was reported to upto 4.3%. Quincke needle was reported to be cheaper than Atracaun needle and cost-effective. We used only one type of needle.

Taman Hi, et al reported PDPB of 10.83% among the included obstetric patients. Headache and backache was more in normal weight females as compared to obese and over-weight females. Poor landmarks were also seen to be significantly associated with the frequency of backache in this study and other studies as well. Similar to this study, our study proved that the increased number of skin punctures, needle redirections and more than one needle passes, change in intervertebral space level, and first pass failure are associated with increased in the incidence of backache.

But in another study, the level of spine used for entry into the spine for spinal block, was significantly associated with headache and backache. Not significant factors were labour, provider experience, contact of spinal needle with bone, intraoperative haemodynamic instability, and quality of block, duration of surgery, time to sitting or time to ambulation. Previous history of backache or headache was also included in the in-significant factors.

Some studies have tried to explain the etiology behind backache after spinal anesthesia. Lower back pain is most probably due to ligament tears, teat in the fascia or injury to bone along with localized bleeding, flattening of lumbar convexity to abnormal extent or its immobility, and stretching of lumbosacral ligaments.

While looking for PDPB, primary investigator should look for other causes of backache including epidural hematoma or abscess. Aim of the study was to determine the incidence of lower backache or PDPB associated with spinal anesthesia given during cesarean delivery. This study proved that there is significant number of females of our population who experienced backache related to spinal anesthesia. Backache can start within 24 h of spinal anesthesia and may resolve in a week. Majority of the patients have mild to moderate backache. Treatment of pain can be done through paracetamol and diclofenac.

CONCLUSION

Post-dural puncture backache (PDPB) can be among the common adverse effects of spinal anesthesia used for any type of surgery. After the caesarian section, multiple factors related to the skills of the anesthetist and related to the body of the patients can be associated. Old age, obesity, multiple attempts to pass the spinal needle, bloody CSF and change of space after failure of 1st attempt were some factors significantly associated with backache related to spinal anesthesia.

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Original Article

Immediate Effects of Diaphragmatic Breathing Versus Pursed Lip Breathing on Blood Pressure, Pulse Rate and Oxygen Saturation of Patients with Hypertension

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ABSTRACT

Objective: To compare the immediate effects of diaphragmatic breathing and pursed lip breathing exercise on blood pressure, pulse rate and oxygen saturation in hypertensive people.
Study Design: Randomized Clinical Trial
Place and Duration of Study: This study was conducted at the Community Dwelling Areas of Lahore Study was completed in 6 months from December, 2020 to June, 2021.
Materials and Methods: One group was given diaphragmatic breathing exercise (DBE) and other was instructed pursed lip breathing exercise (PLBE). Pre and Post treatment values of blood pressure(BP), pulse(PR) and oxygen saturation(PSO2) were recorded.
Results: In across the group comparison both groups showed significant changes after treatment with $p<0.05$.
Conclusion: Diaphragmatic breathing and pursed lip breathing are equally effective in decreasing BP, HB and surging PSO2.
Key Words: blood pressure, breathing exercise, diaphragmatic breathing exercise, heartbeat, hypertension, oxygen saturation, pulse rate

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INTRODUCTION

WHO states "In hypertension (HTN) blood vessels have continuously spiked pressure that puts vessels under stress". High blood pressure (BP) is ≥ 140/90 mm Hg. More than **1 in 5 adults** have HTN around the globe. HTN is the main cause for stroke and many cardiac conditions [(1)]. In developing countries much of the population with HTN is not aware of their pathology. Many of them have little or no access to treatment that can control HTN or prevent deaths and complications due to HTN[(1)].

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Pharmaceutical treatment for controlling blood pressure is much expensive and people in poor income countries cannot afford these medicines [(2)]. Moreover, these medicines can have different sideffects on kindney, liver and other systems of body. According to National Health survey of Pakistan, every third person over the age of 40 years becomes increasingly vulnrable to different health conditions due to increased blood pressure. Furthermore, only 50% of people with HTN ever got a diagnosis and only half of these diagnosed cases ever got a treatment [(3)].

All the above mentioned problems can be overcome by breathing exercises. It is both involountary as well as volountary process [(4)].

Breathing Exercise (BE): Consciously, breathing can be used to have an impact on sympathetic nervous system (SNS) so that heart rate (HR), circulation, BP and other body functions can be regulated[(2, 5)].

Breathing exercises are categorized under therapeutic interventions in which purposepful modification is achieved in a specific breathing pattern [(6)].

Role of Pursed Lip Breathing Exercise (PLBE): This generates remarkable changes in pressure gradient for oxygen that leads to more oxygen in alveoli. This leads to improved oxygen saturation of body. Oxygen

saturation (PSO2) is presence of oxygenated haemoglobin in blood [7-9] .

Deep breathing exercises increase baroreflex senstivity and vagal tone that lead to decrease in BP and pulse rate (PR)[10].

Role of Diaphragmatic breathing Exercise (DBE): It causes improvements in sympathetic and parasympathetic nervous system(PNS). It shows improvements in cardiopulmonary baroceptor stretch reflex hence decreasing peripheral vascular resistance[10]. DBE improves HR variability that shows the changes in SNS and PNS [11]. During inhalation negative intrathoracic pressure is generated that acts as a vaccum for blood thereby DBE improves venous return to heart and that increases the stroke volume and then which in return triggers the arterial stretchreceptors. These arterial stretchreceptors triggers PNS and decreases the SNS. These stimulations cause BP and PR to drop due to decrease in peripheral resistance[12-13].

There are plethora of studies on DBE, nostril breathing, paced breathing and other types of breathings and on their effects on BP, PR and PSO2 in other patient populations and on healthy individuals as well, but in the patients with HTN no comparison has been made between breathing techniques yet, stating which one is effective. Secondly, already present studies had shown long term effects mostly, not the immediate effects of breathing exercises on BP, PR and PSO2 of patients with hypertension. In under developing countries where poverty has been shooting with every passing hour in a way that people cannot afford costly medicines, there is a need to look for other therapeutically effective techniques like DBE and PLBE. These techniques are inexpensive, easy to perform and contain no known harmful effect. Hence, this study undertook this task of finding out what are the immediate possible effects of DBE and PLBE on the BP, PR and SO2 and secondly which technique is more effective.

MATERIALS AND METHODS

Study design was randomized clinical trial with non probability convenient sampling. Data was collected from community dwelling areas. Data was collected within 6 months. Total sample was 46 with 23 in each group.

Inclusion: Patients with hypertension (stage 1 and stage 2) with BP ≥ 140/90mmHg, 40 to 60 years of age people, both genders, patients who had taken no antihypertensive medicines or who had taken antihypertensive medicines more than 6 hours ago were considered.

Exclusion: Patients with lung conditions and cardiovascular issues e.g. exacerbation of COPD, Asthma, lung surgies, MI, thoracic surgies, cardiovascular related surgies; patients with speech issues and pateints who were critically ill e.g. with mental illness, psychosocial issus, cancer, infectious diseases, and comatose patients were excluded.

Patients were asked for their consent first and they were made fully aware about techniques. It was single blinded study with blinding of assessor.

Participants were allocated to the groups through randomization using coin toss method. Physiotherapist guided the one group of patients to do PLBE by inhaling through the nose [14] for two counts, keeping mouth closed. Then the subjects were asked to pursue their lips, and breathe out slowly through pursed- lips while counting to four. Other group of patients was asked with back and head supported to perform DBE by placing one hand on abdomin and other on chest for sensory feedback. Then they were asked to breathe in slowly and deeply through the nose as if filling their abdomins with air while keeping the shoulder and upper chest relaxed during the proceedure. Then the patients were instructed to slowly let all the air out through the mouth as if letting the air out of their abdomins [12].

Both interventions were applied for 3 to 4 repeatitions and then rest was given for one minute, a total of 5 sets were given. Pre interventional BP, PR and PSO2 were taken for both groups on the same day. Post intervention BP, PR and PSO2 were taken after 5 minutes[15] of completion of intervention for both groups. Average was taken of two consecutive readings of blood pressure pre and post intervention in both groups. Data was analyzed using IBM SPSS Statistic 21. Aneriod Sphygmomanometer for measuring BP was used. Pulse oximeter for measuring PSO2 and PR was used.

RESULTS

Table 1 shows clinical and descriptive statistics for DBE and PLBE group. It shows mean age 53.2 (5.6) years, mean hypertension history 7.7 (4.7) years, pretreatment Systolic BP (SBP) mean 147.6 (7.3) mm Hg, pretreatment Diastolic BP (DBP) mean 93.2 (6.14) mmHg, pretreatment oxygen saturation means 97.3 (0.9) % and pretreatment pulse rate 84.5 (8.5) beats per minute for DBE. It shows mean age 52.2 (6.3) years, mean hypertension history 6.5 (5.4) years, pretreatment SBP mean 148.0 (7.2) mm Hg, pretreatment DBP mean 94.8 (5.3) mmHg, pretreatment oxygen saturation means 97.1 (0.9) % and pretreatment pulse rate 85.3 (12.8) beats per minute for pursed lip breathing group.

DBE group had 43.48% females and 56.52% males whereas PLBE group had 43.48% males and 56.52% females.

This study has used Shapiro-Wilk normality test as sample size was smaller than 50. All variables have p value less than 0.05 that shows this data is non-parametric. So for comparing two groups, this study used Mann Whitney U test. For pre and post treatment comparison with in the groups, Wilcoxin Rank Test was used. Table 2 shows that there was no significant

changes in systolic, DBP, PSO2 and PR after treatment between both groups with p= 0.40 for SBP; p= 0.51 for DBP; p=0.14 for PSO2; & p= 0.91 for PR. Table 3 shows for DBE group, number of negatives is more in case of average BP values and PR values and number of positive is more in case of PSO2 values. Table 4 shows for PLBE group, number of negatives is more in case of average BP values and heart beat values and number of positives is more in case of PSO2 values.

Table No.1: Descriptive and Clinical Demographics of Diaphragmatic group & Pursed Lip Breathing

Variables in Diaphragmatic Breathing Exercise Group	Minimum Value		Maximum Value		Mean (S.D)	
	DBE	PLBE	DBE	PLBE	DBE	PLBE
Age/years	41	40	60	60	53.2 (5.6)	52.2 (6.3)
History of HTN/ years	2	1	20	20	7.7 (4.8)	6.5 (5.4)
Pre Treatment SBP mmHg	140	140	160	162	147.6 (7.3)	148.0 (7.2)
Pre Treatment DBP/ mmHg	88	90	110	110	93.2 (6.1)	94.8 (5.3)
Pre Treatment PSO2 %	96%	95%	99%	99%	97.3 (0.9)	97.1 (0.9)
Pre Treatment PR bpm	70	70	100	116	84.5 (8.5)	85.3 (12.8)

Table No.2: Post treatment comparison of both groups using Mann Whitney

Factors	Intervention	P-Value
Post SBP	DBE	0.40
	PLBE	
Post DBP	DBE	0.51
	PLBE	
Post PSO2	DBE	0.14
	PLBE	
Post PR	DBE	0.91
	PLBE	

Table No.3: With in group changes in Diaphragmatic Breathing group using Wilcoxin test

Variables	Ranks	No.	Mean Ranks
post treatment - Pre treatment average SBP	Negatives	18	9.5
	Positives	0	0.0
	Ties	5	
post treatment average - pre treatment average DBP	Negatives	7	4.0
	Positives	0	0.0
	ties	16	
post treatment - pre treatment PSO2	Negatives	1	7.5
	Positives	15	8.6
	ties	7	
post treatment - pre treatment PR	Negatives	23	12.0
	Positives	0	0.0
	ties	0	

Table No.4: With in group changes in Pursed lip breathing group using Wilcoxin Test

Variables	Ranks	No.	Mean Ranks
post treatment - Pre treatment average SBP	Negatives	13	7.0
	Positives	0	0.0
	Ties	10	
post treatment average - pre treatment average DBP	Negatives	18	10.1
	Positives	3	16.5
	ties	2	
post treatment - pre treatment PSO2	Negatives	0	0.0
	Positives	13	7.0
	ties	10	
post treatment - pre treatment PR	Negatives	23	12.0
	Positives	0	0.0
	ties	0	

Table 5 shows that within the group, SBP, DBP, PSO2 and PR in pre and post treatment differ with significant changes in both groups (For DBE: p<0.001 for SBP; p=0.01 for DBP; p<0.01 for PSO2 & p<0.001 for PR; For PLBE: p<0.001 for SBP; p=0.02 for DBP; p<0.001 for PSO2 & p<0.001 for PR).

Table No.5: P values for DBE and for PLBE using Wilcoxin Test

Variables	p-value	p-value
	Diaphragmatic Exercise	Pursed Lip Breathing Exercise
SBP	<0.001	<0.001
DBP	0.01	0.02
PSO2	<0.01	<0.001
PR	<0.001	<0.001

DISCUSSION

Current study found that pursed lip breathing and diaphragmatic breathing are equally effective in decreasing blood pressure, pulse rate and in improving saturations of patients with HTN. This study results about curbing the raised blood pressure levels after administration of pursed lip breathing (p<0.05) is in agreement with the significant results (p <0.05) of declining blood pressure following PLBE about young healthy college going students. But this investigation found none of the techniques more effective in decreasing blood pressure, pulse rate and surging oxygen saturation with p>0.05 while using Mann Whitney test.

However, a research found that PLBE group was more effective in diminishing BP and spiking saturations with p<0.05, whereas, diaphragmatic breathing was more effective in reducing pulses with p<0.05.

Another [16] about effectiveness of DBE on HR, BP and PSO2 in elder patients with hypertension concluded that DBE is statistically and clinically effective in decreasing systolic blood pressure (r= 0.46), diastolic blood pressure(r=0.39), pulse rate (r=0.39) and in improving oxygen saturation levels (r=0.56) all with p values<0.05.

Above mentioned findings are similar to this investigation's findings about effectiveness of DBE in improving systolic blood pressure levels, diastolic blood pressure levels, pulse rates and PSO2 all with p values<0.05.

Yan Zou et.al conducted a Meta-Analysis of 6 studies in 2017 and included studies from 1966 to 2016 about the Voluntary Slow Breathing Exercises for maintaining blood pressures and heart rates in patient with cardiovascular problems and they reached the conclusion that voluntary and slow breathing exercises decrease SBP, DBP and heart rates statistically all with p<0.05; and this decreases the chances of myocardial event in such patients [17].

However, current study shows decrease in SBP, DBP and pulse rate both in PLBE & DBE with negatives =18, mean rank = 9.5 for SBP, negatives = 7, mean rank = 4 for DBP & negatives = 23, mean rank = 12 for PR in DBE; with negatives= 13, mean rank= 7 for SBP, negatives = 18, mean ranks= 10.08 for DBP, negatives= 23, mean ranks= 12 for PR for PLBE. Hence current investigation showed more negatives than positives while subtracting pretreatment values from post treatment values in cases of BP and PR in both groups. This point out that current study is in agreement with results from study by Yan Zou et.al.

Randomized control trial about effect of deep breathing exercise on PSO2 of patients with surgery of abdomen by Mostafa et.al showed significant difference between experimental and control groups of study with p<0.05 using t-test. This finding from literature that is again in agreement with findings of current study about PSO2 in blood that showed PSO2 changed significantly with p<0.05 after administration of forms of deep breathing exercise (PLBE & DBE)[18] .

A study about DBE impact on BP and PR in people with prehypertension showed that significant changes were there in decreasing blood pressure with p<0.05, this finding is similar to the finding of this study that represented p< 0.05 in case of SBP and DBP.

Additionally, there was no significant change was found in PR following the DBE with p>0.05. However, present study found significant changes in PR with p<0.05 after DBE.

CONCLUSION

Diaphragmatic breathing and pursed lip breathing are equally effective in decreasing BP, HB and surging PSO2.

Recommendations

- This study suggests future researchers to increase the size of data.
- Additionally, it is also recommended to recruit other diseased populations as well.
- Future investigators should add more age groups to get clearer picture.
- Comparative studies of breathing exercises with antihypertensive drugs can also be adopted in order to study the effectiveness of both interventions.
- Furthermore, respiratory rates, frequencies and durations of these breathing exercises can also be altered in order to draw conclusions about BP, PR and PSO2 based on these factors

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Original Article

Surgical Outcome in Patients with Ruptured Sinus of Valsalva: A 5 Year Experience at a Tertiary Care Center of Middle Income Country

Muhammad Asad Bilal Awan[1], Romana Awan[2], Aiman Tariq[1], Syed Minhaj[1], Komal Baloch[3] and Saad Bader Zakai[4]

ABSTRACT

Objective: To evaluate the surgical outcomes in patients with ruptured sinus of valsalva who presented at a tertiary care center of middle income country.

Study Design: Retrospective study

Place and Duration of Study: This study was conducted at National Institute of Cardiovascular Diseases Karachi from June 2016 to May 2021 for the period of five years.

Materials and Methods: After approval from the ethical review committee of the institution, hospital records of the patients fulfilling the inclusion criteria were accessed. Inclusion criteria for the study are patients who presented with the diagnosis of ruptured sinus of valsalva on echocardiography and undergone surgical treatment. After quality assessment of the data, IBM SPSS version 21.0 was used for the analysis. The continuous variables were summarized as mean ± SD (standard deviation) and categorical response variables were expressed as percentages.

Results: 30 patients with ruptured sinus of Valsalva were diagnosed on Transthoracic echocardiography and undergone surgical treatment. Out of 30 patients, 18 (60%) were males and 12 (40%) were females. The mean age was 26.6 years (range:16 to 47 years). Typical "wind sock" were present in 24(80%) on echocardiography. The aneurysm had communication with right ventricle outflow tract in 28(93%) patients while in 2 (7%) patients its communication was between the no coronary cusps and the right atrium. Twenty-five patients (83.3%) had associated VSD. Five (16.6%) patients had some element of aortic valve incompetence ranging from mild to moderate. In hospital mortality was 0%. All patients survived and were discharged from hospital without any significant morbidity.

Conclusion: Ruptured Sinus of Valsalva is a surgical emergency. The surgical outcomes in these patients are encouraging with good survival and low complication rate.

Key Words: Ruptured sinus of Valsalva aneurysm(RSOA), RSOVA surgical treatment, cardiac surgical emergency

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INTRODUCTION

In 1957 Lillehei reported the first successful surgical repair of congenital ruptured sinus of Valsalva aneurysm (RSVA).[1] Ruptured sinus of Valsalva aneurysm (RSVA) is caused by a defect in aortic connective tissue [(2,3)] which forms an aneurysm and it ruptures most commonly in right sided chambers.[4]

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Most common congenital disorder associated with this (RSVA) is subaortic Ventricular Septal Defect (VSD).[5] Mortality without surgical treatment is very high with mean survival of 1-2 years.[6]

Surgical repair of RSVA has low morbidity and mortality. Surgical treatment includes repair of sinus defect with or without pericardial patch by putting patient on cardiopulmonary bypass(CPB) and after aortic crossclamp. These patients may need additional procedures like VSD cloure, aortic valve repair or replacement.

The incidence of ruptured sinus of Valsalva aneurysm (RSVA) is highest in Asian population.[7] Here at National institute of Cardiovascular Diseases, we receive large number of patients who presents with symptoms of right heart failure ranging from mild symptoms to multi organ failure.[8] Surgical treatments is offered to all patients. It is important to study all the surgical outcome in patients with ruptured sinus of Valsalva aneurysm (RSVA).

MATERIALS AND METHODS

Study Design: Retrospective chart review
Setting: At National Institute of Cardiovascular Diseases Karachi.
Duration of Study: Five years
Patient Records: from June 2016 to May 2021
Inclusion Criteria: All patients who have been diagnosed as ruptured sinus of Valsalva on echocardiography and were surgically treated were included.
Exclusion Criteria: No patient was excluded.
Study Outcome: Post-surgical in-hospital survival status and complications (if any)
Data Collection: After approval from the ethical review committee of the institution, hospital records of the patients fulfilling the inclusion criteria were accessed. Inclusion criteria for the study are patients who presented with the diagnosis of ruptured sinus of Valsalva on echocardiography and undergone surgical treatment during study duration of June 2016 and May 2021. Demographic (age, gender, nationality, etc.) and clinical data (presenting complaint, lab work up, echo findings, and surgical parameters) along with post-surgical in-hospital survival status and complications were extracted from the patient's file.
Data Analysis: After quality assessment of the data, IBM SPSS version 21.0 was used for the analysis. The continuous variables were summarized as mean ± SD (standard deviation) and categorical response variables were expressed as percentages (%). Effect of confounding factors on the post-surgical in-hospital outcomes was assessed by conducting Chi-square test or Fisher's exact test. The criteria for statistical significance was taken as a p-value of ≤ 0.05.

RESULTS

Between June 2016 and May 2021, 30 patients with ruptured sinus of Valsalva were diagnosed on Transthoracic echocardiography and undergone surgical treatment at National Institute of Cardiovascular Diseases(NICVD)Karachi. Out of 30 patients, 18 (60%) were males and 12 (40%) were females. The mean age was 26.6 years (range:16 to 47 years).
At the time of admission, 28 patients (93%) were symptomatic. The majority had the following symptoms: dyspnea (80%), palpitation (34%), fatigue (85%), angina (20%), and syncope (1.5%). Continuous Heart murmur of grade 4/6 was present in 28 (93.3%%) patients. There were two patients (6.6%) in atrial fibrillation and 28 (93.3%) had normal sinus rhythm.
On Transthoracic echocardiography diagnosis of ruptured sinus of Valsalva aneurysms were confirmed in these 30 patients. Typical "wind sock" were present in 24(80%) on echocardiography. In 20(66.6%) patients aneurysm was arising from right coronary sinus while in other 10 (33.3%)patients it was arising from other sinuses. The aneurysm had communication with right ventricle outflow tract in 28(93%) patients while in 2 (7%) patients its communication was between the no coronary cusps and the right atrium. Twenty-five patients (83.3%) had associated VSD. Five (16.6%) patients had some element of aortic valve incompetence ranging from mild to moderate. One (3.33%) of patient had severe mitral valve regurgitation.
All patients were put on pump by aortic and venous cannulation. The Patient were cool down upto 28 degree centigrade by hypothermia machine. Surgical repair was done after aortic cross clamping. Aortotomy was done in 100% of patients. Cold blood Cardioplegia at 4degree C were given for myocardial protection to all patients, antigrade in 24(80%) through osteal cannulea and in 6(20%) both antegrade and retrograde were used.
Surgical repair of ruptured sinus of Valsalva was done with pericardial patch in 29(96.6%) patients while in one (3.3%) patient it was directly closed with proline 5/0 with pledgets.VSD was closed directly in 2(8%) with proline 5/0 using pledget while in 23(82%) of patients VSD was closed using pericardial patch. Aortic valve replacement (AVR) had to be done in one (3.3%) patient. Mitral Valve Replacement (MVR) was done in one patient who had significant mitral regurgitation.
Most patients were off by pass uneventfully on mild to moderate inotropic support. Only four (13.3%) patient required more than two inotropic agents. Milrinone was given to all patients.
Average ICU stay was 4 days ranging from 2 to 10 days. One Patient required reopening due to bleeding from aortic suture site within six hours of surgery.
In hospital mortality was 0%. All patients survived and were discharged from hospital without any significant morbidity.

DISCUSSION

Ruptured sinus of Valsalva aneurysm is a rare anomaly which carries a very high mortality if left untreated[9-12]. Surgical repair of RSVA is proven to prevent complications of right heart failure and its associated morbidity and mortality.
Association of RSVA with other congenital cardiac abnormalities is common. Association with VSD was very high in our study (83.3%). Whereas, study done by Wing-Kuk Au at division of cardiothoracic surgery, University of Hong Kong reported 49.1% of cases having VSD finding at the time of surgical repair, which is significantly less than noted in our study on Transthoracic echocardiography prior to surgery.[13]
In our study AVR and MVR was done in 3.3% each but it did not affect in hospital mortality however Abe and Komatsu suggested that AVR or mitral valve regurgitation could be related to late death[14].
Myocardial protection strategies are very important in patients with congestive heart failure or coexistent lesions. In our study, we achieved myocardial

protection by giving cold blood cardioplegia, antegrade as well as retrograde in some cases. We were able to achieve complete myocardial protection as none of our patients had low cardiac output syndrome postoperatively requiring any assist device. Other surgical techniques for myocardial protection can also be used such as On-pump beating-heart surgery[15,16].

There are three approaches to repair ruptured aneurysms of the sinus of Valsalva: via the terminal chamber, via the aortic root, and via a combined approach. In our patients, we used the Aortic root approach. However, others propose that a combined approach offers more advantages[17].

In hospital mortality after surgical correction is zero percent in our study which includes almost all types of RSVA varients;1. RSVA 2. RSVA plus VSD 3. RSVA plus AR 4. RSVA plus MR. In a retrospective study done by Sabit Sarikanya in 2013, there were 55 patients who underwent surgical treatment of RSVA. The hospital mortality rate was 3.6%. According to this study 10 and 15 years survival was 93.4+-3.7% and 87.1+-5.6%[3,18-19].

CONCLUSION

Ruptured Sinus of Valsalva is a surgical emergency. The surgical outcomes in these patients are encouraging with good survival and low complication rate.

Author's Contribution

Concept & Design of Study:	Muhammad Asad Bilal Awan
Drafting:	Romana Awan, Aiman Tariq
Data Analysis:	Syed Minhaj, Komal Baloch, Saad Bader Zakai
Revisiting Critically:	Muhammad Asad Bilal Awan, Romana Awan
Final Approval of version:	Muhammad Asad Bilal Awan

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

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Original Article

Preoperative Pulmonary Artery Hypertension

Prevalence of Preoperative Pulmonary Artery Hypertension among Patients Undergoing Mitral Valve Surgery and its Association with In-Hospital Outcomes

Asmatullah[1], Muhammad Asad Bilal Awan[1], Abdul Wasay[1], Romana Awan[2], Muhammad Arif[1] and Ishaq Khan[1]

ABSTRACT

Objective: Objective of the study is to determine the prevalence of preoperative Pulmonary Artery Hypertension (PAH) and its severity in patients undergoing Mitral Valve surgery at a tertiary care hospital in Karachi, Pakistan.
Study Design: Descriptive Observational study
Place and Duration of Study: This study was conducted at the Cardiac Surgery Department of National Institute of Cardiovascular Diseases (NICVD) Karachi for a period of six months December 2020 to May 2021.
Materials and Methods: Non-probability, Consecutive Sampling. Patients fulfilling the inclusion criteria were included in this study, Patients diagnosed with Mitral Regurgitation (MR) or Moderate to Severe Mitral Stenosis (MS) undergoing mitral valve surgery. Pulmonary Artery Hypertension was labelled PAH [+] if preoperative systolic pulmonary artery pressure (sPAP) ≥ 40 mmHg, as measured with Doppler echocardiography, otherwise it was labelled as PH [-]. Data was entered and analysis using SPSS version-21. Variables was expressed using appropriate descriptive statistics such as mean ± SD, median (IQR), maximum and minimum. Frequency and percentages were calculated for categorical variables.
Results: During this period of study 68 patients were included in study who were operated for Mitral Valve Replacement(MVR). It included 50(74%) females and 18 males (26%).In these patients only 1(1.4%) was operated through minimally invasive mitral valve replacement whereas 67(98.52%) patients with conventional mitral valve replacement (MVR) through median sternotomy. All the patients who were operated had severe disease. Pulmonary Artery hypertension (PAH) was present in 23(74.2%) out of 33 Mitral Regurgitation (MR) patients. Pulmonary Artery hypertension (PAH) was present in 23(74.2%) out of 31 patients who had Mitral Stenosis MS. Overall In-hospital mortality in our study was 10.3% (7 out of 68 patients).
Conclusion: Prevalence of PAH is high in patients undergoing Mitral Valve Replacement surgery. Major factors associated with post-operative mortality include prolonged ICU stay, prolonged ventilation and need for high inotropic support.
Key Words: Pulmonary Artery Hypertension (PAH), Mitral Valve surgery, MS, MR

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INTRODUCTION

Rheumatic heart disease (RHD) has almost been eradicated from the developed countries but it still poses a major health concern in developing countries.

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A significantly large number of young adults suffer from morbidity and mortality related to the involvement of mitral and aortic valves[1]. RHD most commonly affects mitral valve leaflets and sub valvular apparatus causing Mitral Stenosis (MS) Mitral Regurgitation (MR) and Mixed disease, both MS and MR.

Pulmonary Artery Hypertension (PAH) describes a vast array of disease states in which chronically elevated pulmonary artery pressure (PAP) and pulmonary vascular resistance (PVR) ultimately result in right heart failure (RHF) and death.[(2)] Pulmonary Artery hypertension (PAH) may occur with the gradual progression of mitral regurgitation (MR) in patients with mitral valve (MV) prolapse and cardiac surgical patients presenting with pre-existing PAH are at a higher risk for postoperative complications and it has been reported to have negative impact on operative outcomes.[(1–5)] In well known risk scoring system,

European System for Cardiac Operative Risk Evaluation II (EuroSCORE II), PAH is considered a risk factors for mortality[6].

Current American College of Cardiology/American Heart Association and European Society for Cardiology guidelines recommend surgery for asymptomatic patients with MR and resting systolic pulmonary artery pressure (sPAP) greater than 50 mmHg as a class II a recommendation based on level C evidence.[7,8]

A recent retrospective observational study on Pakistani population by Chaudhri MS et al. [8] observed significant reduction of PAH postoperatively and concluded that the Mitral valve replacement in the presence of severe PAH is a safe procedure. Study further reported that the mean cardiopulmonary bypass and aortic cross clamp times were 89.87±23.15 and 62.48±18.75 minutes respectively. Mean ventilation time was 7.13±5.65 hours while the mean inotropic requirement was 30.22±23.12 hours. There was no peri-operative mortality.[8]

Ghoreishi M et al. [5] reported preoperative PH (sPAP > 40 mmHg) in 53% of the patients with mild in 20%, moderate in 16% and severe PH in 17% of the patients. Study further reported that preoperative PH was strongly associated with operative mortality (p-value <0.001) with mortality rate of 2% for patients with no PH, 3% for patients with mild, 8% for moderate, and 12% for those with severe preoperative PH. Higher preoperative sPAPs were associated with higher rates of prolonged ventilation (p-value <0.001), longer hospital stay (p-value <0.001), intensive care unit stay more than 24 hours (p-value 0.021), and dialysis (p-value 0.009).

However, there is no consensus about the outcome of patients with PAH after MVR in the literature [10], some studies have revealed that severe PAH is associated with poorer outcome and higher mortality rate [1-5] while some others do not agree with this and believed that severe PAH do not imply the greater risk in corrective surgery. [11, 12] Although pulmonary artery hypertension has been reported as a major predictor of adverse cardiovascular events, there are limited studies on its association with operative morbidity and mortality for patients undergoing Mitral Valve surgery especially in our population. Therefore, it is imperative to study the impact of preoperative PAH on operative outcome of Mitral Valve surgery in our population so that better patient management strategies could be devised.

MATERIALS AND METHODS

It is Descriptive Observational study conducted in Cardiac Surgery Department of National Institute of Cardiovascular Diseases (NICVD) Karachi. Duration of Study was Six months

Sampling Technique: Non-probability, Consecutive Sampling**.** Patients fulfilling the following criteria were included in this study; 1-Age between 16 to 75 years 2-Either gender 3-Patients diagnosed with Mitral Regurgitation (MR) or Moderate to Severe Mitral Stenosis (MS) undergoing mitral valve surgery (as per the operational definition). Patients who were excluded from this study ; 1-Patients with prior history of any cardiac related surgery 2-Patients refused to give consent.

Mitral Regurgitation (MR) was classified as "Severe", "Moderate", and "Mild" based on echocardiography findings as per the following criteria; Mild Mitral Regurgitation (MR): Mild MR was defined as, Small central jet <4 cm^2 or <20% of LA area, Vena contracta width < 0.3cm, regurgitant volume between 30 to 44 ml/beat, regurgitant fraction between 30 to 39%, and effective regurgitant orifice area between 0.20 to 0.29 cm^2. Moderate Mitral Regurgitation (MR): Moderate MR was defined as, signs of MR>mild present, but no criteria for severe MR with regurgitant volume between 45 to 59 ml/beat, regurgitant fraction between 40 to 49%, and effective regurgitant orifice area between 0.30 to 0.39 cm^2. Severe Mitral Regurgitation (MR): Severe MR was defined as, Vena contracta width ≥ 0.7cm with large central MR jet (area < 40% of LA) or with a wall-impinging jet of any size, swirling in LA, regurgitant volume ≥ 60 ml/beat, regurgitant fraction ≥ 50%, and effective regurgitant orifice area ≥ 0.40 cm^2.

Moderate to Severe Mitral Stenosis (MS): MS was classified as "Severe", "Moderate", and "Mild" based on echocardiography findings as per the following criteria; Mild Mitral Stenosis (MS): Mild MS was defined as, valve area > 1.5cm^2 with supportive finding of mean gradient < 5 mmHg and pulmonary artery pressure <30 mmHg.Moderate Mitral Stenosis (MS): Moderate MS was defined as, valve area between 1 to 1.5cm^2 with supportive finding of mean gradient between 5 to 10 mmHg and pulmonary artery pressure between 30 to 50 mmHg.Severe Mitral Stenosis (MS): Severe MS was defined as, valve area < 1.0cm^2 with supportive finding of mean gradient > 10 mmHg and pulmonary artery pressure >50 mmHg.

Pulmonary Artery Hypertension (PAH): Patients was labelled PAH [+] if preoperative systolic pulmonary artery pressure (sPAP) ≥ 40 mmHg, as measured with Doppler echocardiography, otherwise it was labelled as PH [-]. Severity of preoperative Pulmonary Artery Hypertension (PAH) was categorized as: No Pulmonary Hypertension***:*** sPAP < 40 mmHg**,** Mild Pulmonary Hypertension: 40 mmHg ≤ sPAP < 50 mmHg**,** Moderate Pulmonary Hypertension: 50 mm Hg ≤ sPAP < 60 mmHg and Severe Pulmonary Hypertension: sPAP ≥ 60 mmHg.

In-hospital Outcome: included the following Mortality: was labeled as "Yes" if patients died within 7 days of hospital stay after the surgery, otherwise, was labeled as "No". Prolonged Intensive Care Unit (ICU) stay: was labeled as "Yes" if ICU stay was more than 48 hours, otherwise, will be labeled as "No". Prolonged

ventilation: was labeled as "Yes" if more than 24 hours, otherwise, it was labeled as "No". Inotropic Support: was labeled as "Yes" if lasting for more than 24 hours, otherwise, it was labeled as "No". Long Cardiopulmonary Bypass (CPB) Time: was labeled as "Yes" if more than 240 minutes, otherwise, it was labeled as "No".

Diabetic Mellitus (DM): was labelled as "Yes" for the patients with documented history of DM and on anti-diabetic medication for at least 6 months. Hypertension (HTN): will be labelled as "Yes" for the patients with documented history of HTN and on anti-hypertensive medication for at least 6 months. Smoking: was labelled as "Yes" if patient has history of smoking 10 to 20 cigarettes per day for last 5 years otherwise it was labelled as "No".

Data Collection and Analysis: The study was started after approval from the ethical review committee of NICVD. For this study we included consecutive patients undergoing mitral value surgery and fulfilling the inclusion criteria at cardiac surgery department, NICVD, Karachi. Prior to inclusion, the purpose and benefits of the study were explained to all the participants and informed consent was taken by the principal investigator from all patients. Patient's demographic data was obtained such as Age (years) and gender. History of the patients was taken, as per the operational definitions, regarding diabetic mellitus, hypertension, and smoking status. Echocardiography was performed by echo cardiographers with work experience of more than five years for all the patients. Severity of mitral stenosis (MS) and mitral regurgitation (MR) was assessed as per the operational definitions. Preoperative systolic pulmonary artery pressure (sPAP) was measured using modified Bernoulli equation;

$4x$ [tricuspid regurgitation jet velocity]^2 + right atrial pressure [10 mmHg].

And preoperative pulmonary artery hypertension (PAH) and its severity was assessed as per the operational definitions. Mitral valve surgery in all the patients was performed by the surgeon having minimum 5 years of experience. Patients were observed during their hospital stay and in-hospital, intra operative and post-operative outcomes were recorded and measured as per the operational definitions such as mortality, prolonged intensive care unit (ICU) stay, prolonged ventilation, inotropic support, long cardiopulmonary bypass (CPB) time, and long aortic clamp time. All the collected data was recorded on predesigned proforma. Confounding variables and biasness were controlled by strictly following inclusion and exclusion criteria and stratification. Patient information was kept secured and was available to authorized person only.

Data was entered and analysis using SPSS version-21 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp). Variables such as age (years), systolic pulmonary artery pressure (sPAP mmHg), intensive care unit (ICU) stay (hours), ventilation (hours), inotropic support (hours), cardiopulmonary bypass (CPB) time (hours), and aortic clamp time (hours). Quantitative (continuous) variables was expressed using appropriate descriptive statistics such as mean ± SD, median (IQR), maximum and minimum. Frequency and percentages were calculated for categorical variables such as gender, age group, diabetic mellitus, hypertension, smoking status, severity of mitral regurgitation (MR), severity of mitral stenosis (MS), pulmonary hypertension (PH), severity of pulmonary hypertension (PH), and in-hospital intra operative and post-operative outcomes (mortality, prolonged intensive care unit (ICU) stay, prolonged ventilation, inotropic support, long cardiopulmonary bypass (CPB) time, and long aortic clamp time). Effect modifiers like gender, age group, diabetic mellitus, hypertension, smoking status, severity of mitral stenosis (MS), and severity of mitral regurgitation (MR) were controlled through stratification.

RESULTS

During this period of study 68 patients were included in study who were operated for Mitral Valve Replacement(MVR). It included 50(74%) females and 18 males (26%).In these patients only 1(1.4%) was operated through minimally invasive mitral valve replacement whereas 67(98.52%) patients with conventional mitral valve replacement (MVR) through median sternotomy. Redo- MVR surgery was done in 4(5.9%) patients. Emergency MVR was done in 1(1.4%) patient who developed sudden onset of shortness of breath after Percutaneous Mitral Balloon Valvuloplasty (PMBV) and developed severe MR and was intubated before shifting to operation theatre.

Table No.1: Effect modifiers in the study population

	Yes	No
Diabetes Mellitus	03	65
Hypertension	20	48
Smoking	05	63

All the patients who were operated had severe disease.

Table No.2: Distribution of severity of Mitral valve disease

Mitral valve pathology	Mild	Moderate	Severe
MR	00	00	33
MS	00	00	31
MR+MS	00	00	04

Pulmonary Artery hypertension (PAH) was present in 23(74.2%) out of 33 Mitral Regurgitation (MR) patients. In MR patients PAH was severe in 7(30.4%), 6(26.1%) patient had moderate PAH, 10(43.5%).

Pulmonary Artery hypertension (PAH) was present in 23(74.2%) out of 31 patients who had Mitral Stenosis MS. In these MS patients 9(39.1%) had severe

PAH,6(26.1%) patients had moderate PAH and 8(34.8%) patients had mild PAH. All 4(100%) patients who had mixed disease (MR+MS) has PAH and it was severe in intensity.

In-hospital, intraoperative and postoperative outcomes are listed in tables 3, 4, 5.

Table No.3: In hospital, intraoperative and postoperative outcomes in MR patients

Outcomes	Yes	No
Long CPB	00	33
Long aortic clamp time	00	33
Mortality	03	30
Prolonged ICU stay	31	02
Prolonged ventilation	05	28
Inotropic support	31	02

Table No.4: In-hospital, intraoperative and postoperative outcomes in MS patients

Outcomes	Yes	No
Long CPB	01	30
Long aortic clamp time	01	30
Mortality	04	27
Prolonged ICU stay	25	06
Prolonged ventilation	03	28
Inotropic support	29	02

Table No.5: In-hospital, intraoperative and postoperative outcomes in Mixed Mitral valve disease patients

Outcomes	Yes	No
Long CPB	00	04
Long aortic clamp time	00	04
Mortality	00	04
Prolonged ICU stay	04	00
Prolonged ventilation	00	04
Inotropic support	04	00

DISCUSSION

Rheumatic heart disease remains the most common cause of valvular heart disease in developing countries.[1] Pulmonary artery hypertension (PAH) is a long term sequelae of mitral valve disease in these patients. The mechanism by which PH develops in patients with mitral valve disease is driven by an elevation of LA pressure, which in turn, leads to pulmonary venous hypertension, and subsequently, pulmonary arterial hypertension.[14,17,18] In our study, PAH was present in 50 out of 68 patients (73.5%). Borde et al reported prevalence of severe PAH to be 40% in a similar study. Whereas, the prevalence of severe PAH was 29.4% in our study population.

Overall In-hospital mortality in our study was 10.3% (7 out of 68 patients).Cesnjevar et al[16] and Mubeen et al[13] reported 10.5% and 9.3% mortality respectively, which is similar to our results. Out of these 7 mortalities in our study group, 3 patients had mild PAH, 3 had moderate PAH and only 1 patient had severe PAH. Mortality was highest in moderate PAH group, which was 25%.

Factors significantly associated with mortality were prolonged ICU stay, prolonged ventilation and use of high inotropic support. Long CPB time and long aortic cross-clamp time has no impact on mortality of these patients.

PAH prevalence is high in patients undergoing Mitral valve surgery especially patients with Mixed Mitral valve disease and mitral regurgitation. These patients impose a challenge to the surgeons, anesthetists and intensivists. However, these patients can be managed effectively with a team based approach paying close attention to pre-op, intra-op and post operative care.

CONCLUSION

Prevalence of PAH is high in patients undergoing Mitral valve Replacement surgery. Major factors associated with post-operative mortality include prolonged ICU stay, prolonged ventilation and need for high inotropic support.

Author's Contribution:

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Original Article

Assessment of the Noxious Effects of Lithium Carbonate on Granular Cell Layer of Rat Cerebellum

Tazeen Kohari[1], Meshaal Azhar[2], Faryal Azhar[2] and Usama Faruqui[3]

ABSTRACT

Objective: To evaluate and document the effects of ingestion of i.e. of 34 mg/kg body weight/OD of lithium carbonate on Cerebellar Granular cell layer.

Study Design: Prospective Experimental research

Place and Duration of Study: This study was conducted at the Basic medical sciences institute Jinnah post graduate medical Centre Karachi, from June, 2012 till August, 2012.

Materials and Methods: This present study is designed to observe the microscopic changes of Granular cell layer in rat cerebellum. For this experimental study 20 animals weighing 170-175 grams were selected, they were divided into two groups, each comprising of 10 animals. Control group-A were given lab diet and water for a time period of 12 weeks while the rats in group-B received Lithium Carbonate dissolved in distill water given orally by tube 34 mg/kg body[7] weight/OD for 12 weeks respectively.

Results: Our study documented decreased granular cell layer thickness in group B animals, after they had ingested Lithium carbonate for 12 weeks as compared to the Group A animals on lab diet.

Conclusion: The changes of the thickness of cerebellar Granular cell layer was found to be highly significantly decreased in group B animals treated with Lithium than group A rodents which were placed only on lab diet. Lithium carbonate caused apoptosis and injury to Cerebellar Granular layer.

Key Words: Noxious, Granular layer, Mitochondrial Clumping

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INTRODUCTION

The popular treatment for the last 70 years for bipolar disorder is the Lithium a soft alkali metal[1] and medicinal literature has proved that metal accumulation in brain causes permanent brain damage[2], leading to neurological sequele[3]

The cerebellum controls posture and movement, it has two cerebellar hemispheres. The cerebellar cortex consists of three layers, Molecular layer, and middle Purinje cell layer and innermost is the Granular cell layer.[4.] Accumulation of Dietary metals causes' irreversible neuronal damage[5] to Cerebellum Soft alkali metals like Lithium cause irreversible brain[6] decomposition.

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This research was completed at the animal house of Basic medical sciences institute (BMSI) JPMC Karachi.

MATERIALS AND METHODS

The Albino rats were obtained from Charles River Breeding Laboratories, Brooklyn, Massachusetts, USA, and were cross bred at Animal House of Basic Medical Sciences Institute, JPMC, and Karachi. The animals were on a balanced diet and were observed for one week prior to the experiment.

Twenty animals weighing 170-175 grams were divided into two group. The control group A (n=10) and group-B (n=10) animals were selected. The rats in control group-A were given lab diet and water for a time period of 12 weeks while the rats in group-B received Lithium Carbonate dissolved in distill water given orally by tube 34 mg/kg body[7] weight/OD for 12 weeks respectively

At the end of 12 weeks the animals were sacrificed, brain was removed; the cerebellum was separated from the rest of the brain and fixed in Formal aldehyde [8] for 24 hours.

The cerebellum was dehydrated by passing through ascending grades of alcohol cleared by xylene and infiltrated by paraffin. The fixed tissue blocks were sectioned and obtained on glass slides five micron thick sections were collected for staining with haematoxylin and eosin[9].

The changes of the Granular cell layer thickness were observed and documented under light microscope. Observations were recorded for the thickness of inner most cerebellar layer in each group according to time interval. The Granular cell layer thickness was observed under 40 x objectives in selected fields of the tissue. The data was subjected to statistical analysis by using software SPSS (Statistical Program for Social Sciences) 2007 version-16. A statistical difference between means and experimental data was carried out by student 'T' test.

Table No.1: Comparison of the mean values of cerebellar Granular cell layer thickness µm among Groups-A and B albino rats according to time interval

Major Groups	No. of Subjects	12th Week		P Value
		Mean	SEM	12 Weeks
A Normal Diet	10	181.5	0.18	
B Normal Diet + Lithium Carbonate	10	84.1	0.50	0.001

Statistical Analysis
P values of Group A and Group B

Major Group	12TH Week	12TH Week
A vs. B	P<0.001****	P<0.001****
Key: **** Highly significant		

Statistical analysis of cerebellar Granular cell layer thickness in major group-B (Lithium carbonate treated) shows a highly significant decrease in the thickness of Granular cell layer at 12 weeks' time interval as compared to the major group-A (control).

RESULTS

Group-A and B (At 12 weeks): On histological examination of H&E stained section of the gray matter showed multiple basophilic cerebellar Granule cells in normal architecture of the Granular cell layer in Group A animals. The sections of innermost layer in Lithium Carbonate treated Group B showed empty spaces due to Granule cell death, Apoptosis and Spongiosus leading to decreased Granular layer thickness in sections of cerebellar cortex was observed.

A highly significant (P<0.001) increased in the mean values of the thickness of Granular layer in Group A on Lab diet (181.5±2.06) µm was observed as compared to group B animals (84.1±0.50 µm)

A highly significantly (P<0.001) decreased in the mean values of the thickness of Granular layer was observed in group B (84.1±0.50 µm) when compared with A (181.5±2.06 µm).

DISCUSSION

Toxic subsances like Methyl mercury and Ethanol are found to cause cerebellar toxicity[10], the same neurodegenerative changes were found in cerebellum after Lithium ingestion[11]

The cerebellar cortex consists of inner most Granule layer which comprises about ninety percent of Granule cells[12]

As clinical and medical sciences is deficient of the literature on the adverse effects of Lithium carbonate on Granular layer of Cerebellum for the same reason we carried out the present study. We in our study found out that there was a highly significantly decreased thickness of Granular layer in Group B animals as compared to Group A rodents

The same detrimental effects of Lithium on Neuronal tissue were found by Joseph, Badyal and Gulrez[13]. The Neuro toxic effects of Lithium ingestion may be due to the fact that Lithium causes clumping of neurons and degeneration of cerebellar cortical layers as observed by Dethy[14.] (et al 1997). This may be due to that Lithium causes release of reactive oxygen species which causes Mitochondrial clumping leading to Nuclear and Granule neuronal death evident by increase in the distance of neurons and decrement of cortex which results in decreased thickness of Cerebellar Granular cell layer.

These results of cerebellar and toxicity loss of Cerebellar cortex after Lithium intake were also documented by A.valle (2021)[15]. They in their study found that lithium causes inhibition of glycogen kinase synthetase this results in a reduced mitochondrial fission and a decrement of mitochondrial fission leads to the disruption of the electron transport chain causes neuronal cell death[16] and resulting in loss of cortical tissue.

Our study is in accordance with the above facts of Lithium ingestion causes decreased thickness of Cerebellar Granular cortical layer**.**

CONCLUSION

This study cautions Neuropsychiatrists in prescribing Lithium to the masses.

Author's Contribution:

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

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Original Article

Impact of Local Traffic Pollution on the Health Status of Secondary School Students in Karachi

Riaz Ahmed Bhutto[1], Syed M. Maqsood[1], Zeba Saeed[1], Muneer Sadiq[2], Shahid Kamran[1] and Irfan Khan[3]

ABSTRACT

Objective: The aim of this study was to see how secondary school students were influenced by vehicle exhaust emissions and dust. The health impact of local traffic pollution on the secondary school age children is evaluated in this report.

Study Design: Randomized Study

Place and Duration of Study: This study was conducted at Community Medicine, Al-Tibri Medical College, Karachi. from December, 2020 to March, 2020.

Materials and Methods: 210 secondary school students were selected of age 12 to 16 years for study. Oxygen saturation (SPO2) changes were measured by Wireless Fingertip Pulse Oximeter and Peak Expiratory Flow Rate was taken by Digital Peak Flow Meter of secondary school going students attending schools at main Saddar area, Gulshan-e-Iqbal and in DHA Karachi city. Statistical analysis was carried out by SPSS.

Results: Oxygen saturation, (SPO2) changes were normal in students of every area but were remarkably low in students attending school in Saddar area ($p<0.001$) to compare with other areas students. Peak Expiratory Flow Rate was lower (431.00 ± 10.98 L/min) in students going schools at Saddar area than students attending school in Gulshan-e-Iqbal area (436.00 ± 13.19 L/min) and Defense Housing Authority area (450.40 ± 12.92 L/min).

Conclusion: Effect of automobile exhaust emissions and dusts on secondary school students inside centres of city seed more health threat to young students than the students attending schools in other parts of city.

Key Words: Secondary school students, Automobiles air pollution, Environmental dust pollution, Oxygen Saturation, Peak Expiratory Flow Rate

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INTRODUCTION

Karachi is the 10th largest city of the world. Karachi has grown nearly 25 times since 1947 and is growing at the rate of about 5.4 percent per annum, making it one of the fastest growing cities of the world. Apart from the spurt in population that it has experienced, the intra-urban distribution of population has also changed phenomenally. Its average annual growth, 2006 to 2019, was 3.19%. Its Pollution Index rate 2019 at mid-year is 89.32[1].

The city has seen an extraordinary advancement in most recent decade.

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Recent census revealed Karachi population has grown at around 6% per annum while the average growth rate of registered vehicles was recorded 40%[2].

Motor vehicle exhaust is made up of a combination of gases, liquid droplets, and solid particles. In humans, several of these compounds have been linked to disease[3]. Automobile emissions cause encompassing levels of air toxics contain carcinogens. Exposure to air toxins even causes noncancerous effects such as cardiovascular, neurological, reproductive and respiratory diseases.

Engine vehicles exhaust fumes discharge has a lot of negative impact on the human wellbeing and the climate. Internal combustion engines emit carbon monoxide, carbon dioxide, hydrogen vapors, water, hydrogen isocyanides, sulfur oxides, nitrogen oxides, and various metals like lead, cadmium, nickel, sodium, potassium, phosphorus, zinc, manganese, iron, copper, barium, and so on while the evaporative outflows are the fumes of fuel which are delivered into the environment[4]. Diesel exhaust from vehicles and air pollution is harmful and interrupts with the proper functioning of human body organ systems. After acute and long term exposure to particulate matter, vehicle fume exhaust can disrupt normal physiology. Systemic

disease processes in the central nervous, ocular, hematologic, respiratory, cardiovascular, and renal systems may occur as a result of exposure[5]. Dust and smoke are visible examples of PM 10, but more than 90 percent of particulate matter isn't visible to the naked eye. Particulate matter contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Some particles less than 10 micrometers in diameter can get deep into human lungs and some may even get into bloodstream. The high surface-to-mass ratio of very small particles less than 0.1 microns increases their toxic capacity[6]. PM 2.5 concentration in Karachi air is currently 4 times above WHO exposure recommendation[7].

The current investigation was subsequently manifest the impact of toxic waste such as auto exhaust fumes, gases, and so forth on secondary school going students by estimating their peak expiratory flow rate and oxygen saturation.

MATERIALS AND METHODS

This study was carried out from 1st week of December 2019 to 2nd week of March 2020. Schools are chosen using a stratified random sample of secondary schools from the Karachi city area's major school regions: Saddar, Gulshan-e-Iqbal and Defense housing authority (DHA). Twenty-one secondary schools were chosen at random from a list of secondary schools collected from the Department of Education. For each of the schools we selected, we calculated the distance between the school's central and the nearest major road. At least average three hundred automobile vehicles movements in twenty-four hours in all the areas in study were recorded. 210 students were conveniently selected. Only healthy students with same anthropometric measurements, and at least two years of duration of exposure were included in the study. Students with history of allergies or respiratory illnesses were not included in study. Their identity was kept secret. Study was conducted in all three selected sites of Karachi, at the entrance of the school, in the open parking area of the school, and inside the school building respectively. Before testing all selected students were given a complete explanation of the purposes, procedures and potential risks and benefits involved in the study and their school administration consent was taken in this regard. A detailed history including the history of diet and lifestyle was taken and general physical and systemic examination was done. Weight was taken on a weighing scale with standard minimum clothing to the nearest 1/2 kg. Height was recorded in cm without shoes. The study was approved by the local institutional ethical committee.

The Wireless Fingertip Pulse Oximeter was used to calculate the Oxygen saturation. Students were asked to sit for ten minutes before taking three measurements on their left index finger at one-minute intervals. The highest pulse oximetry-measured blood oxygen saturation value was held. In the event of a broken nail, other digit from the same hand was used. It was also tested to see whether the subjects were wearing nail polish or ink, which was removed if they were. After spending ten minutes in warm rooms, measurements were taken. A Digital Peak Flow Meter was used to calculate the peak expiratory flow rate. The test was carried out while standing, with the peak flow meter kept horizontally. In the inlet nozzle, a tight-fitting disposable cardboard mouthpiece was inserted. Following proper rest, the subject was instructed to take a deep breath and exhale as vigorously as possible into the instrument in one single blow. The experiment was carried out three times, with the best of the three results being documented.

Statistical analysis was carried out by SPSS. The unpaired 't'test was used for statistical procedure and analysis. We compared the means of two independent groups to determine if there is a significant difference between the two. The findings were expressed as Mean± SD, with a p value of < 0.001 considered relatively significant.

RESULTS

This study looked at whether or not exposure to vehicular contaminants is linked to children's respiratory health. In most cases, according to a WHO technical report, vehicle exhaust is a significant irritant that affects the respiratory tract. To avoid permanent damage, it is important to detect and treat respiratory obstruction at an early and reversible stage. At present in Karachi airborne particles concentration is less than 2.5 microns (PM 2.5) which is four times higher than the WHO's recommended exposure level[7]. Pulmonary function tests are used as screening tests to ascertain the effects of these contaminants in populations exposed to them[8]. One such parameter that can be easily measured is the peak expiratory flow rate.

Table No.1: Oxygen Saturation (SPO2)

Location	Oxygen Saturation %	Values
School located at Saddar Karachi	98.90 ± 0.59	in Mean ± SD
School located at Gulshan-e-Iqbal Karachi	98.60 ± 0.60	in Mean ± SD
School located at DHA Karachi	97.94 ± 1.29	in Mean ± SD

In our study, school students in Saddar area who were constantly exposed to exhaust and fumes had a lower peak expiratory flow rate than Students of Gulshan-e-Iqbal area and DHA Schools. The PEFR is useful for determining the degree and rate of growth of a disease[9]. Within 100-120 m of the start of forced expiration, the PEFR emerges from the broad airways as an effort-

dependent parameter. It stays at its highest point for around 10 meters[10, 11].

Table No.2: Peak Expiratory Flow Rate (PEFR)

Location	Peak Expiratory Flow Rate (L/min)	Values
School located at Saddar Karachi	431.00 ± 10.98	in Mean ± SD
School located at Gulshan-e-Iqbal Karachi	436.00 ± 13.19	in Mean ± SD
School located at DHA Karachi	450.40 ± 12.92	in Mean ± SD

Table No.3: Comparative relation of Oxygen Saturation

Location	T-value	P-value	Statistical Significance
Students of Saddar area School Vs Students of Gulshan-e-Iqbal area School	3.66	0.01-0. 001	Significant
Students of Gulshan-e-Iqbal area School Vs Students of DHA area School	1.71	>0.10	Non-Significant
Students of Saddar area School Vs Students of DHA area School	3.99	<0.001	Highly Significant

Table No.4: Comparative relation of Peak Expiratory Flow Rate

Location	T-value	P-value	Statistical Significance
Students of Saddar area School Vs Students of Gulshan-e-Iqbal area School	4.69	0.01-0. 001	Significant
Students of Gulshan-e-Iqbal area School Vs Students of DHA area School	1.31	>0.10	Non-Significant
Students of Saddar area School Vs Students of DHA area School	5.95	<0.001	Highly Significant

DISCUSSION

Motor vehicles release a mixture of solid and liquid particles into the atmosphere. Primary particles are made up of unburned diesel or petrol droplets combined with solid fuel (smudge) from engine emissions[12]. Traffic pollution has been linked to a number of illnesses as well as risk of death. Over the previous two decades, the concentrations of main air pollutants such as O3, NOx, and SO2 have also increased dramatically in Pakistan. According to the World Bank, the annual burden of disease caused by outdoor air pollution in Pakistan leads in about 22,000 premature adult deaths and 163,432 disability-adjusted life years (DALYs) lost. Increased mortality in children as a result of pollution, on the other hand, is difficult to estimate since increased mortality occurs later in life. Early exposure to local traffic pollution has been linked to lung function problems later in life[13]. In a study performed by Yasar et al. in 2013, vehicle emissions were reported to be significantly depending on the type of fuels utilized. Diesel vehicles and buses produced five times more SO2 and fourteen times more HC emissions than CNG vans and buses, which produced two to twenty times more CO emissions. According to Hussain et al. (2018), one of the main causes of inferior civic air quality in Pakistan's major cities is increasing number of vehicles. The average yearly growth rate for on-road cars in Pakistan was more than 8.5 percent, and an average vehicle in Pakistan produces 25, 20, 8, and 3.6 times more lead, hydrocarbons, carbon, and NOX per kilo metre than a vehicle in the United States, according to this report[14]. The peak expiratory flow rates of students inside school building were lower than those of students in open parking area or students near entrance in school in Saddar. Our findings back up previous studies that found men working in underpasses and bus garages had decreased lung capacity[15]. Students at DHA school inside in school building had significantly lower Peak Expiratory Flow Rates due to the localized concentration of exhaust fumes and dust in the building and the lack of access to outside fresh air. A lack of proper ventilation and humidity in side building exposes student to dust mites and air borne spores, in addition to exhaust and dust. Many studies have linked dampness and mould in buildings to negative respiratory health effects[16,17]. All of the students seemed to have normal oxygen saturation (SPO2) levels in all places of studies. This clearly indicates that their oxygen saturation was not affected despite the apparent drop in PEFR. Since our research was conducted on a younger age group, this may be reason for normal oxygen saturation SPO2 with pollutants exposure. Students inside school building, on the other hand, had significantly lower oxygen saturation than those whom tests were taken outside school buildings. Various studies have found several examples of air quality constantly exceeding national guidelines in Pakistan's major cities. During the year 2019, PM 2.5 concentrations in the city of Karachi and Lahore exceeded the WHO and national air quality guidelines on virtually every single day. Although a few studies have reported on the significant effects of rising pollution concentration in Pakistan, the full

scope, nature of contributing causes, and consequences are unknown.

CONCLUSION

Because of the growing health and socioeconomic consequences, in recent years, air pollution and particle matter have merged to create a global problem. These dangers have grown in intensity and impact, particularly in developing nations Pakistan, for example, is a developing country with inadequate warning, protection, and control mechanisms. Poor air quality has been linked to a number of health issues, as well as growing death rates, according to several epidemiological studies. As a result of high levels of air pollution, mainly particulate matter, death rates in Pakistan are alarmingly high. Exhaust gases and dust have a negative impact on student's health. Students are at risk due to the additional effects of indoor pollution. Regular health tests for the students should be performed to identify any respiratory problems as soon as possible and to follow proper management procedures. Ventilation should be carefully considered, and generators and other air-polluting devices should not be placed in basements.

Author's Contribution:

Concept & Design of Study:	Riaz Ahmed Bhutto
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Role of Serum Ceruloplasmin as Tumor Marker in Early Diagnosis of Oral Squamous Cell Carcinoma

Early Diagnosis of Oral Squamous Cell Carcinoma

Shahrayne Rashid[1], Saadia Manzar[2], Farhat Kazmi[1] and Zeeshan Aslam Jan[2]

ABSTRACT

Objective: To compare serum Ceruloplasmin (CP) levels in histopathologically diagnosed oral squamous cell carcinoma (OSCC) patients with healthy controls and to determine its role as tumor marker of early diagnosis and malignant transformation of OSCC.

Study Design: Comparative cross-sectional study

Place and Duration of Study: This study was conducted at Department of Oral Pathology and Oral & Maxillofacial Surgery, King Edward Medical University Lahore, in duration of 6 months from February 2019 to August 2019.

Materials and Methods: Sample size of 90, compromising: control group A, 45 healthy subjects; group B, 45 histopathologically diagnosed OSCC patients were included. After obtaining informed consent from all patients, serum CP levels were estimated by using immunoturbidimetric analysis for quantitative determination of CP level on the serum samples. All the data was collected on predefined pro-forma and analyzed using SPSS version 26. The mean values of CP were compared using ANNOVA and One-way ANNOVA test. Independent T-Test was applied to subgroups of OSCC to analyze the OSCC disease progression.

Results: CP levels were significantly increased in histopathological grades of OSSC in comparison to control group (p-value < 0.001). However, there was no significant difference between CP values of well differentiated and moderately differentiated histopathological grades of OSCC.

Conclusion: Serum CP levels can help to diagnose early stages of OSCC, thus establishing it as noninvasive tumor marker of malignant transformation. However, role of serum CP levels to establish progression of disease is still ambiguous.

Key Words: Oral squamous cell carcinoma**,** Ceruloplasmin**,** Malignant transformation**,** Well-differentiated squamous cell carcinoma**,** Moderately-differentiated squamous cell carcinoma, Immunoturbidimetric analysis.

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INTRODUCTION

Oral squamous cell carcinoma (OSCC), a fatal debilitating disease with rising incidence has irreparably low survival rate for the past many decades[1]. OSCC is one of the most common cancer that dominates globally, constituting about 90% of all oral malignancies and is ranked as the 8th most common cancer world-wide [2].

However, in Pakistan it is 2nd most common malignancy according to cancer registry of Shaukat Khanum memorial Hospital Pakistan and accounts for 15% of all newly diagnosed cancer cases in comparison to 3% detected globally, which makes it a threat to public health in Pakistan [1]. European Oral Cancer Foundation reports 80-90% survival rate if cancer is diagnosed at an early stage [3]. The late stage diagnosis of cancer leads to high death rate of about 43% at five years from diagnosis, even after treatment, it is associated with severe incapacitating morbidities in survivors [3]. There is extensive data on concept of delay in diagnosis of oral cancer [4]. Delay can either be 'patient delay' or 'professional delay', patient delay defined as "the interval between detection of awareness of a bodily change to the first consultation with a healthcare professional", and professional delay defined as "the interval between first professional consultation and definitive histological diagnosis of malignancy" [4, 5]. Other factors of delay are cognitive and psychosocial variables that involves fear, anxiety and lack of symptom recognition [6]. The gold standard for diagnosis of OSCC is scalpel biopsy, which significantly induces anxiety and fear among the patients to prevent them to seek medical consultation [6]. Therefore, less invasive and least expensive diagnostic measures are highly needed for early detection of OSCC, one of such methods is detection of tumor markers in serum [7].

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These markers are the specific substances released into serum either by the cancer cells or the host while combating the cancer[8]. Tumor marker such as Ceruloplasmin (CP) is a glycoprotein and a principle Copper (Cu) carrying enzyme normally produced by the liver, it is an antioxidant and an acute phase reactant[9]. CP synthesis rises in response to free radical tissue injury, therefore, serum CP levels can be used as diagnostic marker of oxidative damage which is one of the vital steps in the pathogenesis of OSCC [9]. Upsurge of pro-oxidants and deficiency of antioxidant in the body also appear to play an important part in the progression of severity of malignancy [10]. Based on above narrated factors, aim of this study was to compare serum levels of CP of various histopathological grades of OSCC with control group in order to determine its significance as a tumor marker of early diagnosis and establish its role in malignant transformation.

MATERIALS AND METHODS

It was a comparative cross-sectional study based on nonprobability convenient sampling, conducted in the department of Oral and Maxillofacial Surgery and department of Pathology, King Edward Medical University Lahore. After ethical clearance from the university (ref no.406/RC/KEMU), a total of 90 subjects were enrolled in the study and were divided into two groups: Group A (45 healthy controls with no oral lesions); Group B (45 OSSC). Group B was further divided into subgroups based on histopathological grading that is, well-differentiated (WD), moderately-differentiated (MD), however as the sample of OSCC was collected randomly poorly-differentiated (PD)-OSCC was not histologically diagnosed in the sample of 45 cases of group B (OSCC). Both genders ranging from age 10-65 years who had not undergone any treatment for OSCC were included in the study. Patients with chronic systemic disease (diabetes, hypertension, liver and renal failure), pregnant females and those taking oral contraceptives were excluded from the study. Control group comprised of healthy patient with no oral lesion. After obtaining informed consent from all the subjects, 5ml blood was drawn from a major vein and centrifuged at 1500g for 10 minutes to obtain serum. The CP levels were determined through Immunoturbidimetric test (for quantitative determination of CP in human serum) by using CP OSR6164 Assay on the AU640 Analyzer. Data was analyzed using SPSS version 26. Mean ± S.D was used to present quantitative data such as age and serum CP. ANNOVA was applied for comparison of control and OSSC group, while comparison of control with subgroups (WD- OSCC and MD-OSSC) was done by using One-way ANNOVA. p-value $\leq$ 0.05 was considered as significant for both the tests. Independent T-Test was applied to subgroups to analyze the OSCC disease progression.

RESULTS

The study comprised of 90 participants who were categorized into 2 groups: Group A, 45 healthy controls; Group B, 45 patients of OSCC. In group A, 75.60% (n=34) were male and 24.40% (n=11) were female, whereas, in group B 66.70% (n=30) were male and 33.30% (n=15) were female, showing gender distribution of 2:1 male to female ratio in OSSC. Mean age of the group A was 23.38±3.28 years, and mean age of group B was 45.50±18.55 years. In group B, 73.30% (n=33) of the participants were in the age range of 50-65 years, 24.40% (n=11) were of 30-49 years, while 2.20% (n=1) were below 30 years of age, showing prevalence of OSCC in fifth and sixth decade of life.

The mean values of serum CP in both groups was compared using ANNOVA test. The mean CP value of group A was 238.53±51.56, and group B was 361.27±62.89. The mean difference of serum CP between two groups was statistically significant (p-value <0.001) as depicted in table 1.

Table No.1: Comparison of serum CP levels (mg/l) of control with OSCC group

Serum CP Levels (mg/l)			
Groups	Mean± Std. Deviation	95% Confidence Interval for Mean	p-value
Group A(control)	238.53±51.56	223.04-254.02	<0.001
Group B (OSCC)	361.27±62.89	342.37-380.16	

Table No.2: One-way ANOVA for comparison of mean serum CP levels (mg/l) of control (group A) with the sub groups of OSCC (Grade I, II)

Group	sub groups	No. of samples	Mean± Std. Deviation	95% Confidence Interval for Mean	p-value
Control (Group A)	-/-	45(100%)	238.53±51.56	223.04 -254.02	<0.001
OSCC (Group B)	WD-OSCC	31(68.89%)	361.35±56.83	340.51 -382.20	<0.001
	MD-OSCC	14(31.11%)	361.07±77.04	316.59 -405.55	<0.001

The mean difference of serum CP between control (Group A) and subgroups of OSCC (Group B) was statistically significant (p-value <0.001).

Serum CP was 238.53±51.56 mg/l in group A (Control) and 361.27±62.89 in group B (OSCC). The mean difference was statistically significant (p-value <0.001). One-way ANNOVA, test was applied to compare the mean CP value of group A with subgroups of group B; WD-OSCC and MD-OSCC. The results of control (group A) with the subgroups of OSCC (group B) were found to be statistically significant, as shown in table 2.

In order to determine the role of CP as a marker of disease progression in OSCC, serum CP levels of subgroups WD-OSSC and MD-OSSC were compared. Independent T-Test was applied to these subgroups, where mean difference of serum CP level between subgroups of WD-OSCC cases and MD-OSCC patients was statistically insignificant (p-value 0.989) as presented in table 3.

Table No.3: Comparison of serum CP levels (mg/l) between sub groups of OSCC WD-OSCC cases (Grade I) and MD-OSCC cases (Grade II)

OSCC Group B			
Sub Group OSCC	No. of sample	Mean± Std. Deviation	p-value
WD-OSCC cases (Grade I)	31(68.89%)	361.35±56.83	0.989
MD-OSCC cases (Grade II)	14(31.11%)	361.07±77.04	
Total	45(100%)		

Independent Samples Test-0.014 Difference was statistically insignificant between two sub groups of OSCC (Group B).

DISCUSSION

OSCC, one of fatal debilitating cancers is still currently diagnosed at later stages impacting the prognosis of the disease [1]. The delay factors can be multiple owing to availability of health care facilities and patients' anxiety and fear resulting in reluctance to seek consultation [6]. Presently used diagnostic techniques are invasive and expensive for many patients leading to further delay in treatment. Scalpel biopsy, the gold standard for diagnosis of OSCC is painful and apprehensive for the patients; also biopsy can result in dissemination of malignant cells[11]. Therefore, it is need of the hour to research and develop diagnostic methods which are noninvasive and inexpensive. Thus, estimation of serum CP could be one of the noninvasive methods that can be used in an effort to establish early diagnosis of OSCC. CP is among the primary enzymatic antioxidant which acts through several mechanisms: i) ferroxidase activity which inhibits iron-dependent lipid peroxidation and $HO^{\bullet}$ formation from H_2O_2 ; ii) Superoxide Dismutase (SOD) activity by reacting with H_2O_2 and scavenging of superoxide anion radicals; iii) Cu regulation and hemostasis by inhibiting copper-induced lipid peroxidation through Cu ions binding with CP; iv) Iron regulation and hemostasis, CP helps to incorporates iron into transferrin preventing the formation of toxic Fe products [12]. These all mechanisms play a pivotal role in pathogenesis of OSCC resulting in biochemical alteration in levels of serum CP.

In this research, the serum CP levels were significantly increased (p-value <0.001) in OSCC (group B) being 361.27±62.89 mg/l as compared to controls (group A) being 238.53±51.56 mg/l, these findings are in accordance with study conducted by Singh et al., (2015) [13]. Similar findings were also reported by Shah et al., (2017) and Nayyar et al., (2020) in relation to the mean serum CP levels, which was significantly increased in OSCC group [7, 14]. Carcinogenesis occurs due to oxidation of DNA, resulting from imbalance between pro-oxidants and anti-oxidants leading to oxidative stress, this equilibrium is disturbed either by increased levels of Reactive Oxygen Species (ROS) and Reactive nitrative species (RNS) or by antioxidants depletion [15]. Therefore, CP with major oxidase activities tries to combat oxidative stress that occurs along with increased lipid peroxidation [13, 16]. Such changes in plasma of OSCC patients cannot be recouped by the antioxidant defense system resulting in insignificant increase in serum CP levels in OSSC patients [13, 16, 17]. Furthermore, first step of malignant transformation of a lesion is tumor angiogenesis initiated by rise in serum CP levels [18]. CP bounded by Cu binds with the angiogenic growth factors and boosts its affinity for endothelial cells and secretion of angiogenic molecules, such as Fibroblast growth factors (FGF) and interleukin-1 α (IL-1α) [19]. CP plays an vital role in the stabilization and nuclear transport of hypoxia induced factor-1α, thereby regulating vascular endothelial growth factor (VEGF) expression (an important angiogenic growth factor) [20]. Numerous researches carried out on inhibition of CP have successfully demonstrated suppression of tumor growth and angiogenesis [20].

The role of CP as a marker of disease progression in OSCC was not established, as the difference in serum CP levels between WD-OSCC (grade I) cases and MD-OSCC (grade II) was statistically insignificant (p-value 0.989). This finding is consistent with the study conducted by Singh et al.,(2015), where although, values of serum CP were increasing gradually as the OSCC progressed from WD-OSCC to MD-OSCC to PD-OSCC but the mean difference remained statistically insignificant (p-value 0.3556) [13]. No other correlation with the findings of the present research was found in literature to study the relation of levels of CP in serum with the dysplastic changes involved in advancement of OSCC disease severity, therefore comprehensive studies are required to unveil further role of serum CP levels as a marker of disease progression of OSCC.

In this study, the mean age of OSCC was found to be 45.50 ± 18.55 years, whereas the peak incidence of occurrence for OSCC was the 5th decade of life. These findings coincide with a study done by Naseer et al.,

(2016) on frequency of delayed diagnosis of OSCC in Pakistan [21].

In this research, the higher incidence of OSCC was noted in males, with male to female gender predilection in ratio of 2:1. These findings were in accordance with Chaturvedi et al., (2012) and Gadbail et al., (2017) who also reported male to female predilection of 2:1 [22].

CONCLUSION

Estimation of serum CP levels is a useful indicator to diagnose early stages of OSCC, thus establishing it as noninvasive tumor marker of malignant transformation. However, role of serum CP levels to establish progression of disease was not ascertained through this study.

Recommendation: Extensive studies including equal distribution of all histopathological grades with larger sample size are required to unveil further the role of serum CP levels as a marker of progression of disease severity.

Author's Contribution:

Concept & Design of Study:	Shahrayne Rashid, Saadia Manzar, Farhat Kazmi
Drafting:	Shahrayne Rashid, Saadia Manzar
Data Analysis:	Zeeshan Aslam Jan
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Final Approval of version:	Farhat Kazmi

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

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Original Article

Frequency of In-Hospital Diabetic Patients Presented with St Segment Elevation Myocardial Infarction (STEMI) Having Raised Blood Sugar

Diabetic Patients with STEMI Having Raised Blood Sugar

Mahboob ur Rehman[1], Malik Ali Raza[1], Farhan Faisal[1], Anwar Ali[2] and Muhammad Fasih ullah Khan[1]

ABSTRACT

Objective: To determine the frequency of inpatient mortality in non-diabetic patients presented with ST segment Elevation Myocardial Infarction (STEMI) having raised blood sugar.

Study Design: Descriptive case series

Place and Duration of Study: This study was conducted at the Department of Cardiology, PIMS, KIH Islamabad for a period of 6 months from February 2018 to August 2018.

Materials and Methods: The total sample was 150 subjects, aged 20 – 60 years, non-diabetic patients with blood sugar level of ≥ 140 mg /dl at presentation, consecutively recruited for the study, having obtained written informed consent.

Results: Amongst the participants, 123 (82%) were discharged while only 27 (18%) had expired. Admission hyperglycemia and male sex were significantly associated with mortality.

Conclusion: Hyperglycemia on admission is a strong predictor of mortality in patients with STEMI and could be used in the risk stratification of these patients.

Key Words: ST segment elevation myocardial infarction, mortality, hyperglycemia

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INTRODUCTION

Acute coronary syndrome (ACS) refers to any group of clinical symptoms compatible with acute myocardial ischemia and includes unstable angina (UA), non-ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI)[1]. The important risk factors for Ischemic heart diseases (IHD) are insulin resistance, obesity and type two diabetes mellitus(DM) which are increasing in trend along with genetic factors, a high-fat and energy-rich diet, smoking, and a sedentary lifestyle.

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IHD is likely to become the most common cause of death in near future.[2] STEMI is one of the leading causes of mortality and morbidity worldwide. However, survival after STEMI has considerably improved due to increasing symptom recognition, accurate diagnosis and effective timely reperfusion. Further reasons for reduction in STEMI mortality can be explained by greater use of percutaneous coronary intervention (PCI), antithrombotic therapy and secondary cardiovascular prevention strategies.[3] In one study in England and wales auditing the database of 34722 patients with STEMI, in-hospital mortality was 10.6 % and the strongest predictors of in-hospital survival for STEMI were aspirin therapy given acutely and out-of–hospital thrombolysis.[4]

Hyperglycemia, also called stress hyperglycemia or stress diabetes, associated with critical illness, even in patients without diabetes mellitus (DM), is a consequence of many factors, including increased cortisol, catecholamines, glucagon, growth hormone, gluconeogenesis, and glycogenolysis. Acute hyperglycemia on admission is common among patients with STEMI is common and is one of the important predictors of in-hospital and long-term adverse events. Mortality risk may be modifiable by therapeutic lowering of glucose levels with insulin, though the literature here is inconsistent.[5,6] Poor glycemic control and insulin resistance are associated with significant endothelial cell dysfunction, procoagulability, and diffuse multi-vessel CAD. This finding

underlines the need for aggressive glucose management in this setting and may support a more vigorous screening strategy for early recognition of diabetes.[7] Admission hyperglycemia can be used in risk stratification of these STEMI patients. They also have high incidence of malignant tachyarrhythmias, heart blocks during hospitalization resulting in increased in-hospital mortality. This is supported by a study in Spain, showing 15% mortality in patients of STEMI who presented with stress hyperglycemia (with serum glucose level of ≥ 140mg/dl).[8] A meta-analysis, including 15 trials which examined stress hyperglycemia and in-hospital mortality, showed that stress hyperglycemia in MI is associated with an increased risk of in-hospital mortality in patients with, and without, DM)). the risk of congestive heart failure or cardiogenic shock is also increased in patients without diabetes.[9] As inferred from the studies above that raised blood sugar is a major risk for in-hospital mortality, hence every non-diabetic patient of STEMI with hyperglycemia needs to be monitored vigilantly, to avoid possible complications (e.g arrhythmias) and subsequent mortality. There is variability in the mortality rates of the above mentioned population. Secondly there is limited data available in our country on this issue. Hence this study will show whether raised blood sugar in non-diabetic increases the in-hospital mortality in STEMI patients or not and if it affects then how frequently it affects the STEMI patients.

MATERIALS AND METHODS

This Descriptive Case series study was conducted in Department of Cardiology, PIMS, KIH/GMC Hospital Islamabad. The study was conducted for a period of 6 months from 21/02/2018 till 21/08/2018. The data was collected through Non probability consecutive sampling.

Sample Size: The sample size was calculated according to WHO calculator.

Confidence level =95%

Anticipated population proportion= 0.48[6](ALTERNATIVE REFERENCE CAN BE USED

Absolute precession=0.08

Sample size=150

Selection of Cases

Inclusion criteria:

- Any patient regardless of gender with STEMI.
- Age: 20 – 60 years.
- Non-diabetic patients with blood sugar level of ≥ 140 mg /dl at presentation.

Exclusion criteria:

- Known diabetics on the basis of record.
- Old MI (both STEMI and NSTEMI)
- Left ventricular aneurysm
- Pericarditis
- Prinzmatal angina
- Cocaine

Data Collection Procedure: After taking hospital ethical committee permission, informed consent was obtained from all subjects. Patients were included in the study having inclusion and exclusion criteria applied. The blood sample was then sent to laboratory for blood sugar estimation and verified result of blood sugar (of more than 140mg /dl) by assigned pathologist in Shifa international hospital was considered. Demographic data like age and gender with patient's serum blood glucose level and outcome of patient within seven days stay of hospital were collected in proforma. The data was entered into SPSS for analysis by researcher.

Data Analysis Procedure: The data was analyzed by SPSS (version 16). For quantitative variables like age and blood glucose level mean ± standard deviation (SD) was calculated. For qualitative variables like gender and mortality frequency and percentages were calculated. The effect modifier such as age and gender were controlled by stratification. Post stratification chi-square test was applied. P value < 0.05 was considered statistically significant.

RESULTS

The total sample was 150 subjects. The mean age of the participants was 54.5 years with S.d ± 7.744, with an age range of 25-60 years. The mean blood glucose level in participants was 174.04 with S.D ± 21.074. The gender distribution revealed a male preponderance with 117 (78%) males and 33 (22%) females.

Outcome of the patients: The outcome of patients revealed that 123 (82%) were discharged while only 27 (18%) had expired. **(Table 3.2)**

Table No.3.1: Showing Outcome of Patients (N=150)

Outcome	Frequency	Percentage
Discharged	123	82%
Expired	27	18%

Table No.3.2: Chi-Square Test: To Look for Association of Age with Mortality

Age groups	Outcome		Total
	Discharged	Expired	
20-30	6	0	6
31-40	3	0	3
41-50	12	12	24
51-60	102	15	117
Chi-square	Df		P-value
20.753	3		0.000

Chi-Square Tests:

- **Chi-square test for association of age with mortality (TABLE 3.3)**
  The chi-square test revealed chi-square = 20.753, df=3 and p-value p=0.000 i.e < 0.05, hence suggesting a statistically significant association.
- **Chi-square test for association of gender with mortality (TABLE 3.4)**

The chi-square test revealed chi-square = 2.275, df=1 and p-value p=0.131 i.e > 0.05, hence suggesting no statistically significant association between gender and mortality.

Table No.3.3: Chi-Square Test: To Look for Association of Gender with Mortality

Gender	Outcome		Total
	Discharged	Expired	
Males	93	24	117
Females	30	3	33
Chi-square	Df		P-value
2.275	1		0.131

DISCUSSION

Many studies have shown that disturbances of glucose metabolism are widely prevalent in acute myocardial infarction (AMI) and related to short and long term adverse outcome, irrespectively of the presence or absence of previously diagnosed diabetes mellitus (DM).[8,10] The poor prognosis in such patients, despite having baseline characteristics similar to those of patients without diabetes, supports the idea that metabolic abnormalities contribute to their adverse outcomes.[11] This study was conducted on 150 patients with STEMI at the Cardiology Department, PIMS, KIH, Islamabad, for a period of 6 months from 21st February 2018 till 21st August 2018, presenting with raised admission plasma glucose (APG). The mean age of the participants was 54.50 years ± S.D 7.744. This is comparable with other published studies. In a study by Bilal A et al.[12] who evaluated the clinical impact of hyperglycemia on poor outcome in 322 ACS patients, the mean age was 57.6 and 62.8 years. In a study by Akbar DH et al [13]. total of 480 patients were included, the mean age of the patients among hyperglycemic population was 51.5±4.3 year and 45.3±21 years among patients who were normo glycemia.

Ekmekci A et al[5] studied 677 elderly patients in a prospective manner-, mean age of 72.2 ± 5.4 years old who underwent primary PCI for STEMI. In our study, the male patients dominated the female population i.e there was a male preponderance. The male population consisted of 78% of the participants while females only 22%. The female to male ratio was 1:3.5. This observation has also been observed by other authors. Timmer JR et al[14] also found a male dominance pattern. They found that male population constituted 71%. Bilal A,[12] and Timmer JR,[14] reported a frequency of male population in their studies as 64.1%, 80.7%, 68%, respectively. This male preponderance may be attributed to the fact that male gender is the risk factor for STEMI.

Our main finding was that amongst the participants, 123(82%) were discharged while 27 (18%) had expired. This is a significant finding and has important implications for the health care providers. It is comparable with other studies published locally and internationally.

Ekmekci A et[5] al reported 18 % percent in hospital mortality despite of the proper triage and best possible indoor trearment. But the population was relatively 0lder than our study. In the acute phase of MI, higher glucose levels are usually seen and result in insulin resistance, higher free fatty acid concentrations, and impaired myocardial glucose usage which causes increased oxygen consumption and probably worsens ischemia.

Sanjaun R et al[8] reported in a large study in Spain, 15% mortality in patients of STEMI who presented with stress hyperglycemia (with serum glucose level of ≥ 140mg/dl) vs 5 % mortality in normoglycemic.[8] (P < 0.001). Akbar DH et al[13] Observed mortality in 19 % in newly diagnosed hyperglycemia vs 12 % in known diabetic patient. This observation was also similar to that in our study Timmer JR,[14] et observed, mortality by glucose category (<7.8, 7.8-11.0 or > or =11.1 mmol was 9%, 8% and 25%, respectively (p = 0.001); in 332 ACS patients.

CONCLUSION

Hyperglycemia on admission is a strong predictor of mortality in patients with STEMI and could be used in the risk stratification of these patients.

Limitations: First, due to the observational nature of this study, and small sample size the possibility of selection bias and/or residual confounding from unknown or unmeasured covariates cannot be excluded. we should be cautious in hypothesizing about the mechanisms involved and the generalizability of our conclusions to other populations. Our study didn't mention co morbids nor treatment strategy ahead like thrombolyticS therapy or primary PCI but the study was conducted in the best tertiary care hospitals so all possible guideline directed management is possibly given to the patients.

Author's Contribution:

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Original Article

Correlation of Thrombocytopenia with Esophageal Grading Varices in Patients of the Disease of Chronic Liver

Talha Khalid[1], Khalil Ahmed[1], Sidrah[1], Muhammad Rafiq[2] and Hira Khalid[1]

ABSTRACT

Objective: The goal of this examination was to discover relationship of thrombocytopenia severity with evaluating of esophageal varices in patients of the disease of chronic liver.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Medicine Department of Jinnah Hospital in Lahore from June, 2018 to November, 2018.

Materials and Methods: Patients satisfying the incorporation and prohibition criteria were also incorporate for the examination right after taking all the informative consents. Particulars of patients were recorded on a proforma. Detailed history and examination was done for all patients and recorded in same proforma. Laboratory tests were sent including platelet counts. Endoscopy was done and findings were noted. Thrombocytopenia and esophageal varices were labelled as per operational definition. All patients were treated as per hospital protocol.

Results: From 215 patients, the lowest age was calculated as 18 years and highest age was 60 years with mean ± standard deviation 36.30 ± 13.66 years. The minimum platelet count was calculated as 40000 and maximum platelet count was 180000 with mean ± standard deviation 122707 ± 48500.43. The minimum duration of CLD was calculated as 6 months and maximum duration of CLD was 24 months with mean ± standard deviation 14.37 ± 5.13 months. There were 48.4% male patients and 51.6% female patients. Thrombocytopenia was present in 36.3% patients while it was not present in 63.7% patients. Esophageal varices were present in 27.9% patients while it was not present in 72.1% patients.

Conclusion: Thrombocytopenia was present in 36.3% patients while Esophageal varices was present in 27.9% patients. The important relationship was found between presence of thrombocytopenia and presence of esophageal varices. Effect modifiers also showed significant influence.

Key Words: Obesity, Hypothyroidism, Body Mass Index, Diabetes Mellitus

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INTRODUCTION

The Cirrhosis addresses a last phase of reformist hepatic fibrosis portrayed by mutilation of the hepatic engineering and the development of regenerative knobs. It is for the most part viewed as irreversible in its high level stages so, where the only option for the treatment might be liver transplant.

However, inversion of cirrhosis (in its initial stages) has been recorded in a few types of liver infection following treatment of the basic reason. Patients with cirrhosis are defenseless to an assortment of inconveniences and their future is especially decreased.

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Cirrhosis patients may have these symptoms [1].

- The patients with chronic liver disease might have a blemish found on daily physical assessment.
- They might have gone through research facility or radiologic testing or an inconsequential surgery that unexpectedly reveal the cirrhosis presence on the body.
- There might be a presence of decompensated cirrhosis, which can be described as a life threatening or any other severe complication for example, variceal discharge or hemorrhage, ascites, hepatic encephalopathy, or unconstrained bacterial peritonitis.
- Most of the patients never considered to come to the clinical. In fact, in more seasoned audits, cirrhosis was analyzed at post-mortem in dependent upon 30 to 40% of patients. [2,3]

While the patient's pathogenesis is not completely perceived, they are accepted to result from changes in sex hormones digestion[4,5]. One examination recommended that the may increase in the estradiol or free testosterone ratio if there in the presence of spider

angiomata in their body[6,7]. Procured arachnid angiomata are not explicit for cirrhosis since they may likewise be seen ravenous patients (with extreme hunger) or in pregnant women. They can likewise be seen in any case with healthy individuals, who typically have less than three little sores. The number and size of spider angiomata and liver diseases are connect with each other.[8,9] Patients with various and huge spider angiomata might be at expanded danger for variceal drain.

The presence of cirrhosis is sometimes suggested by laboratory abnormalities. In today's medical practice, it is usual of serum sciences to be sent for screening or assessment of explicit complaints. The term "liver capacity tests" (LFTs) is normally utilized, it is uncertain since a considerable lot of the tests mirroring the liver health which is not immediate measurements of the functions. [10,11].

LFTs are the most widely recognized laboratory which incorporate the compound tests (mainly the serum aminotransferases, alkaline or basic phosphatase, and gamma glutamyl transpeptidase), the serum bilirubin, and trial of the functions of synthetic (basically the serum egg whites focus and prothrombin time) [12].

Certain abnormalities discovered on routine cell counts and chemistries can suggest the existence of advanced disease of liver while providing clues to its severity and etiology.

Various noninvasive tests for finding of cirrhosis have been suggested however none has yet arisen as a norm. All things considered, they can give adjunctive data to ordinary research center testing [13,14].

MATERIALS AND METHODS

This cross sectional research was held in Medicine Department of Jinnah Hospital in Lahore from 01.06.2018 to 30.11.2018. The data was collected through Non-probability consecutive techniques of testing and sampling.

Inclusion Criteria

- Patients of both gender as well as age ranging between 18 and 60 years presenting already diagnosed with chronic liver disease (as per operational definition) on history and medical record (diagnosed atleast 6 months ago)
- Willing to take part in the research

Exclusion Criteria

- Patients on beta-blockers for portal hypertension, or having history of endoscopic band ligation or sclerotherapy for esophageal varices assessed by history and medical record
- Patients with hepatocellular carcinoma or evidence of portal vein thrombosis assessed by history and medical record
- Patients with temperamental cardiopulmonary, neurological, or mental illness evaluated according to history, clinical assessment or past clinical record.
- Lung tumor, transitional cell carcinoma or other neoplasia able to shorten life expectancy assessed as per clinical or history records of the patient.
- Patients are not willing to take part in the research

Data Collection Procedure: Patients achieving the inclusion and exclusion standard were involved in the research after taking informed accord. Particulars of patients were recorded on a proforma. Detailed history and examination was done for all patients and recorded in same proforma. Laboratory tests were sent including platelet counts. Endoscopy was done and findings were noted. Thrombocytopenia and esophageal varices were labelled as per operational definition. All patients were treated as per hospital protocol.

Data Analysis Procedure: Statistical Package for Social Sciences (SPSS) rendition was done by utilizing the statistical examination 22. Qualitative information like gender, presence of thrombocytopenia and presence of esophageal varices was introduced as frequencies and rates. Quantitative information such as age was introduced as means and standard deviations. Information was delineated dependent on the sex, age, and the period of CLD.

RESULTS

From 215 patients, the lowest age was calculated as 18 years and highest age was 60 years with mean $\pm$ standard deviation 36.30 $\pm$ 13.66 years. The minimum platelet count was calculated as 40000 and maximum platelet count was 180000 with mean $\pm$ standard deviation 122707 $\pm$ 48500.43. The minimum duration of CLD was calculated as 6 months and maximum duration of CLD was 24 months with mean $\pm$ standard deviation 14.37 $\pm$ 5.13 months.

Table No.1: Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
Age	18	60	36.30	13.66
Platelet Count	40000	180000	122707	48500.34
Duration of dialysis in months	6	24	14.37	5.31

There were 104 (48.04%) male patients and 111 (51.06%) of the female patients. Thrombocytopenia was present in 78 (36.3%) patients while it was not present in 137 (63.7%) patients. Esophageal varices were present in 60 (27.9%) patients while it was not present in 155 (72.1%) patients.

Table No.2: Distribution of Thrombocytopenia

Thrombocytopenia	Frequency	Percentage
Present	78	36.3
Absent	137	63.7
Total	215	100.0

Spearman rank correlation showed significant correlation between presence of thrombocytopenia and presence of varices of esophageal having p-value of = 0.000. Correlation was important between presence of thrombocytopenia and esophageal varices existence in of both groups of age having p-value < 0.05.

Table No.3: Correlation presence of both thrombocytopenia and esophageal varices

			Thrombo-cytopenia	Esophageal Varices
Spearman's rho	Thrombocytopenia	Correlation Coefficient	1.000	.285**
		Sig. (2-tailed)	.	.000
		N	215	215
	Esophageal Varices	Correlation Coefficient	.285**	1.000
		Sig. (2-tailed)	.000	.
		N	215	215
**. Correlation is significant at the 0.01 level (2-tailed).				

Table No.4: Stratification of presence of thrombocytopenia with respect to age

Age ≥ 40 years				
			Thrombocytopenia	Esophageal Varices
Spearman's rho	Thrombocytopenia	Correlation Coefficient	1.000	.376**
		Sig. (2-tailed)	.	.000
		N	94	94
	Esophageal Varices	Correlation Coefficient	.376**	1.000
		Sig. (2-tailed)	.000	.
		N	94	94
Age < 40 years				
			Thrombocytopenia	Esophageal Varices
Spearman's rho	Thrombocytopenia	Correlation Coefficient	1.000	.215*
		Sig. (2-tailed)	.	.018
		N	121	121
	Esophageal Varices	Correlation Coefficient	.215*	1.000
		Sig. (2-tailed)	.018	.
		N	121	121
*. Correlation is significant				
**. Correlation is significant				

Table No.5: Stratification of presence of thrombocytopenia with respect to Gender

Males				
			Thrombo-cytopenia	Esophageal Varices
Spearman's rho	Thrombocy-topenia	Correlation Coefficient	1.000	.534**
		Sig. (2-tailed)	.	.000
		N	104	104
	Esophageal Varices	Correlation Coefficient	.534**	1.000
		Sig. (2-tailed)	.000	.
		N	104	104
Females				
			Thrombo-cytopenia	Esophageal Varices
Spearman's rho	Thrombo-cytopenia	Correlation Coefficient	1.000	.167
		Sig. (2-tailed)	.	.080
		N	111	111
	Esophageal Varices	Correlation Coefficient	.167	1.000
		Sig. (2-tailed)	.080	.
		N	111	111
**. Correlation is significant				

Table No.6: Stratification of presence of thrombocytopenia with respect to Duration of CLD

Duration of CLD ≤ 12 months				
			Thrombocytopenia	Esophageal Varices
Spearman's rho	Thrombocytopenia	Correlation Coefficient	1.000	-.167
		Sig. (2-tailed)	.	.127
		N	85	85
	Esophageal Varices	Correlation Coefficient	-.167	1.000
		Sig. (2-tailed)	.127	.
		N	85	85
Duration of CLD > 12 months				
			Thrombocytopenia	Esophageal Varices
Spearman's rho	Thrombocytopenia	Correlation Coefficient	1.000	.597**
		Sig. (2-tailed)	.	.000
		N	130	130
	Esophageal Varices	Correlation Coefficient	.597**	1.000
		Sig. (2-tailed)	.000	.
		N	130	130
**. Correlation is significant at the 0.01 level (2-tailed).				

The connection was not important between presence of thrombocytopenia and presence of esophageal varices in female having p-value = 0.080 while Correlation was significant between presence of both thrombocytopenia and esophageal varices in male having p-value = 0.000. Correlation was significant between presence of thrombocytopenia and esophageal varices in duration of CLD ≤ 12 months having p-value = 0.000 while correlation was not significant between presence of thrombocytopenia and presence of esophageal varices in duration of CLD > 12 months having p-value = 0.127.

DISCUSSION

The target of the current study was to discover connection of thrombocytopenia severity with evaluating of esophageal varices of chronic liver condition in patients. In this regard the present cross sectional research was held in Medicine department Jinnah Hospital in Lahore. So two hundred and fifteen cases were involved by fulfilling the additional standards by using non-probability consecutive sampling.

From 215 patients, the lowest age factor was calculated as 18 years and highest age was 60 years with mean ± standard deviation 36.30 ± 13.66 years. The minimum platelet count was calculated as 40000 and maximum platelet count was 180000 with mean ± standard deviation 122707 ± 48500.43. The minimum duration of CLD was calculated as 6 months and maximum duration of CLD was 24 months with mean ± standard deviation 14.37 ± 5.13 months.

In a previous study, one hundred and two patients with thrombocytopenia and esophageal varices were included in this research. There were 62 males and 40 females approximately with the percentage of (60.8%) 39.2%) respectively. The majority of the age of onset of the disease in these patients was 49.49 + or - 14.3 years with range of 11-85 years. One of the major causes of cirrhosis were described as hepatitis C (n=79, 77.5%), hepatitis B (n=12, 11.8%), mixed B and C hepatitis infection (n=8, 7.8%) as well as the Wilson's disease (n=3,2.9%). Almost seven patients had esophageal grade I, grade II, grade III, and grade IV with2 24, 35,36 respectively. Gastric varices were identified in 2 of the patients. Gateway hypertensive gastropathy were identified in 87 patients. There was a converse connection of platelet check with evaluating of esophageal varices ($r=-0.321$, $p < 0.001$). The thrombocytopenia severity expanded as the evaluating of esophageal varices expanded. Thrombocyte check was essentially and conversely connected with the classification of esophageal varices.. [5,16]

There were 48.4% male patients and 51.6% female patients. Thrombocytopenia was present in 36.3% patients while it was not present in 63.7% patients. Esophageal varices were present in 27.9% patients while it was not present in 72.1% patients [17-20].

CONCLUSION

Thrombocytopenia was present in 36.3% patients while Esophageal varices was present in 27.9% patients. The important connection was found between presence of thrombocytopenia and presence of esophageal varices. Effect modifiers also showed significant influence.

Author's Contribution:

Concept & Design of Study:	Talha Khalid
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Original Article

Antenatal Care Service Utilization of Pregnant Women Attending Antenatal Care in Public Hospital During the COVID-19 Pandemic Period

Almas[1], Shahla Afsheen[1], Sakeena Ahmed Memon[2] and Khalida Avesi[2]

ABSTRACT

Objective: To evaluate antenatal care utilization of pregnant women attending care during COVID-19 pandemic.
Study Design: Cross sectional study
Place and Duration of Study: This study was conducted at the Study was conducted at outpatient department of Gynecology and Obstetrics Sindh Government Hospital, Qasimabad, Hyderabad, from February 2021 to July 2021.
Materials and Methods: Three hundred and twenty patients were enrolled in the study. Main variables of study were antenatal visits, education of mother, residential area (rural and urban), and depression during COVID-19 and number of visits. Data analysis was done by using SPSS version 23. Mean and frequency were calculated, test of significance t-test and chi square test were applied. P value ≤0.05 was taken as significance.
Results: The mean height of fundus of the patients was 29.21±4.29cm. Majority of the patients 92.2% was longitude lie. Cephalic was the most common presenting part i.e. 82.8%. Fetal movement and fetal heart sound were positive in 87.2% and 89.7%, respectively. The mean antenatal care visits of the patients were 2.63±1.77 times. Most of the patients 74.7% had ≤3 antenatal care visits. 6.9% patients had positive covid-19 while 5.3% went to isolation.
Conclusion: Findings of this reveal that COVID-19 pandemic reduced the utilization of antenatal health care facilities among pregnant women. Thus, the residency, age of mother and educational status are main contributing factors involved in use ANC facilities.
Key Words: Prenatal care, Antenatal care, Coronavirus disease, Utilization, Pregnant women.

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INTRODUCTION

Novel corona virus that causes COVID-19 has spread rapidly since 2019 which was declared as global pandemic by world health organization (WHO) on 11 March 2020[1]. In October 2020 there were 49,373,235 confirmed cases and 1,243,083 confirmed deaths[2]. Care a pregnant mother receives before birth is labeled as antenatal care which includes screening, education, counseling, treatment plan and immunization[3].

First contact opportunity with formal health facilities for a pregnant mother is antenatal care that links the women with referral system in case of pregnancy complications. Worldwide about 303,000 maternal deaths occur every year because of pregnancy related complications most of them occur in Southern Asia and sub-Saharan Africa[4]. Maternal morbidity and mortality can be reduced with proper antenatal care by pointing danger signs, birth preparedness, health promotion and high care for complications of pregnancy[5].

WHO recommends at least four antenatal visits for pregnant ladies to overcome mortality after 42 days of termination of pregnancy and during pregnancy? Literature available on this topic reported that number of living children, maternal age,[6] place of residence, educational status, educational status, socioeconomic status; occupation and previous history of obstetrics were main factors that significantly associated with antenatal care facilities[7].

COVID-19 pandemic is bedeviling major challenges for many countries to provide and maintain high quality newborn and maternal health services[8]. Women carrying pregnancies and newborn carrying mothers are experiencing difficulties regarding transport, lockdown measures and access to health care facilities along with psychological effects and fear of infection[9]. Approximately 10% decline was observed in coverage and approach of health care services because of corona pandemic. In USA 39.3-51.9% reduction was observed

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in antenatal visits that causes 56.700 additional maternal deaths[10].

To the best of our knowledge there is no research paper published that was exploring the effect of COVID-19 pandemic on utilization and visits of antenatal health care facilities among pregnant women of lower Sindh. So, in order to fulfill this scientific literature, gap of this geographical area this study aims to explore the utilization of antenatal health facilities during pandemic.

MATERIALS AND METHODS

Study was conducted at outpatient department of Gynecology and Obstetrics Sindh Government Hospital, Qasimabad, Hyderabad, from February 2021 to July 2021. Study was started after ethical approval from hospital ethical board and informed written consent was obtained from patients after detailed information of study purpose. Non probability consecutive sampling technique was obtained. All pregnant women attended antenatal clinic at hospital were enrolled and 320 women were selected according to inclusion criteria. Patients having 2nd and 3rd trimester during COVID-19 pandemic or history of incomplete antenatal care in previous pregnancies and abortion during study period were excluded from the study. Sample size was calculated by using online source openepi.com taking 95% confidence interval, 5% margin of error and 30.8%[11] 1st antenatal visits during pandemic from a previous study.

Primary outcome of study was proportion of use of antenatal facilities during pandemic and independent variables were demographic, social and obstetric factors. Use of antenatal care was defined as at least three visits of antenatal clinic with two or above dose of tetanus toxoid and use of above 90 tablets of iron and folic acid.

Data was entered in Statistical package for social sciences (SPSS) and analyzed. Mean and standard deviation was calculated for numerical data like age, gestational age, antenatal visits and frequency and percentages were calculated for categorical data like educational status, occupational status. Test of significance was applied (t-test for numerical variables and chi-square for categorical variables). P value ≤ 0.05 was taken as significant.

RESULTS

Three hundred and twenty pregnant women were enrolled in this study, with mean age 28.29±4.13 years. The mean gestational age was 26.04±3.48 weeks. Majority of the patients were illiterate and primary educated, (29.1%) and (38.8%), respectively. (41.9%) patients were under depression. (24.1%) patients suffered diabetes mellitus. (31.3%) patients were hypertension. While, (20.6%) women suffered with domestic violence. (Table. I).

Table No.1: Characteristics of pregnant women included in the study

Variable	Mean±S.D	N (%)
Age (years)	28.29±4.13	
18-29 years		201 (62.8)
30-45 years		119 (37.2)
Gestational age (weeks)	26.04±3.48	
<25		139 (43.4)
>25		181 (56.6)
Area of residence		
Rural		168 (52.5)
Urban		152 (47.5)
Education of mother		
Illiterate		93 (29.1)
Primary		124 (38.8)
Middle		54 (16.8)
Matriculation		30 (9.4)
Above matric		19 (5.9)
Blood Pressure systolic/diastolic	125/72	
Pulse	79.89±5.39	
Temperature (F^0)	99.03±2.17	
Depression		134 (41.9)
Diabetes mellitus		77 (24.1)
Hypertension		100 (31.3)
Domestic violence		66 (20.6)

Table No.2: Outcome characteristics of the study patients

Variable	Mean ±SD	N (%)
Height of fundus (cm)	29.21±4.29	
Lie		
Longitude		295 (92.2)
Altitude		25 (7.8)
Presenting part		
Cephalic		265 (82.8)
Breech		55 (17.2)
Fetal movement		
Positive		279 (87.2)
Negative		41 (12.8)
Fetal heart sound		
Positive		287 (89.7)
Negative		33 (10.3)
Antenatal care visit	2.63±1.77	
1-3		239 (74.7)
4+ visits		81 (25.3)
Covid-19		22 (6.9)
Isolation		17 (5.3)

The mean height of fundus of the patients was 29.21±4.29 cm. Majority of the patients (92.2%) was longitude lie. Cephalic was the most common presenting part i.e. (82.8%). Fetal movement and fetal heart sound were positive in (87.2%) and (89.7%), respectively. The mean antenatal care visits of the patients were 2.63±1.77 times. Most of the patients

(74.7%) had ≤3 antenatal care visits. (6.9%) patients had positive covid-19 while (5.3%) went to isolation. (Table. 2).

Logistic regression was applied on the area of residence, age, education status, depression, diabetes mellitus, hypertension, domestic violence and gestational age. It was seen that depression and diabetes mellitus were the predictors of antenatal care visits with odds ratio 1.75 and 2.41, respectively. (Table. 3).

Table No.3: Logistic regression analysis of the antenatal care visits

Covariate		Frequency	Coefficient	S.E	P-value	Odd Ratio
Area of residence	Urban	152	-	-	-	-
	Rural	168	0.353	0.272	0.196	1.42
Age (years)	18-29	201	-	-	-	-
	30-45	119	0.146	0.281	0.604	1.16
Education status	Illiterate	93	-	-	-	-
	Primary	124	-0.211	0.446	0.637	0.810
	Middle	54	0.152	0.411	0.712	1.16
	Matriculation	30	0.791	0.466	0.090	2.21
	Above matric	19	0.612	0.061	0.000	1.672
Depression	Yes	134	0.63	0.272	0.038	1.75
	No	186	-	-	-	-
Diabetes mellitus	Yes	77	0.880	0.297	0.003	2.41
	No	243	-	-	-	-
Hypertension	Yes	100	-0.229	0.301	0.447	0.796
	No	220	-	-	-	-
Domestic violence	Yes	66	-0.448	0.357	0.171	0.614
	No	254	-	-	-	-
Gestational age (weeks)	≤25	139	0.080	0.274	0.769	1.08
	>25	181	-	-	-	-
Constant			-1.866	0.489	0.000	0.155

DISCUSSION

Antenatal care is affected worldwide during COVID-19 pandemic situation. A very small proportion was reported 100% antenatal visits. In low income countries preparedness and containment policies were made for pregnant women and lockdown restriction almost subsided. But antenatal loss either fetal or maternal is needed to be estimated.

Most of patients in our study were between ages 18-29 years with mean age 28.29±4.13. A study was conducted by Chimankar et al[12] on Indian population and evaluated the factors that influence the utilization of antenatal health care facilities and reported mostly patients between 25-29 years of age. Forty-five percent women of this study fully received recommended visits. It was also reported in this study that about 67% births were takes place outside the health care system.

Age of patient is also a strong contributing factor of better antenatal care utilization. As the age of mother increases it is associated with better experience of pregnancy and its relevant complications, better knowledge, understanding and the use of antenatal facilities. This observation is also supported by studies conducted in Debre Tobar by Ayalew et al[13] and in Southern Ethopia by Abosse et al[14]. In our study we also observed that age of mother is significantly and positively associated with ANC.

Education status of patients is also having main role in proper utilization of antenatal care facilities. Mean gestational age of patient in our study was 26.04±3.48 weeks and most of our patients were illiterate (55%) or primary educated (33%). The study conducted by Manyeh et al[15] reported that most of patients starts their antenatal care from 12 weeks of pregnancy and education is illiterate or primary.

Another similar study was conducted on Nepali population by Tuladhar et al[16] and reported 71.6% pregnant women that were enrolled in study having secondary education or above and 87% pregnant women received full recommended antenatal health care facilities. Study shows that only 6.5% population was not attending antenatal care facilities.

In our study 24.1% of women were diabetic and 31.3% were hypertensive. Our study supported by study conducted by Fagbamigbe et al[17] in 2015 that shows in Nigerian population monitoring of blood pressure and iron supplementation are main components of ANC. About 81.5% of women received full antenatal care during pandemic and 11.3% pregnant women avail minimum level of ANC. Gitonga et al[18] observed similar findings and reported 52% successful antenatal visits and reported that household income, education of

women and type of employment are also contributing factors of antenatal care utilization.

In our study we also observed that education of mother has strong association with compliance of antenatal care. Mothers of secondary education and above have high level of antenatal care than women with formal education. Mulat et al[19] reported that educated women are capable of attaining early information, counseling and can identify danger signs during pregnancy. Another previous study by Nebeb et al[20] observed similar findings that use of antenatal care facilities is associated with better education and knowledge understandings.

Our study also observed that women living urban areas have higher ratio of ANC utilization during pandemic. This finding was supported by Saccone et al[21] and Durankuş et al[22], they concluded that better utilization of ANC in urban areas may be due to easy availability of health care facilities. Awareness about ANC use is also more in urban areas as compare to rural areas of any country.

In developing countries lack of infrastructure and deficit in resources along international choices for lockdown position make this harsher and panic for pregnant women[23]. Reduction in workforce, restrictions from health facility and access reduction are also responsible for reduction in ANC utilization[24].

CONCLUSION

Findings of this reveal that COVID-19 pandemic reduced the utilization of antenatal health care facilities among pregnant women. Thus, the residency, age of mother and educational status are main contributing factors involved in use ANC facilities.

Limitations: Incomplete follow ups and cross sectional nature of our study were main limitations.

Recommendations: Door step antenatal care and awareness programs about importance of antenatal care utilization with proper protective measures are recommended.

Author's Contribution:

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Original Article

Factors Predicting In-Hospital Mortality in Patients with Liver Cirrhosis

Hospital Mortality with Liver Cirrhosis

Qasim Umar[1], Abid Ali[2], Dure Shahwar[4], Fareeha Bashir[3] and Muhammad Ibrahim[5]

ABSTRACT

Objective: To determine the predictors of in hospital mortality in gastro esophageal variceal (GEV) hemorrhage/bleeding in patients of chronic liver disease.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the gastroenterology department of Nishtar hospital, Multan in duration of one year from March 2019 to March 2020 in one-year duration.

Materials and Methods: A total of Two hundred and sixty patients were enrolled in present study. Clinical signs and laboratory investigations were correlated for prediction of in hospital mortality.

Most common laboratory investigations include serum bilirubin and creatinine and clinical parameters were bleeding within 24 hours after endoscopy, ascities and Child-Pugh score. Data analysis was done by using SPSS version 23.

Results: In our study Hemoglobin was found deranged in 5.2% patients, prothrombin time in 7.6%, S. bilirubin in 4.8%, S. creatinine in 8.7% and S. albumin in 2.6% of the survivors Similarly hemoglobin was found in 10%, prothrombin time in 3.3%, S. bilirubin 6.7%, S. creatinine 6.7% and S. albumin in 3.3% of the non-survivors. Differences was calculated statistically insignificant.

Conclusion: Deranged serum creatinine, serum bilirubin, PSE and re-bleed within 24 hours of endoscopy were independent predictors of in hospital mortality. Aggressive control on laboratory and clinical values with latest innovative management is helpful in reduction of in hospital mortality.

Key Words: Gastro-esophageal varices, Liver Cirrhosis, Endoscopy, Serum creatinine, In hospital mortality.

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INTRODUCTION

Gastro esophageal variceal (GEV) bleeding because of portal hypertension is the main complication in patients of liver cirrhosis[1]. In 30% of cirrhotic patients its incidence is accompanied by 90% bleeding episodes. GEV hemorrhage is responsible for major hospital cost, morbidity and mortality as compare to any other bleeding of gastrointestinal tract[2].

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Worldwide about fifty percent of cirrhotic patients died within six months after 1st episode of GEV bleeding.

Usually GEV bleeding starts after the blockage of normal blood flow to liver due to clot or scar in vessels[3].

Body tried to overcome this deficiency in flow of blood to hepatic system via smaller vessels but they are unable to fulfill huge requirement because of smaller diameter[4]. Sometime this blockage cause rupture of vessels and develops a life threatening blood loss which may lead to loss of life[5]. A significant decrease in mortality was observed because of latest innovation in management plans of GEV hemorrhage and instrumental advancement[6]. Main contributing factors of GEV bleeding and mortality are older age, advance Child-Pugh score, hepatocellular carcinoma, re-bleeding after endoscopy, encephalopathy and renal failure[7].

Many authors conducted reports on different regions and reported very slow prognosis and some of them observed that prognosis varies region to region[8]. Chronic liver disease (CLD) is progressively moving illness and GEV bleeding is a big cause of hospital admission in Pakistan[9]. Increase in hospital admission continuously developing a pressure on health care system of country. In hospital mortality statistics after

CLD and GEV bleeding are much higher in Pakistan (8-50%) as compare to any other country of this region[10]. Purpose of study is to determine the incidence of gastro-esophageal variceal bleeding and its role in hospital mortality in cirrhotic patients.

MATERIALS AND METHODS

Study was completed at gastroenterology department of Nishtar hospital, Multan in one year duration from March 2019 to March 2020. Ethical approval was obtained from hospital ethical board before start of study. Informed written consent was taken from patients. Sampling technique was non probability consecutive sampling. Patients of age between 14 years to 60 years presented with HEV bleeding because of chronic liver disease were enrolled in the study.

All patients of GEV bleeding were shifted to high dependency unit of hospital where essential monitoring patient's hemodynamics and high trained staff with quality care was available. Facility of endoscopy along with vasoconstrictors like terlipressin and octreotide was also available 24/7. Variceal band ligation with good visibility is the treatment of choice in these patients. Option of re-endoscopy was available for patients in case of significant re-bleed, frank hematemesis, malena, fresh blood in nasogastric tube and hemodynamic instability. Hemodynamic instability was labeled in case of hemoglobin drop more than 2mg/dl.

After complete surgical assessment by team of surgeons any kind of surgical intervention was performed if needed. Surgical management may be needed in patients who were re-bleeding after endoscopy or at least two episodes after endoscopy. Patients who needed surgical intervention were managed with transjugular intrahepatic portosystemic shunt (TIPSS). Laboratory investigation and clinical condition of patients was correlated for assessment or prediction of re-bleed within 24 hours or mortality. Common parameters were serum bilirubin, hemoglobin level, serum creatinine and prothrombin time.

Imaging investigations, biochemical parameters and liver biopsy were used for CLD diagnosis. Hepatocellular carcinoma was labeled if space occupying lesion was seen on ultrasound, on liver biopsy report and serum alpha fetoprotein level was also raised. Ascites grading was also labeled as "tense" or "absent". Its control with diuretics was labeled as easy control and association with respiratory distress labeled as tense.

SPSS version 23 was used for calculation of mean value and standard deviation (SD) of continuous variables like age. Frequency/percentage were calculated for qualitative variables like gender, ascites, portosystemic encephalopathy, cirrhosis with HCC, child Pugh class cirrhosis alone and thrombosis of portal vein. Test of significance (chi-square and t-test) were applied to see association among variables. Probability value ≤0.05 was taken as significant.

RESULTS

A grand total of two hundred and sixty patients of both gender male or female were enrolled in the study. The patients were assigned into group's survivors and non survivors. Survivors include n=230 (88.5%) and n=30 (11.5%) non-survivors. In survivors group mean age of patients was 42.19±3.35 years and male gender was dominant with percentage of 66.5% and females 33.5%. Similarly mean age of the non-survivors was 41.93±3.84 years with 76.7% males' gender and 23.3% females. Diagnosis of patients like ascites, child-Pugh score, and PSE was presented in table I. Significant difference was observed in re-bleeding within 24 hours of endoscopy (p=0.000). (Table. I).

Table No.1: Demographics and clinical parameters in survivors and non survivors

Variable	Survivors n=230 (88.5%)	Non-survivors n=30 (11.5%)	P-value
Age (years)	42.19±3.35	41.93±3.84	0.660
Gender			
Male	n=153 (66.5%)	n=23 (76.7%)	0.264
Female	n=77 (33.5%)	n=7 (23.3%)	
Diagnosis			
Cirrhosis alone	n=172 (74.8%)	n=25 (83.3%)	0.304
Cirrhosis + HCC	n=51 (22.2%)	n=8 (26.7%)	0.581
Cirrhosis + PVT	n=15 (6.5%)	n=2 (6.7%)	0.976
Cirrhosis + HCC + PVT	n=5 (2.2%)	n=2 (6.7%)	0.153
Child-Pugh class			
A	n=29 (12.6%)	n=4 (13.3%)	0.911
B	n=42 (18.3%)	n=9 (30.0%)	0.128
C	n=157 (68.3%)	n=22 (73.3%)	0.573
Ascites			
Absent	n=55 (23.9%)	n=7 (23.3%)	0.944
Easily controlled	n=159 (69.1%)	n=18 (60.0%)	0.313
Tense	n=15 (6.5%)	n=3 (10.0%)	0.480
PSE			
Absent	n=200 (87.0%)	n=29 (96.7%)	0.123
Stage 1 or 2	n=28 (12.2%)	n=5 (16.7%)	0.487
Stage 3 or 4	n=16 (7.0%)	n=2 (6.7%)	0.953
Re-bleeding within 24 h	n=20 (8.7%)	n=19 (63.3%)	0.000

In this study Hemoglobin was found deranged in 5.2% patients, prothrombin time in 7.6%, S. bilirubin in 4.8%, S. creatinine in 8.7% and S. albumin in 2.6% of the survivors Similarly hemoglobin was found in 10%, prothrombin time in 3.3%, S. bilirubin 6.7%, S.

creatinine 6.7% and S. albumin in 3.3% of the non-survivors. Differences was calculated statistically insignificant. (Table. 2).

Table No.2: Laboratory parameters among survivors and non survivors

Variable	Survivors n=225	Non-survivors n=25	P-value
Hemoglobin (g/dL)	n=12 (5.2%)	n=3 (10.0%)	0.291
Prothrombin time (s)*	n=17 (7.4%)	n=1 (3.3%)	0.614
S. bilirubin (mg/dL)	n=11 (4.8%)	n=2 (6.7%)	0.234
S. creatinine (mg/dL)	n=20 (8.7%)	n=2 (6.7%)	0.707
S. albumin (g/dL)	n=6 (2.6%)	n=1 (3.3%)	0.818

DISCUSSION

Gastrointestinal bleeding because of portal hypertension in patients of chronic liver disease is the leading cause of in hospital mortality. Recent advancement in management of GEV bleeding like terlipressin, prophylactic antibiotic, TIPSS and variceal band ligation reduce its incidence and mortality rate[11]. In hospital mortality rate of our hospital is much higher than other hospitals of our region.

In a study Pauwels et al[12] concluded that in hospital mortality ratio reduced 50% in last 15 years in patients who were admitted due to variceal bleeding and chronic liver disease. This significant decrease is just because of early availability of specialized care and innovative bleeding management system. Chojkier et al[13] conducted a study on this topic and concluded that 35% mortality in cirrhotic patients is just because of bleeding disorder.

In 2000 another study was conducted by Afessa et al[14] and investigated frequency of in hospital mortality with 21% observation of mortality which is much lesser proportion from last few years.

Another similar study found 14.2% mortality rate due to bleeding of variceal in cirrhotic patients[15]. This is also a reduced rate of mortality just because of latest innovation in management procedure and advance diagnostic measures.

Continuous reduction in incidence of mortality shows an aggressive control of disease and vast research work in previous years which much helpful to overcome disease problem and associated complications. Another study was conducted by Del Olmo et al[16] in 2000 on large sample size of cirrhotic patients who were admitted for the management of GEV hemorrhage and observed 7.4% decline in mortality rate. A significant improvement was found deranged laboratory values like serum bilirubin, serum creatinine after early endoscopy.

In year 2004 a study was conducted by Carbonell et al[17] and estimated similar conclusion that survival from in hospital can be improved with use of skillful hands and early implementation of management skills with specialized care. Like literature search and reference quoted in this study we also observed similar findings about development of complications (Ascites, advance Child-Pugh score) that can be managed with early utilization of health care equipment. Magliocchetti et al[18] observed in 1997 that greater blood transfusion, Child-Pugh score, older age are strong contributing factors of in hospital mortality in liver cirrhosis.

In our study we evaluated main predicting factors of in hospital mortality. In a study by Patch et al[19] six main contributing factors were highlighted which include moderate to severe ascites, partial thromboplastin time, need for ventilation, raised creatinine level, white blood cell and platelet count.

Chronic liver disease is responsible for huge number of deaths worldwide. Ismail et al[20] reported 8.7% in hospital mortality in patients of chronic liver disease who were presented at emergency department of hospital with gastro-esophageal variceal bleeding. Older age, serum bilirubin, serum creatinine is concluded as contributing factors of sudden death in such patients. Intestinal endoscopy and re-bleed within 24 hours are independent factors of in hospital mortality.

CONCLUSION

Deranged serum creatinine, serum bilirubin, PSE and re-bleed within 24 hours of endoscopy were independent predictors of in hospital mortality. Aggressive control on laboratory and clinical values with latest innovative management is helpful in reduction of in hospital mortality.

Author's Contribution:

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Original Article

Different Drugs Therapy for Helicobacter Pylori

Comparison between Conventional Triple Therapy VS Sequential Therapy on Tolerance of Treatment and Eradication of Helicobacter Pylori Infection

Abid Ali[1], Qasim Umar[3], Fareeha Bashir[2] and Dure Shahwar[4]

ABSTRACT

Objective: To compare the efficacy of sequential therapy (levofloxacin) and triple therapy (clarithromycin) in treatment of helicobacter pylori eradication.

Study Design: Randomized Control Trial (RCT)

Place and Duration of Study: This study was conducted at the gastroenterology department of Nishtar hospital Multan from January, 2020 to December 2020 for a period of one year.

Materials and Methods: One hundred and forty diagnosed patients of H. pylori were selected for study. Patients were divided into two group ST group and TT group by lottery method. Levofloxacin and clarithromycin were used. Patients' compliance and adverse effects were compared in both groups. SPSS software with version 23 was used for data analysis. Significant probability value ≤0.05 was considered.

Results: Antral gastritis, pangastritis, duodenitis, hiatus hernia and GERD of sequential group was observed as 61.4%, 25.7%, 10%, 21.4% and 45.7%, respectively. While, antral gastritis, pangastritis, duodenitis, hiatus hernia and GERD of standard group was observed as 50%, 27.1%, 15.7%, 20% and 50%, respectively. The differences were statistically insignificant.

Conclusion: Sequential therapy with levofloxacin is more effective in treatment of H pylori eradication as compare to conventional triple therapy with clarithromycin. Tolerability of sequential therapy is also better than conventional triple therapy. Great resistance has found against clarithromycin in Pakistani population.

Key Words: Helicobacter pylori, Sequential therapy, conventional triple therapy, Gastritis, GERD

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INTRODUCTION

H. Pylori infection caused by Helicobacter pylori is main cause of disorders in upper gastrointestinal region[1]. Recent literature on this topic shows that many extragastric problems and disorders including cardiovascular, neurodegenerative, metabolic, pancreatic, hepatobiliary and colorectal diseases are due to h. pylori infection[2]. In addition to rheumatic disease it also develops many skin diseases like urticaria and skin allergies[3].

Its treatment and removal include multiple therapies among them most common and effective is triple therapy (TT). Triple therapy consist of amoxicillin (1g/12h), clarithromycin (500mg/12h) and proton pump inhibitor (PPI) (rabeparazole 20mg/12h, lansoprazole 30mg/12h, esomeperazole 40mg/24h, omeprazole 20mg/12h, pantoprazole 40mg/12h) for at least 14 days[4,5].

Multiple studies have been conducted on duration of treatment; in a meta-analysis it was recommended that 14 days eradication therapy is 5% more effective and successful than 7 days treatment therapy[6]. Metronidazole is also effective that can be used in cases of allergic to pencillin. A recent survey on worldwide emergence on resistance development against antibiotic confirms that H. pylori eradication rate is reducing with increase in development against antibiotic[7,8].

A recent Egyptian study conducted in Mansoura gastroenterology surgical center on 82 patients that were admitted with upper gastrointestinal symptoms. Biopsy samples were taken with endoscopy and sent to

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laboratory for culture developments and analysis for H. pylori[9]. It was found that 71% strains of H. pylori were resistant against clarithromycin which is primary treatment modality regime against H. pylori[10].

MATERIALS AND METHODS

Study was completed in of gastroenterology department of Nishtar hospital Multan from 1st January to 31st December 2020 in one-year duration. Study was started after permission from hospital ethical review board of hospital. Consent was taken from the patients after detailed information about the goals and purpose of study. Non probability consecutive sampling technique was used. Patients were diagnosed with campylobacter test and C13 urea breath test. Pregnant women, age less than 18 years, history of previous gastric surgery, lactating mothers and previous history of eradication therapy of H. pylori were excluded from the study.

Clinical examination, detailed medical and drug history was taken. Examination of esophagus, stomach, duodenum and upper GI was done with endoscopy. C13 breath test was performed on all patients. A sample of corpus of stomach and antrum was taken for biopsy. Patients were divided into two groups (ST group and TT group) by lottery method. Group ST patients were given 30mg lansoprazole (proton pump inhibitor) per 12 hours and 1-gram amoxicillin 12 hourly for initial five days and after that 30mg lansoprazole 12 hourly plus 500mg levofloxacin 24 hourly with 500 mg tinidazole 12 hourly for 5 days.

Patients in TT group were given proton pump inhibitor 30mg lansoprazole 12 hourly, 1g amoxicillin 12 hourly plus clarithromycin 500mg 12 hourly for 14 days. All patients were counseled for possible side effects and asked for good compliance. Adverse effects may include, abdominal pain, bitter taste, abdominal bloating, general weakness, epigastric pain, diarrhea, dizziness, constipation, headache, loss of appetite, skin eruptions, nausea, vomiting, mucosal ulcer and increased sleeping tendency. Compliance below 80% was considered as termination of therapy. C13 urea test and response of therapy was evaluated after 6 weeks termination of therapy.

SPSS software with version 23 was used for determination of mean and standard deviation for quantitative variables like age, weight and frequency percentages were calculated for qualitative data like gender, nausea, vomiting, epigastric pain, and diarrhea. Tests of significance (T test and chi-square test) were applied to see the association among variables. Significant probability value ≤0.05 was considered.

RESULTS

One hundred and forty patients were included in this study, both genders. The patients were divided into two groups as sequential n=70and standard n=70. The mean age of sequential group was 35.43±4.22 years. There was n=48 (68.6%) males and n=22 (31.4%) females. Smoking status, epigastric pain, nausea, vomiting, heart burn and hematemesis was noted as n=30 (42.9%), n=51 (72.9%), n=16 (22.9%), n=21 (30%), n=20 (28.6%) and n=1 (1.4%), respectively. Mean age of standard group was 33.08±4.99 years. There was n=49 (70%) males and n=21 (30%) females. Smoking status, epigastric pain, nausea, vomiting, heart burn and hematemesis was noted as n=22 (31.4%), n=48 (68.6%), n=21 (30%), n=10 (14.3%), n=19 (27.1%) and n=0 (0%), respectively. Statistically insignificant difference was observed except vomiting (p=0.025). (Table. I).

Antral gastritis, pangastritis, duodenitis, hiatus hernia and GERD of sequential group was observed as n=43 (61.4%), n=18 (25.7%), n=7 (10%), n=15 (21.4%) and n=32 (45.7%), respectively. While, antral gastritis, pangastritis, duodenitis, hiatus hernia and GERD of standard group was observed as n=35 (50%), n=19 (27.1%), n=11 (15.7%), n=14 (20%) and n=35 (50%), respectively. The differences were statistically insignificant. (Table. 2). Response to treatment of Helicobacter pylori by C13- urea breathe test and termination of therapy because of adverse effects of both groups were shown in table 3. The differences were statistically significant except termination of therapy because of adverse effects(p=0.649). (Table. 3).

Nausea, vomiting, abdominal pain and diarrhea of sequential group was observed as n=2 (2.9%), n=14 (20%), n=3 (4.3%) and n=5 (7.1%), respectively. While, nausea, vomiting, abdominal pain and diarrhea of standard group was observed as n=4 (5.7%), n=10 (14.3%), n=0 (0%) and n=6 (8.6%), respectively. The differences were statistically insignificant (Table. 4).

Table No.1: Demographic characteristics and clinical presentation of both groups

Variable	Sequential n=70	Standard n=70	P-value
Age (years)	35.43±4.22	33.08±4.99	0.985
Gender			
Male	n=48 (68.6%)	n=49 (70%)	0.855
Female	n=22 (31.4%)	n=21 (30%)	
Smoking status	n=30 (42.9%)	n=22 (31.4%)	0.467
Epigastric pain	n=51 (72.9%)	n=48 (68.6%)	0.577
Nausea	n=16 (22.9%)	n=21 (30%)	0.338
Vomiting	n=21 (30%)	n=10 (14.3%)	0.025
Heart burn	n=20 (28.6%)	n=19 (27.1%)	0.879
Hematemesis	n=1 (1.4%)	n=0 (0%)	0.316

Table No.2: Endoscopic characteristics of both groups

Variable	Sequential n=70	Standard n=70	P-value
Antral gastritis	n=43 (61.4%)	n=35 (50%)	0.173
Pangastritis	n=18 (25.7%)	n=19 (27.1%)	0.848
Duodenitis	n=7 (10%)	n=11 (15.7%)	0.313
Hiatus hernia	n=15 (21.4%)	n=14 (20%)	0.835
GERD	n=32 (45.7%)	n=35 (50%)	0.612

Table No.3: Response to treatment of Helicobacter pylori by C13- urea breathe test of both groups

Parameters	Sequential n=70	Standard n=70	P-value
Responders	n=66 (94.3%)	n=51 (72.9%)	0.001
Nonresponses	n=4 (5.7%)	n=19 (27.1%)	
Termination of therapy because of adverse effects			
Termination of therapy	n=2 (2.9%)	n=3 (4.3%)	0.649

Table No.4: Adverse effects of the treatment of both groups

Parameters	Sequential n=70	Standard n=70	P-value
Nausea	n=2 (2.9%)	n=4 (5.7%)	0.404
Vomiting	n=14 (20%)	n=10 (14.3%)	0.370
Abdominal pain	n=3 (4.3%)	n=0 (0%)	0.080
Diarrhea	n=5 (7.1%)	n=6 (8.6%)	0.753

DISCUSSION

In Pakistani population limited data is available about incidence rate and eradication modalities of H. pylori which are may be because of unaffordability of medical treatment in remote areas or lack of awareness. Main contributing factors are low socioeconomic status, rural and tribal areas residence. In 2008 a study was conducted by EI Dine et al[11] on seroprevalence of H. pylori and reported 91.7% seroprevalence. It was also found that positivity of H. Pylori varies with variation in age advance or older.

High prevalence rate and complications associated with treatment of H. pylori are deep concerns of eradication therapy. In 2018 a study was completed by Waleed et al[12] and compare the sequential triple therapy and conventional triple therapy and reported 91% successful eradication with sequential triple therapy and 71.6% successful eradication with conventional triple therapy. Although patient's compliance is the main contributing factor in treatment of H. pylori eradication but literature supports sequential therapy more authentically.

Either conventional or sequential triple therapy used complications are main concern which is associated with both modalities. In our study epigastric pain is the main complaint which is also reported in a study by Karthick et al[13] in 100 cases, out of them 83 reported dyspepsia. H. Pylori Prevalence was 73.41% in this study.

Detailed literature search shows a serial association among gastritis and H. Pylori. In 2009 Diab et al[14] conducted a study and reported that 82.9% patients of gastritis diagnosed as H. Pylori positive. Our study also shows association with gastroesophageal reflux disease (GERD) and H. pylori. In a study completed by Corley et al[15] reported that H. Pylori infection also associated with GERD have direct association that's why patients of casual symptoms of GERD must be considered for H. Pylori investigations and symptomatic treatment before starts of triple eradication therapy.

A study in 2014 by Rubenstein et al[16] reported that there is no association between GERD and H. Pylori. Findings of this study were in contrast with our results. Similarly, in a study by Grande et al[17] shows association between GERD, esophagitis and H. pylori but results were not significant.

Another study was conducted by Marzio et al[18] and concluded that symptoms of H. pylori are same in every case. No specific association was observed between symptoms of H. pylori. In a study conducted by Mayasa et al[19] compared regimes of our study (clarithromycin and levofloxacin) in eradication of H. Pylori infection and found success rate of Clarithromycin 71% and Levofloxacin 23.2%.

In a study conducted by Polat et al[20] compared sequential triple therapy and conventional triple therapy and reported 90% successful treatment with sequential therapy and 57% successful treatment with conventional triple therapy. In a Chinese study conducted by Qian et al[21] and reported a successful eradication with sequential therapy (Levofloxacin and proton pump inhibitors. A study was conducted by Zullo et al[22] found more successful eradication of H. pylori with sequential therapy as compared to conventional triple therapy. Sequential therapy was given with combination of proton pump inhibitors and levofloxacin in treatment of H. Pylori infection.

CONCLUSION

Sequential therapy with levofloxacin is more effective in treatment of H pylori eradication as compare to conventional triple therapy with clarithromycin. Tolerability of sequential therapy is also better than conventional triple therapy. Great resistance have found against clarithromycin in Pakistani population.

Author's Contribution:

Concept & Design of Study:	Abid Ali
Drafting:	Qasim Umar
Data Analysis:	Fareeha Bashir, Dure Shahwar
Revisiting Critically:	Abid Ali, Qasim Umar
Final Approval of version:	Abid Ali

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

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Original Article

Risk Factors of Systolic Hypertension among Patients Admitted with Intracerebral Hemorrhage

Muhammad Roh ul Amin, Sabir Hussain, Kashif Ali, Mujahid Iqbal, Irfan Ahmed and Sajid Hussain

ABSTRACT

Objective: To determine the risk factors of systolic hypertension among patients admitted with intracerebral hemorrhage.

Study Design: Cross-sectional analytical study

Place and Duration of Study: This study was conducted at the Hospital Dera Ghazi Khan from December 2018 to June 2019.

Materials and Methods: After taking approval from institutional ethical review committee. Calculated sample size was 139 at 95% level of confidence, 5% precision required and 90% anticipated population proportion.[10] Both male and female patients, between 40-70 years of age which presented with sudden onset of neurological deficit were included in study through non probability consecutive sampling method. Informed consent was taken from each patient. Systolic hypertension was labeled at blood pressure >140 mmHg. BMI of each patient was calculated and >27 taken as obese. SPSS version 22.0 was used for data entry and analysis. Chi-square test was applied and p-value <0.05 was considered as significant.

Results: Mean age of study participants was 55± 9.5 years. Out of total 139 cases; 79 (56.8%) had age between 51-70 years, 80 (57.6%) patients were obese, 94 (67.6%) were smoker and 75 (54%) patients were male (Table I). Total 115 (82.7%) patients with intracerebral hemorrhage had systolic hypertension (Fig. I). Obesity (p=0.006) and smoking history (p<0.001) was found to be significantly associated with systolic hypertension among patients with intracerebral hemorrhage.

Conclusion: Obesity and history of smoking was found to be significantly associated with systolic hypertension among patients with intracerebral hemorrhage.

Key Words: Systolic blood pressure, Hematoma expansion, Systolic hypertension, Intracerebral hemorrhage, Stroke

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INTRODUCTION

Intracerebral hemorrhage (ICH) is responsible for 10% of all strokes, with 35-45% of patients dying within a month. It's yet uncertain whether reducing blood pressure slows the growth of hematomas or not.[1,2] Approximately 85% of strokes are caused by inadequacy of blood flow to all or some part of brain. The remaining strokes are divided between hemorrhage into brain tissue and hemorrhage into the surrounding brain spaces, most frequently the subarachnoid space. In addition to availability of well-established prophylactic and acute therapies, the diagnostic tools have also been improved.[1] The interact 2 experiment is the only large scale phase 3 clinical trial that looks at the impact of acute blood pressure lowering on ICH functional outcomes. In the lower blood pressure group, there was a significant change toward better outcomes, while mortality was similar in both groups.[3]

Only 20% of those who survive from ICH are independent after six months.[4-7] Hatcher et al, found that 90% cases of intracerebral hemorrhage showed an elevated SBP of ≥140 mm Hg.15 while Hevesi M et al. found hypertension in 75% cases of ICH.[1,6] This initial blood pressure (BP) after Intracerebral hemorrhage is higher as compared with ischemic stroke. The BP after a hemorrhagic stroke may remain high for a greater time duration than following ischemic stroke.[8,9]

In addition to socioeconomic costs there are various complications associated with intracerebral hemorrhage include motor deficits, dementia and high

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risk of early rehospitalization. The most common risk factor of intracerebral hemorrhage is hypertension followed by diabetes mellitus and smoking. There is scarcity of data in Pakistan on this topic; where hypertension in intracerebral hemorrhage is usually uncontrolled. But such cases are frequently seen in our daily clinical rounds. Keeping these facts in my mind, this study was planned to be conducted in our local population of Southern Punjab to ascertain burden of problem in local population. The results will provide useful baseline data of our local population which would help clinicians to manage such patients more effectively and would form the basis to formulate guidelines for optimal control of blood pressure among targeted population.

MATERIALS AND METHODS

This cross sectional analytical study was conducted in Medicine department of teaching hospital Dera Ghazi Khan after approval of ethical review committee from December 2018 to June 2019. The sample size calculated for study at 95% level of confidence, 5% precision required and 90% anticipated population proportion (frequency of systolic hypertension in ICH) was 139.[10] Both male and female patients, from age of 40 to 70 years admitted in medical ward which presented with sudden onset neurological deficit and CT scan brain plain showing hyper dense area inside brain parenchyma were included in the study through non probability consecutive sampling method. Patients with history of head injury and space occupying lesion (SOL) on CT brain were excluded from study. Informed consent was taken from each patient before data collection. Individual patient data regarding age and gender and history of head injury was taken. Blood pressure levels were measured by using standard sphygmomanometers with the subject lying quietly. Two readings of blood pressure 5 minutes apart were taken and average of the two readings were noted in the proforma. Systolic hypertension was labeled at blood pressure >140 mmHg. Weight and height of each was measured BMI was calculated and >27 taken as obese. Data was entered and analyzed by computer program SPSS version 22.0. Mean and standard deviation was calculated for the age, BMI and systolic blood pressure. Frequencies and percentages were calculated for categorical variables like Age groups, systolic hypertension, BMI groups, smoking history and gender. Stratification was done to control effect modifiers like age groups, gender, smoking and body mass index (BMI). Chi-square test was used after stratification and p-value less than 0.05 was taken as significant.

RESULTS

Total 139 cases with intracerebral hemorrhage were included in the study. Mean age of the study participants was 55 ± 9.5 years. Out of total 139 cases; 79 (56.8%) cases had age between 51-70 years, 80 (57.6%) patients were obese, 94 (67.6%) were smoker and 75 (54%) patients were male (Table I). Out of total 139 cases; 115 (82.7%) cases had systolic hypertension (Fig. I).

Out of 115 cases that had systolic hypertension; 68 (59.1%) cases had age 51-70 years and 13 (54.2%) cases with no hypertension were in the age group of forty to fifty years. Difference in systolic hypertension frequency was not significant (p=0.33) among various age strata. Gender distribution of the patients with intracerebral hemorrhage showed that 62 (53.9%) patients having systolic hypertension were male, 53 (46.1%) cases were female and difference in both genders was not significant (p=0.98). In 88 (76.5%) cases with systolic hypertension history of smoking was present and obesity was present in 70 (61%) cases with systolic hypertension. Out of 24 cases that had no systolic hypertension; 13 (54.2%) cases had age between 40-50, 13 (54.2%) cases were male, 14 (58.3%) cases have no history of smoking, 14 (58.3%) cases were obese while 10 (41.7%) cases with no systolic hypertension were non obese. The factors significantly associated with systolic hypertension among patients admitted with intracerebral hemorrhage were obesity (p=0.006) and history of smoking (p<0.001) as shown in Table II.

Table No.1: Age, gender, obesity and smoking history among respondents

Variable	Frequency	Percentage
Age		
40-50 years	60	43.2%
51-70 years	79	56.8%
Gender		
Male	75	54%
Female	64	46%
Obesity		
Yes	80	57.6%
No	59	42.2%
Smoking history		
Yes	94	67.6%
No	45	32.4%

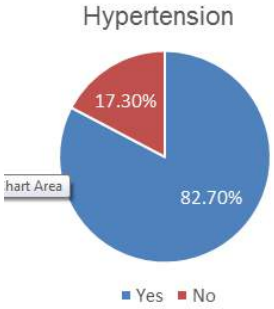

Figure No.1: Frequency of Hypertension among study participants

Table No.2: Association of Age, gender, obesity and smoking history with systolic hypertension

Variable	Systolic Hypertension Yes	No	P value
Age			
40-50 years	47(40.9%)	13(54.2%)	0.33
51-70 years	68(59.1%)	11(45.8%)	
Gender			
Male	62 (53.9%)	13 (54.2%)	0.98
Female	53 (46.1%)	11 (45.8%)	
Obesity			
Yes	45 (39.1%)	14 (58.3%)	0.006
No	70 (60.9%)	10 (41.7%)	
Smoking history			
Yes	88 (76.5%)	06 (25.0%)	<0.001
No	27 (23.5%)	18 (75.0%)	

DISCUSSION

Intracerebral hemorrhage (ICH) is a life-threatening condition and most common risk factor of intracerebral hemorrhage is hypertension followed by smoking. The exact underlying mechanism for this high mortality is unclear but there is theoretical risk that acutely raised blood pressure on expansion of hematoma is the basis of consideration for clinical trials for acute lowering of blood pressure,[10] but it still not clear that whether reduction of blood pressure decreases the growth of hematoma. Recently conducted clinical trials revealed that systolic blood pressure (SBP) can be safely reduced rapidly to less than 140 mmHg among patients with spontaneous ICH whose initial SBP was between 150-220 mmHg.[11,12] Intraventricular extension of hemorrhage (IVH) is particularly a poor prognostic sign, with expected mortality between 50% and 80%.[13,14]

Mean age of the patients admitted with intracerebral hemorrhage was 55 ± 9.5 years. More than three fourth of the patients (82.70%) had systolic hypertension and these results are in line with findings of study conducted by Hatcher S et al. in which 90% of patients with intracerebral hemorrhage has systolic hypertension,[15] and in the study of Hevesi M systolic hypertension was present in 75% of cases.[16]

About two third of the cases who had systolic hypertension were between the age of fifty-one to seventy years. Systolic hypertension was more frequent among male patients admitted with intracerebral hemorrhage as compared to females. History of smoking was present in about 75% of the patients in which systolic hypertension was diagnosed. The obesity was noted in about two third cases of intracerebral hemorrhage in which systolic hypertension is present.

Stratification of systolic hypertension in ICH with age groups, gender, smoking history and obesity revealed that obesity (p=0.006) and smoking history (p<0.001) was found to be significantly associated with systolic hypertension among patients with intracerebral hemorrhage while gender and age were not significantly associated with the systolic hypertension in this study. These findings are similar to the data of Framingham heart study in which it was revealed that there is linear correlation between BMI and systolic blood pressure.[17] The findings of Praso S et al. study also showed that systolic hypertension is more common in obese people as compared to non-obese and obesity is a risk factor of systolic hypertension.[18] Virdis A et al. revealed that there is relationship between cigarrete smoking and hypertension. Smoking stimulates the sympathetic nervous system which in turn increase the blood pressure. Arterial stiffness Persons who are already hypertensive and smoker there are chances of developing severe hypertension among them.[19] Prevention and control of hypertension can be simply achieved by adapting and maintaining healthy lifestyle. Healthy life style means eating healthy diet, regular exercise, maintaining healthy wait, avoidance or quitting the smoking and learning stress management skills.[20, 21]

The main limitations of study were that it was a cross sectional study with small sample size and there was no follow-up for long duration to identify that either this hypertension existed after recovery of the patients or controlled. Other important limitation of the study is that it cannot be ascertained that it was preexisting hypertension which lead to intracerebral hemorrhage or it was intracerebral hemorrhage which caused the systolic hypertension.

Based upon the findings of our study it is recommended that healthy diet with low salt content and fat along with regular exercise to maintain healthy weight, avoidance of smoking and good stress management skills can prevent hypertension. People who are already suffering from high blood pressure, it is important to prevent it from getting worse or causing complications like stroke. Awareness regarding healthy life style, regular medical care and compliance of antihypertensive medications are beneficial to prevent complications in known hypertensive patients.

CONCLUSION

Frequency of Systolic hypertension was high in study population. Obesity and history of smoking was found to be significantly associated with systolic hypertension among patients with intracerebral hemorrhage.

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Original Article

Breast Pathology and Cancer Diagnosis

Breast Pathology and Cancer Diagnosis: A Link Between Hormonal Replacement Therapy and Breast Cancer Risk

Momina Khadija Abbasi[1], Mehreen Fatima[2], Amatul Naval[1], Nabeela Naeem[1], Naila Abrar[3] and Anum Ashfaq[1]

ABSTRACT

Objective: The main objective of this study was to investigate the link between the hormonal replacement therapy and the risk of breast cancer.

Study Design: Case-control study

Place and Duration of Study: This study was conducted at the Department of Pathology, Watin Medical and Dental College, Rawalpindi from January 2019 till January 2020.

Materials and Methods: In this study 700 females, aged form 50 to 70 years were included. All of these females were past menopause and recently got diagnosed with the primary invasive breast carcinoma. All the data of patients was collected from Watin medical and dental college hospital's data base. The women included in this study were divided into four groups: the one that did not have history of hormonal replacement therapy, the one with less than 2 years of HRT, the one with 2 to 5 years of HRT and the one with more than 5 years of HRT. These groups were compared using ANOVA test and chi-square test. To measure the hazard ratio of the prevalence of breast cancer in accordance to the time period of hormonal replacement therapy, Cox proportional hazards regression analysis was used. SAS software was used to analyze all of the data. P value less than 0.05 was considered significant.

Results: Out of 700 women included in this study, 15.1% had used HRT at some point in their life. 0.7% of the women got diagnosed with the breast cancer newly after almost 5 years of follow up. The hazard ratio was 1.35 (95% CI 1.33, 1.40) of breast cancer risk in hormonal replacement therapy users in comparison to the non-users. The results show that the occurrence of breast cancer increases with the increase in the duration of HRT. The women who got HRT for less than 2 years had hazard ratio of 1.09 (95% CI 1.05, 1.23). The women who got HRT for 2 to 5 years had hazard ratio of 1.42 (95% CI 1.36, 1.50) and the one who got this therapy for more than 5 years had hazard ratio of 1.83(95% CI interval 1.74, 1.93). This pattern of increase in the breast cancer incidence with the increase in HRT duration was observed in both, the women who had invasive breast carcinoma and the women who had ductal carcinoma in situ. The breast cancer risk associated with HRT was also more in older women and the women with breasts of high density.

Conclusion: As the results show, the risk of breast cancer do increase with the use of hormonal replacement therapy. As the duration of HRT increased, so did the risk of breast cancer. Risk factors like old age and higher breast density also increased the risk of breast cancer related to HRT.

Key Words: Breast cancer, Hormonal replacement therapy, breast carcinoma.

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INTRODUCTION

Hormone Replacement Therapy (HRT), is a therapy done to alleviate the symptoms of menopause. After menopause the women are no longer able to reproduce hence it marks the end of the reproduction.

The use of HRT increased rapidly back in the days when it was approved for the prevention of osteoporosis in postmenopausal women [1]. But later its use decreased due to the publications that reported its (HRT) association with increased risk of breast cancer[1,2]. Since then, many studies have reported the link between HRT and increased breast cancer incidence [3, 13]. Nonetheless, whether all postmenstrual women are at increased risk of breast cancer due to HRT or not, is not clear yet.

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The symptoms that this therapy alleviate, other than preventing osteoporosis, are night sweats, vaginal dryness, hot flushes, reduced sex drive and mood swings [11].

Other than increasing the risk of breast cancer, HRT also increases the risk of ovary cancer, stroke, endometrium cancer and thrombus [12].

Most studies that investigated the link between the hormonal replacement therapy and the risk of breast cancer were conducted in the western countries [4, 13]. But the dynamic of breast cancer is very different in western countries and in Asian countries. The age at which the incidence of breast cancer is highest differs in both regions. In Asian countries this age is between 40 to 50 years while in western countries this age is 60 to 70 years [5, 6]. The type of most common breast cancer are also different in both the regions. For instance the most common type of breast cancer in Korea is estrogen receptor negative[7].

There are some risk factors contributing to the HRT related breast cancer risk. Obesity is one of those. Postmenstrual women are at increased risk of breast cancer if they are obese. Another one of those risk factor is breast density[8]. The history of breastfeeding and the use of oral contraceptives impacts the prevalence of breast cancer. They also effect the use of HRT[9, 10].

The decision to use the hormonal replacement therapy depends on its risk to benefit ratio of the individual case. In this study, we investigated the link between the hormonal replacement therapy and the risk of breast cancer.

MATERIALS AND METHODS

In this study 700 females, aged between 50 to 70 were included. All of these females were post menopause and recently got diagnosed with the primary invasive breast carcinoma. These patients had their cancer diagnosed between Jan 2019 and Jan 2020. All the data of patients included in this study was collected from Watin medical college hospital's database. The women included in this study were divided into four groups: the one that did not have any history of hormonal replacement therapy, the one with less than 2 years of HRT, the one with 2 to 5 years of HRT use and the one with more than 5 years of HRT.

The data collected included age of menopause, history of oral contraceptive, history of hormonal replacement therapy, history of breastfeeding, and diagnosis of any previous benign breast lumps.

The four groups of women based on the duration of hormonal replacement therapy were compared using ANOVA test and chi-square test. To measure the hazard ratio of the prevalence of breast cancer in accordance to the time period of hormonal replacement therapy, Cox proportional hazards regression analysis was used. Age, history of oral contraceptives, breastfeeding history and breast density were adjusted. SAS software was used to analyze all of the data. P value less than 0.05 was considered significant.

RESULTS

In this study, out of 700 postmenopausal 15.1% had at some point in their lives used HRT. The results show that out of total, 85% of the participants had no history of HRT. 8.5% off the women used HRT for less than 2 years, 3.6% used it for 2 to 5 years and 3% of the women used HRT for more than 5 years. These results are given in Table 1.

Women who never opted for HRT had more fatty breasts, history of breastfeeding and had no history of benign breast lumps. On the other hand, the women who took oral contraceptives for longer duration and gave no births had linear relation with the duration of HRT.

0.7% of the women got diagnosed with the breast cancer newly after almost 5 years of follow up. 93% of these women had invasive breast carcinoma while the 7% had ductal carcinoma in situ. The hazard ratio was 1.35 (95% CI 1.33, 1.40) of breast cancer risk in hormonal replacement therapy users in comparison to the non-users.

The multivariate analysis of breast cancer incidence according to HRT duration is shown in Table 2. These results show that the occurrence of breast cancer increases with the increase in the duration of HRT. The women who got HRT for less than 2 years had hazard ratio of 1.09 (95% CI 1.05, 1.23). The women who got HRT for 2 to 5 years had hazard ratio of 1.42 (95% CI 1.36, 1.50) and the one who got this therapy for more than 5 years had hazard ratio of 1.83(95% CI 1.74, 1.93). This pattern of increase in the breast cancer incidence with the increase in HRT duration was observed in both the women who had invasive breast carcinoma and the women who had ductal carcinoma in situ.

The link between the risk of breast cancer and HRT according to risk factors of breast cancer is shown in Table 3. The results show that the women of age older than 66 were at higher risk of HRT related breast cancer with the P interaction value being less than 0.0001. The association also varied with the breast density. The women with higher breast density i.e. 51 – 75 % breast density, hazard ratio 1.38 (95 % CI 1.29, 1.52), 76 – 100 % breast density, hazard ratio 1.39 (95 % CI 1.33, 1.43), had a higher breast cancer risk then the women of lesser breast density i.e. 25 – 50 % breast density, hazard ratio 1.21 (95 % CI 1.22, 1.34) (P interaction value being 0. 0354). The breast cancer risk associated with HRT was not influenced by number of births, oral contraceptive history, personal history of benign breast lumps and breast feeding history.

Table No.1: Characteristics of participants according to Hormone Replacement Therapy

		Non- users of HRT%	HRT use <2 years%	HRT use 2<5 years%	HRT use ≥5 years%
Total		85	8.5	3.6	3
Age in years	50	4.3	7	4.1	2.3
	50-59	41.5	52	50	34
	60-69	32	33.5	39	53
	70	20	7.5	7.1	11
Number of births	0	2.2	3	3	4
	>1	91	87.2	87	87.2
Oral contraceptive history	None	84	73.5	71	70.1
	<1 year	8	15	12	11.5
	>1 year	5.3	9	12	13.1
Breastfeeding history	None	8	10.8	11.5	11.3
	<6 months	8	11	10.5	9
	>1 year	70	60	57	64
	No	86	90	90.5	89.3
Breast density	<25%	40	29	25.3	25
	25–50%	32.2	35.4	35.8	36.3
	51–75%	22	29	31	31.2
	76–100%	6.3	8.6	9.2	8.9
Personal history of benign breast lumps	Yes	6	10.2	11	11.3
	No	88	85.2	84.4	84.2

Table No.2: Hazard ratios and 95% confidence intervals of the risk of breast cancer according to HRT duration and invasive breast carcinoma and ductal carcinoma in situ

	HRT duration	Total percentage	Breast cancer%	Incidence per person	Hazard ratio (95% CI)
Total	None	85	0.55	1.113	1
	All HRT users	15.1	0.79	1.629	1.35 (1.33, 1.40)
	HRT use <2 years	8.5	0.68	1.397	1.09 (1.05, 1.23)
	HRT use 2–<5 years	3.6	0.83	1.738	1.42 (1.36, 1.50)
	HRT use >5 years	3	1.09	2.239	1.83(1.74, 1.93)
Invasive breast carcinoma	None	85	0.51	1.055	1
	All HRT users	15.1	0.73	1.582	1.35 (1.32, 1.40)
	HRT use <2 years	8.5	0.63	1.398	1.09 (1.15, 1.24)
	HRT use 2–<5 years	3.6	0.78	1.579	1.41 (1.36, 1.50)
	HRT use >5 years	3	0.99	2.035	1.79 (1.60, 1.89)
Ductal carcinoma in situ	None	85	0.04	0.089	1
	All HRT users	15.1	0.06	0.263	1.45 (1.30, 1.50)
	HRT use <2 years	8.5	0.05	0.089	1.07 (0.93, 1.34)
	HRT use 2–<5 years	3.6	0.06	0.239	1.45 (1.22, 1.78)
	HRT use >5 years	3	0.10	0.306	2.33 (1.96, 2.78)

Table No.3: Link between the risk of breast cancer and Hormone Replacement Therapy according to risk factors of breast cancer

Subgroup		Hazard ratio (95% CI)	P value for interaction
Age	<55	1.22 (1.26, 1.38)	<0.0001
	>55–65	1.19 (1.24, 1.35)	
	>66	1.34 (1.35, 1.54)	
Number of births	0	1.31 (1.05, 1.49)	0.4725
	>1	1.37 (1.33, 1.47)	
Oral contraceptive history	No	1.30 (1.35, 1.42)	0.7856

	<1 year	1.05 (0.96, 1.25)	
	>1 year	1.43 (1.30, 1.59)	
	Unknown	1.42 (1.26, 1.64)	
Personal history of benign breast lumps	No	1.34 (1.20, 1.39)	0.2124
	Yes	1.08 (1.03, 1.28)	
Breastfeeding history	No	1.44 (1.34, 1.55)	0.2428
	Yes	1.35 (1.30, 1.38)	
Breast density	<25%	1.32 (1.25, 1.42)	0.0354
	25–50%	1.21 (1.22, 1.34)	
	51–75%	1.38 (1.29, 1.52)	
	76–100%	1.39 (1.33, 1.43)	

DISCUSSION

In our study, the hazard ratio of HRT users was 1.35, with the incidence per person being 1.63. These results are similar to another meta-analysis study published recently [4]. This study showed high risk of breast cancer in both, current and past users of HRT, with the relative risk of 1.17 95% confidence interval 1.10 – 1.26. The results of this study are accordant with our results, the breast cancer risk was almost 7.9% in women who got HRT for less than 2 years and 72.2% in women who used it for more than 5 years. These results correlate with our results that say that the risk of breast cancer increase with the increase in the duration of HRT use.

HRT use increased the risk of invasive breast carcinoma and ductal carcinoma in situ in our study. Even with a small ratio but the risk of DCIS increased consistently with HRT duration. Some other studies show different results regarding DCIS and HRT association[14,15]. One of the study reported that the increase in DCIS risk related to HRT use was not significant[14].

There are not many studies on the risk of breast cancer related to HRT use and these studies show varying results[16,17]. One of the recent study showed that compared to Caucasians (HR 1.34), the Asian population (HR 1.84) had a higher risk of breast cancer due to HRT use [18].

In our study, women with dense breasts had a higher risk of HRT related breast cancer. Few studies reported that obesity decreased the link between HRT use and breast cancer risk[4, 19].

Small sample size is one of the limitation of this study. Another limitation is not separating the effects of estrogen-progesterone replacement therapy and estrogen only replacement therapy. This study also lacks the information about the subtype of cancer.

The results of this study could be helpful while deciding on the hormone replacement therapy. Also, more research should be done on this topic to eliminate the limitations of this study and have more clear views about the relation of breast cancer and HRT use.

CONCLUSION

As the results show, the risk of breast cancer do increase with the use of hormonal re-placement therapy. As the duration of HRT increased, so did the risk of breast cancer. Risk factors like old age and higher breast density also increased the risk of breast cancer related to HRT.

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Original Article

Long Term Effects of Mulligan Mobilization with Movement Versus Macquarie Injury Management Group on Function and Pain of Knee Osteoarthritis

Saimoon Rafi[1], Maryam Shabbir[2], Misbah Waris[1], Sidra Faisal[1], Qurat-ul-Ain[2] and Ahsen Ilyas[2]

ABSTRACT

Objective: To compare the long term effects of Mulligan Mobilization with Movement versus Macquarie Injury Management Group on pain and function of knee osteoarthritis.

Study Design: Randomized Controlled Trial study

Place and Duration of Study: This study was conducted at the Revival Physiotherapy Center, Lahore in last 06 months.

Materials and Methods: Through non-probability convenient sampling technique 26 diagnosed patients with osteoarthritis were included in the study. Subjects were randomly divided into two groups by using flip coin method. Patients in Group 1 received MIMG with conventional physical therapy and in Group 2 received MWM with conventional physical therapy. Visual analogue Scale, Non modified WOMAC were used as outcome measuring tools. Readings were taken pretreatment ad at the end of 6th week. Statistical analysis was done by SPSS 21.0.

Results: There were statistically significant difference in results of VAS in between group analysis. Pain decreased to greater extent in post treatment of MMG with routine physical therapy group with mean value 8.89±2.37 as compared to 7.16±1.17 in MWM with routine physical therapy group. WOMAC Score increased to greater extent in post treatment of MIMG with routine physical therapy group with mean value 59.78±13.59 as compared to MWM with routine physical therapy 71.89±12.40. VAS score increased to greater extent in post treatment of mobilization with movement and with routine physical therapy group with mean value 17.84±3.71 as compared to routine physical therapy group 18.00±4.16.

Conclusion: It concluded that Macquarie Injury Management Group has statistically significant results as compared to Mulligan Mobilization with Movement on pain and function of knee osteoarthritis.

Key Words: Knee Pain; Movement with Mobilization; Routine Physical Therapy; Osteoarthritis; Visual analogue scale

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INTRODUCTION

Knee osteoarthritis is basically a joint inflammation that is extremely prevalent with a substantial socioeconomic stress.[1] It is a common source of pain and disability in the elder people. OA of the knee is mainly affect the synovium sheet, the bones and the cartilage in the joint.[2] The synovium is the soft sheet that defences the joint.

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Similarly, Cartilage is the smooth tissue that works as a pillow and is responsible for a smooth surface of the joint. So, when these main parts of the joint break down due to inflammation, they do not protect the joint and then bone damage take place.[3] Osteoarthritis is generally thought to be the result of local mechanical factors acting as part of systemic susceptibility.[4] The most common form of osteoarthritis of the lower limbs is osteoarthritis of the knee.[5] ≥ 60 years of age had symptomatic radiographic osteoarthritis of the knee. [6] The development of the condition OA in knee usually begins from the antero-medial division of the knee joint leading to fibrillation, sclerosis, burning, and osteophyte formation.[7] The Kellegren and Lawomen method is one of the proven methods in which OA is classified into five brands based on the degree of destruction in radiographic images.[8] Grade 0 is considered as normal knee. The next one is grade 01, in this stage of osteoarthritis very little spurs of bone are present on the bone.[9] The grade two of knee OA is the

"mild" condition. Patients feel pain and discomfort after exertion and long sitting.[10] Third grade is the "moderate" stage in which cartilage of the bone showed a little damage and synovial fluid of the joint is also insuffient.[11,12] In this stage patients faced pain and limitations during kneeling, walking, running and sitting. Similarly stage four in which bones and cartilage are totally in the damaged condition. Persons with this grade experienced high grade pain, swelling around the joint and restrictions in daily life activities.[13,14] Mulligan techniques of Mobilization With Movement is an innovative method of joint movement with dynamic movement, consisting of a therapist that combines dynamic movement with the power of pain-free access.[15](1) The Macquarie Injury Management Group (MIMG) Knee Control is an innovative and non-invasive method of manual therapy developed by Dr. Henry Pollard.[16] The MIMG protocol on the knee is a methodology using chiropractic methods that consists of two methods that are soft tissue release and myofascial manipulation. (9) These methods are new methods for those physiotherapists who wanted to deal with pain and prioritize patients. [17] The aim of this study is to compare the long-term effectiveness of MWM versus MIMG on pain and function in OA knee

Matheus G. Gomes et.al 2020, conducted a study to find out the short term effects of MWM on function and pain. After the treatment and evaluation, the study concluded that MWM protocol was significantly reduced the pain and improved function of the knee.[18] Hani A. AlKhawaja et.al (2018) conducted a study to look into the effect of MWM on pain and functions in patients of knee osteoarthritis there was comparison of MWM with the sham MWM. In the conclusion, this study found that MWM delivered more positive and effective results as compared to sham MWM over the pain and function of knee osteoarthritis.[19] Swathi et. al 2015, in a study, compared the short term effectiveness of MIMIG and MWM protocol on pain and function in the osteoarthritis of knee. In the results the study showed that both groups were affective in the treatment of knee OA.[20]

MATERIALS AND METHODS

It was a registered Randomized Controlled Trial (NCT04995250).In which Non probability convenience sampling technique was used. 26 Sample size was calculated through epitool software. Data was collected from Revival Rehab and Medical Complex. According to grade 1 and 2 of Kelly-green and Lawrence participants were included in the study, age range 50 and above of both gender with symptoms of less than 30 minutes of morning stiffness, crepitus on active motion, tenderness and No palpable warmth of synovium were included in the study. Those Patients were excluded who presented with any surgery done in last 6 months and those with any metal implants in lower extremity, any infectious or neoplastic disease, Post-Surgical knee stiffness or Secondary knee OA with any peripheral vascular disease were also excluded from the study. Randomization of participants was done by using flip coin method.

Group A Participants in Group A were treated with MIMG (soft tissue mobilization) along with base line treatment that included 10 min Hot pack, knee Isometrics and Stretching. For the application of MIMG patient lies supine with knee in extension, therapist places both hands on the knee and gently apply soft tissue release for 2 to 3 minutes. **Group B** Participants in Group B were treated by Mulligan Mobilization with movement with base line treatment that included 10 min Hot pack, knee Isometrics and Stretching for the application of MWM patient lies supine with knee flexion of 30 degrees, therapist put right hand below the knee and left one above the knee. Apply the lateral glide on the joint. This technique was applied for 3 times. All patients received 18 treatment sessions over a period of 6-weeks. Follow up value was taken after 18 sessions. Western Ontario and McMaster Universities Arthritis. (WOMAC), Visual Analogue Scale and Goniometer were used as outcome measuring tools. The data was analyzed using SPSS version 21. Normality of data was checked by using Shapiro-Wilk test. Non-Parametric tests (Kruskul Willis Test, Fried-men Anova) were used while comparing variables having non-significant p values ($p>0.05$). Frequency tables, bar charts and pie charts were used to show summary of group measurements measured over time.

RESULTS

To test the normality Shapro Wilk test was used. In the statistics analysis VAS with the p value 0.002 showed significant results and in WOMAC scale with the value 0.086. So non-parametric tests were applied. Descriptive statistics were calculated.

Table No.1: With-In Group Compression (Friedman's Anova)

		Mean	**S.D**
Group A	Age of Participants	56.0769	4.05096
	Gender	1.46	.519
	BMI	2.3077	.94733
Group B	Age of Participants	56.6923	4.73259
	Gender	1.54	.519
	BMI	2.3077	.94733

The comparison of pre-treatment and post-treatment WOMAC and VAS values between two groups was done using Kruskal Willis test. Analysis revealed that there was statistically significant difference in mean and standard deviation values of both groups. MIMG

with routine physical therapy group showed greater reduction in WOMAC and VAS score with mean value of 14.00±7.00 as compared to routine physical therapy group with mean value of 13.00±20.00.

Table No.2: Between Group Comparison (Kruskul Wali's Test)

	Mean	Standard deviation	Chi - square	Df	Asymp. Sig. P-value
Womac (pre)	3.96	.196	74.004	3	0.001
Womac (follow up 1)	3.35	.485			
Womac (follow up 2)	2.50	.510			
Womac (post)	1.31	.788			
Vas (pre)	8.50	.510	78.004	3	0.001
Vas (follow up 1)	6.54	.508			
Vas (follow up 2)	4.50	1.175			
Vas (post)	1.96	1.612			

Table No.3: The comparison of pre-treatment and post-treatment WOMAC and VAS values

	Group of participants	Mean rank	Chi-square	Df	Asym sig. P-value
Womac (pre)	Group a	14.00	1.000	1	0.317
	Group b	13.00			
Womac (follow up 1)	Group a	9.00	13.235	1	0.001
	Group b	18.00			
Womac (follow up 2)	Group a	7.00	25.000	1	0.00
	Group b	20.00			
Womac (post)	Group a	7.00	22.354	1	0.00
	Group b	20.00			
Vas (pre)	Group a	14.00	.148	1	0.701
	Group b	13.00			
Vas (follow up 1)	Group a	13.50	000	1	0.003
	Group b	13.50			
Vas (follow up 2)	Group a	7.00	20.024	1	0.001
	Group b	20.00			
Vas (post)	Group a	7.00	20.02	1	0.00
	Group b	20.00			

The comparison of pre-treatment and post-treatment WOMAC and VAS values with in groups was done using Friedman test. Analysis revealed that there was statistically significant difference in mean and standard deviation values of within groups. MIMG with routine physical therapy group showed greater reduction in WOMAC scale score with the significant value 0.001.

DISCUSSION

The aim of this study was to compare and find the long term effects of two non-invasive treatment techniques which are MIMG and MWM Mobilization for the management of chronic knee osteoarthritis. While analyzing the outcomes measures of this study, it was observed that significant improvement was found in both groups, but Macquarie Injury Management group showed improved results in terms of long term pain and functional outcome than Mulligan Mobilization with Movement. A study was done in which Mulligan's MWM and MIMG protocol were used to find its short term effectiveness in treating OA knee. The comparison within groups was significant but between groups was not statistically significant.[1] P-value was less than 0.05 for pre & post treatment value but it was non-significant when between groups analysis was performed. Current study showed contrast findings in relative to this study, p-value was less than 0.05 on between group analysis. MIMG protocol showed better results in improvement of pain and range. With-in group analysis both groups showed significant results.

A study was conducted to find out the efficacy of Mulligan Mobilization with Movement versus Maitland mobilization in females with osteoarthritis of knee. The outcome measures were WOMAC, goniometer, and VAS. The p value was <0.05. Hence, they concluded that Mulligan mobilization showed more efficacy as compared to Maitland and routine physical therapy in pain and function of knee osteoarthritis. [21]

Another study in agreement was conducted to find out the impact of MWM on pain and function of knee osteoarthritis. VAS and WOMAC scale was used to assess pain and range of motion at knee. The study elicited that the treatment of patients with knee OA with the Mulligan Mobilization was effective as compare to conventional treatment. (36) Current study also showed that P-value reduced from 0.317 to 0.00 from 1st assessment to 4th assessment on between group comparisons. Mean value on VAS value was reduced with time that showed improvement in pain with follow up.

A study was conducted to investigate the immediate effects of Mulligan Mobilization with Movement on pain and functional mobility in knee osteoarthritis. This study proved that the immediate effects of Mulligan mobilization were highly significant in the treatment of knee pain. On the comparison the treatment group demonstrated good outcomes with significant value p<.05. To conclude they reported that Mulligan Mobilization with Movement showed improvement in pain relief and functional mobility. [22]

Current study showed better results in MIMG group where mean rank value at WOMAC scale was gradually reduced from 14 to 7 while significant improvement was also seen in mean value of VAS. So

according to current study MIMG showed more significant results as P value was less than 0.05 on between group analysis.

CONCLUSION

The study concluded that Mulligan mobilization showed better results after the 1st follow up but in long term follow up MIMG showed better results. Hence, it was concluded that MIMG showed highly significant in long term effects as compared to the Mulligan Mobilization with movement on pain and function of knee osteoarthritis.

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Original Article

Management of Cervicogenic Headache

Comparison of Sub-Occipital Myofascial Release and Cervical Mobilization in managing Cervicogenic Headache

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ABSTRACT

Objective: To determine the effects of sub-occipital myofascial release in patients with cervicogenic headache.
Study Design: Randomized Clinical Trial study
Place and Duration of Study: This study was conducted at the conducted at Lateef Clinic Nespack society and Al-Kareem Aman Health Care Center, Lahore from July 2020 to February 2021.
Materials and Methods: Non-probability convenient sampling technique was used, 22 patients were included and were randomized through sealed envelope method in two groups. Group A was given sub-occipital myofascial release along with conventional therapy while group B was given cervical mobilization and conventional therapy. Participants of both gender with age range 20 to 50 years with Neck pain referring the unilateral pain to the sub-occipital region and head were included in the study. Patient who do not tolerate the cranio-cervical Flexion rotation test were excluded from the study. Neck Disability Index, Pain Numerical Rating Scale, and goniometer were outcome measuring tools. The data was analyzed using SPSS 21.
Results: The descriptive statistics regarding age in myofascial release showed that mean and standard deviation found to be 30.63±4.90 while age in control group found to be that of 33.18±3.62. NDI of Group A pre-treatment 21.72 ± 2.8 and post treatment 6.27 ± 1.8. Group B 23.09 ± 4.4 and post treatment 11.00 ± 3.3 and P value was less than 0.05. PNRS showed same result with significant p-value. Cervical ranges were also improved more in Group A.
Conclusion: The study concluded that both Sub-occipital myofascial release and cervical mobilization were effective in reducing pain of cervicogenic headache. The results were statistically significant for both groups, though the sub-occipital myofascial release group found better than conservative group in terms of mentioned outcome measures on the basis of mean differences.
Key Words: Cervicogenic headache (CGH), Neck disability index (NDI), Pain Numerical Rating Scale (PNRS)

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INTRODUCTION

The secondary form of headache that arises from the upper cervical spine and atlanto-occipital joint is cervicogenic headache (CGH).[1,2] This headache is a recurrent and sometimes misdiagnosed source of chronic headache[3].

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The discomfort is generally unilateral most of the times and is certainly not just a neck pain rather it presents also with pain in temporal, frontal, ocular regions and sometimes face as well. The headache does not alter the sides, but often certain patients can sometimes feel it on the opposite side when serious[4]. Cervicogenic headache is unilateral headache. Some patients present with continuous basal headache. Its course is fluctuating and long term, with many remissions and exacerbations.[5] Convergence of trigeminal nerve afferents with the afferents of the upper three cervical spinal nerves is the anatomical cause of cervicogenic headache[6]. Several studies indicate that the fusion of nerves that innervate the head with those that innervate the cervical spine is not only between trigeminal and cervical afferents, as other nerves such as the larger occipital nerve, the lower occipital nerve, and the larger auricular nerve innervate the head.[6-8] The potential causes of cervicogenic headache lie in the area innervated by C1-C3 spinal nerves, upper cervical muscles, sub-occipital muscles, C2-C3 discs, upper cervical synovial joints,

vertebral and internal carotid arteries, upper cervical spine, posterior cranial fossa and Dura matter.[1] Diagnosis of cervicogenic headache depends on the detailed history, manual examination and assessment of nervous system. After the diagnostic block test disappearance of headache shows that the source of this pain is cervical spine.[2,3] A lot of work has been done on cervicogenic headache but very few studies Support the effects of sub-occipital myofascial release technique combined with other Techniques but no study has shown evidence on this technique as a single and primary Intervention in patients with cervicogenic headache. An uncontrolled experimental study was conducted on 9 patients from different physiotherapy clinics. These patients were suffering from cervicogenic headache. They were treated with manual therapy and 10 physiotherapy interventions. Neck disability index and visual analogue scale was used as measurement tools for pain. The study found that this multimodal approach was quite helpful to reduce symptoms and cervical disability.[3] Dr. L.Rameshor conducted a comparative study in 2014.He did comparison of the effectiveness of myofascial release with positional release therapy in patients with tension type headache. There were 28 subjects who fulfilled the criteria and participated in the study. Both the techniques proved to be effective in the study. The study found that the myofascial release technique is a good treatment choice to decrease pain as well as disability in patients having sub-occipital muscle trigger point in TTH.[4] Park et al. in 2019 conducted a study. The aim of this study was to find out an effective technique of manual therapy for the patients that are suffering from cervicogenic headache.30subjects participated in the study. This study showed that neck stabilizing exercises were proved to be very effective in reducing the tone of cervical muscles and stiffness which will eventually improve posture.[5,6] Mohammad Hosseinifar et al. conducted a randomized control study in 2017 to examine the effects of exercise therapy and neck myofascial release techniques on pain and disability in people suffering from chronic TTH.30 female subjects have participated in the study who were having tension type headache. Subjects were randomly allocated in 2 groups. The results showed that myofascial release technique as well as exercise therapy has substantial effect on patients suffering from TTH.[7,8]

MATERIALS AND METHODS

It was a Randomized Clinical Trial (NCT04816448). 22 Sample Size was recruited by Non-probability convenient sampling technique and randomization was done by Lottery method. Study was conducted at Lateef Clinic Nespack society and Al-Kareem Aman Health Care Center, Lahore. Participants of both Gender with Age between 20 to 50 Years presented with Neck pain referring the unilateral pain to the sub-occipital region and Headache intensifying upon manual pressure to upper cervical joints and muscles were included in the study. Also patients with the cranio-cervical Flexion rotation exam, neck pain and ipsilateral headache and restriction of C1 and C2 rotation were also a part of study. Participants were excluded in case of Tension headache, if the patient not tolerate the cranio-cervical Flexion rotation test and those Patients who presented with autonomic symptoms like visual disturbance, vertigo, dizziness, Headache other than cervical origins and Clinically diagnosed as case of cervical radiculopathy or myelopathy.

Group A treated by Sub-occipital myofascial release with baseline treatment (Hot pack for 10 minutes, TENS for 10 minutes, Neck isometrics and stretching). For the application of the technique, the patient position is supine lying with the head fully supported on therapist's hands and therapist places 3 middle fingers just inferior to the nuchal line, lifts the fingers tips towards the ceiling while resting the head on the table and then therapist applied a gentle upward pull. This procedure done for 2 to 3 minutes and 5 to 7 repetitions, 3 sessions per week on alternate days were given for 6 weeks. **Group B** treated by cervical mobilization (SNAG technique) with baseline treatment. For cervical mobilization the patient's position was sitting on a chair in the erect posture. The therapist handled C2 spinous process with the middle phalanx of one hand. With the other hand, he performed ventral glide asked the patient to move neck in all directions (Flexion, Extension, Side bending and rotation) one by one and then slowly move the neck back to its starting position while the therapist maintained the ventral glide. NDI, PNRS and goniometer were outcome measuring tools. Pre-treatment and at 6th week post treatment readings were taken. Data was analyzed by using SPSS version 21.

RESULTS

Out of 22 participants 7 were males and 15 were females.

Table No.1: Gender detail with frequency and percentage

Group	Gender	Frequency	Percent
Group A	Male	3	27.3
	Female	8	72.7
	Total	11	100.0
Group B	Male	4	36.4
	Female	7	63.6
	Total	11	100.0

NDI shows -4.7 mean difference and P value was 0.01 while PNRS 0.001 p value at post-treatment reading. Cervical ranges including flexion, extension, side flexion (left & right) and cervical rotations shows significant p-value on independent-t test analysis.

Table No.2: Between Group Analysis

	Group	Mean	Std. Deviation	Mean Difference	P Value
Pre-Interventional Neck Disability Index	Group A	21.7273	2.86674	-1.36364	.400
	Group B	23.0909	4.41485		
Post-Interventional Neck Disability Index	Group A	6.2727	1.84883	-4.72727	.001
	Group B	11.0000	3.37639		
Pre-Interventional PNRS	Group A	6.9091	.83121	-.54545	.110
	Group B	7.4545	.68755		
Post-Interventional PNRS	Group A	.8182	.60302	-1.90909	.000
	Group B	2.7273	.90453		
Pre-Interventional Cervical Flexion	Group A	63.0909	2.11918	.81818	.445
	Group B	62.2727	2.76011		
Post-Interventional Cervical Flexion	Group A	84.4545	2.01810	5.09091	.000
	Group B	79.3636	3.32484		
Pre-Interventional Cervical Extension	Group A	50.1818	1.16775	-1.09091	.121
	Group B	51.2727	1.90215		
Post-Interventional Cervical Extension	Group A	70.9091	1.30035	2.54545	.011
	Group B	68.3636	2.69343		
Pre-Interventional Cervical Right Side Flexion	Group A	26.0000	1.54919	.81818	.255
	Group B	25.1818	1.72152		
Post-Interventional Cervical Right Side Flexion	Group A	39.2727	3.13340	3.90909	.003
	Group B	35.3636	2.20330		
Pre-Interventional Cervical Left Side Flexion	Group A	27.0000	2.00000	-.27273	.793
	Group B	27.2727	2.76011		
Post-Interventional Cervical Left Side Flexion	Group A	41.0000	2.52982	3.54545	.011
	Group B	37.4545	3.35749		
Pre-Interventional Right Cervical Rotation	Group A	59.2727	2.49363	1.81818	.083
	Group B	57.4545	2.16165		.
Post-Interventional Right Cervical Rotation	Group A	80.7273	2.72363	6.18182	.000
	Group B	74.5455	2.42337		

Table No.3: With in Group Analysis

		Group A		Group B	
		Mean ±	P-Value	Mean ±	P-Value
Neck Disability Index	Pre-Treatment	21.7±2.8	<0.001	23.1±4.4	<0.001
	Post-Treatment	6.27±1.8		11±3.3	
PNRS	Pre-Treatment	6.9±0.8	<0.001	7.4±0.6	<0.001
	Post-Treatment	0.8±0.6		2.7±0.9	
Cervical Flexion	Pre-Treatment	63.0±2.1	<0.001	62.2±2.7	<0.001
	Post-Treatment	84.1±2.0		79.3±3.3	
Cervical Extension	Pre-Treatment	50.1±1.6	<0.001	51.2±1.9	<0.001
	Post-Treatment	70.9±1.3		68.3±2.6	
Cervical right side bending	Pre-Treatment	26±1.5	<0.001	25.1±1.7	<0.001
	Post-Treatment	39.2±3.1		35.3±2.2	
Cervical left side bending	Pre-Treatment	27±2.0	<0.001	27.2±2.7	<0.001
	Post-Treatment	41±2.5		37.4±3.3	
Cervical right rotation	Pre-Treatment	59.2±2.4	<0.001	57.4±2.1	<0.001
	Post-Treatment	80.7±2.7		74.5±2.4	
Cervical left rotation	Pre-Treatment	60.1±2.8	<0.001	59.6±2.4	<0.001
	Post-Treatment	82.1±3.2		77.1±2.6	

Comparison of PNRS mean scores Group A at Baseline, Post was found to be (6.9±0.8), (0.8±0.6) respectively having statistically significance (p-value <0.001) within the Group B NDI value at baseline Post was found to be 23.1±4.4 ,11±3.3 respectively having statistically significance (p-value <0.001).

DISCUSSION

The demographics were quite different from previously published studies in other parts of world where mostly have been reported almost equal distribution of cervicogenic headache in male and females. In current study, however, females were dominating in number over males. This is likely due to the cultural impact. Furthermore, the biological correlation is also very important where females are more likely to be affected by cervicogenic headache as compared to male. Nevertheless, statistics showed that current study had more female than male patients but almost with equal ratio in both groups.[7,9] This improvement has been indicated by decrease in disability index score.

Myofascial release has also performed significantly better in terms of improvement in pain as compared to that of headaches snag. It has been noticed that myofascial release has consistently improved pain at post interventional assessment. Ranges have well responded to myofascial release technique and it was seen that all ranges such as cervical flexion and extension, left and right-side flexion, left and right rotation have improved in myofascial release technique group at post-operative assessments.[10,11]

The physiological effects of myofascial release technique include reduction of pain sensitization and improved muscle performance by increasing flexibility underline musculature. In another past study conducted by Kvarstein G et in 2019, it was seen that these effects such as elongation of sarcomere and reduction of pain has been achieved by corticosteroids steroids injections and other such treatments.[12] In current studies myofascial release techniques have been used to address these impairments following cervicogenic headache and remarkable improvements were found in pain and cervical ranges. P value was less than 0.05 on NDI and PNRS.

Park SK conducted a study in 2017 and it was seen that by using stretching in comparison to massage and myofascial techniques the latter was two times more effective than traditional stretching techniques.[13] These findings are directly related to the findings of current study where my facial release technique has been found significantly effective in improving range of motion in cervical region. Crvical flexion, extension, right 7left side flexion and right & left side bending showed significant improvement in ranges in Myofascial release group.

In another study a 12-week program was given to patients with chronic neck pain including cervicogenic headache. The main intervention in this study was therapeutic exercises in comparison to myofascial release techniques. Myofascial technique was also combined with trigger point therapy. It was seen that my facial technique was very effective in increasing motor performance by reduction of pain and sensitization of cervical structures, however therefore sound no apparent role of my facial technique in improving muscle fibres size and its strength as per shown by Olivier B in 2018.[14] Current study showed same results, NDI score and NPRS score significantly reduced and cervical ranges were remarkably increased in myofascial release group. P-value was found less than 0.05

In a study, Barrows and Jessica found that cervical mobilization is more effective in pain alleviation and in improving motion range.[15] In current study sub-occipital myofascial release showed significant results in improving cervicogenic headache.

In short myofascial techniques have been significantly effective in improving neck disability e generalized pain and cervical range of motion such as cervical flexion and extension cervical right and left side flexion and cervical right and left rotation. Further studies are warranted to investigate role of my facial techniques in improving for change in muscle fibers size and strength**.**

CONCLUSION

The findings concluded that sub-occipital myofascial release was significantly effective in improving neck disability, pain and ranges of cervical motion in patients with cervicogenic headache.

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

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Original Article

Congenital Absence of Palmaris Longus Muscle Frequency in Hayatabad Medical Complex, Peshawar

Congenital Absence of Palmaris Longus Muscle

Zainab Rehman[1], Shazia Iftikhar[1], Shabnum Aamir[1], Falak Naz[1], Shagufta Sultana[1] and Parkha Rehman[2]

ABSTRACT

Objective: The objective of the study was to determine the absence of Palmaris Longus muscle in patients presenting at Hayatabad medical complex, Peshawar.
Study Design: Descriptive Cross Sectional study.
Place and Duration of Study: This study was conducted at the Hayatabad Medical Complex, Peshawar for a period of six months from January 2019 to June 2019.
Materials and Methods: A total of 432 cases which included male and female both of all ages were included in the study. Schaeffer Test was performed on them to find out the absence of Palmaris longus tendon.
Results: Out of 432 subjects, 202 females and 230 males, 70 (16.2%) were found to have absence of Palmaris longus muscle. Out of this 58 (82.8%) were female and 12 (17.1%) were male.
Conclusion: The findings of this study highlight the variation in the presence of Palmaris longus muscle.
Key Words: Palmaris Longus, vestigial, tendon graft, agenesis

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INTRODUCTION

In humans Palmaris longus muscle is one of the most variant muscles[1]. It has no active function and is generally accepted as a vestigial muscle. Its absence does not cause any deformity but it has great significance in tendon transfer during reconstructive plastic surgeries as well as hand procedures[2,3]. It is also used as tendon grafts in otolaryngology and ophthalmology (e.g. facial paralysis treatment, restoration of lip and chin defect, correction of ptosis, augmentation of lips, etc.

Palmaris longus muscle is a thin and spindle shaped muscle belonging to the superficial flexor muscles of the forearm which has a short belly and a long tendon. It lies in the volar compartment of the forearm, arising from the medial epicondyle of the humerus and its tendon runs between the flexor carpi radialis and flexor carpi ulnaris[4].

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It also lies anterior to the transverse carpal ligament and cross the flexor retinaculum superiorly. It inserts into the palmar aponeurosis. Its nerve supply is from the median nerve and blood is supplied by the ulnar artery. It helps to flex the wrist, abduct the thumb and anchor the fascia but these functions are negligible and its absence does not cause any handicap[5-7].

Many studies have been conducted to find out the frequency of congenital absence of Palmaris Longus Muscle which have shown variations in this muscle. Studies have revealed that almost 15% of the population could be lacking this muscle either unilaterally or bilaterally[8,9.] Many tests can be performed to confirm the presence of this muscle which includes the Schaeffer's test, Mishra Test, Thompson Test and Phushpa kumar Test. In addition to these standard test other tests can be done to confirm the presence of Palmaris Longus muscle which includes the Lotus sign test, the four-finger sign, the Cangata test, the Bhattacharya test and the Hiz-Ediz test.

This study was conducted to find out the frequency of congenital absence of Palmaris longus muscle in patients presenting at Hayatabad Medical complex as Palmaris Longus muscle tendon has great significance in tendon transfer and tendon graft.

MATERIALS AND METHODS

This study was a descriptive cross sectional review of data from Surgical ward of Hayatabad Medical Complex, Peshawar where Schaeffer test was performed on 432 patients over a six-month duration

which included 202 females and 230 males. Patients of all ages above 10 years without neurological deficit and previous injury/surgery on the hand or forearm were included. Schaeffer test involves moving the thumb in opposition towards the little finger with the wrist partially flexed. In this state, the palmaris longus muscle tendon is raised under the skin which can be observed and palpated. This test was performed to confirm the presence or agenesis of the muscle in both limbs.

RESULTS

Our study revealed that out of 432 patients, 70 patients had absence of Palmaris Longus muscle. 30(6.9%) patients had bilateral agenesis of the muscle among which 20(66.7%) were female and 8(26.7%) were male. In 24 (5.6%) patients Palmaris Longus muscle was absent in the left upper limb out of which 22(91.7%) were female and 2(8.3%) were male. In 16(3.7%) patients Palmaris Longus muscle was absent on the right side and among them 14(87.5%) were female and 2 were male (12.5%).

Table No.1: Frequency of absence of Palmaris longus Muscle

Absence	Total	Female	Male
Bilateral agenesis	30(6.9%)	20(66.7%)	8(26.7%)
Left hand agenesis	24(5.6%)	22(91.7%)	2(8.3%)
Right hand agenesis	16(3.7%)	14(87.5%)	2(12.5%)
Total	70(16.2%)	58(28.7%)	12(5.2%)

DISCUSSION

Palmaris longus muscle has been studied extensively due to its clinical importance and its variations. Absence of palmaris longus muscle does not cause any deformity hence it can be easily used during tendon transfer and as a graft[10-15]. Hence it is important for surgeons to know its variations. There is also variation in the occurrence percentage with its absence ranging from 1.5% to 63.7%[16-18]. The low percentages were reported in Zimbabwe (1.5%)[19-20], China (4.1%)[5] and South Korea (4.6%)[21-22] while the highest percentage of absence of Palmaris longus muscle was reported by Ceyhan and Mavt[8] which was 63.9%.

Our study revealed that bilateral agenesis (6.9%) was more common followed by left hand agenesis (5.6%) and that the absence of Palmaris Longus muscle was more common in females (28.7%) as compared to males (5.2%). Our study was similar to studies carried out by Osonagu et al[12] (3.1%) and Kose et al [15] (26.6%). Another study carried out by Sater et al (36.8%)[20] also revealed increased percentage of bilateral agenesis with the incidence more in females.

A study carried out by Karimi et al[22] in South Iran revealed the prevalence of absence of Palmaris Longus muscle to be 30.7% which was different to a study carried out in Tehran which reported the absence of Palmaris longus muscle to be 22.8%. Hence there is also variation in the absence of Palmaris longus muscles in different regions[13,14].

CONCLUSION

Palmaris Longus muscle is the most variant muscle. It has great importance in tendon transfer and tendon graft during reconstructive plastic surgeries like lip augmentation, facial paralysis treatment[13,14]. It also has significance in identifying median nerve during operations. Hence it is important to study its variations. Our study highlighted the fact that Palmaris Longus muscle is indeed one of the most variable muscle and the variations differ in different parts of the world.

Author's Contribution:

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Original Article

A Cross-Sectional Study on Correlation Between Age, BMI, Ovarian Reserve and Fertility

Sarah Yunus, Shehla Aman, Usman Ullah, Sadaf Rasheed, Amir Amanullah and Fidaullah Wazir

ABSTRACT

Objective: To observe the correlation between age, follicle count, ovarian volume and fertility according to BMI.
Study Design: Cross sectional study
Place and Duration of Study: This study was conducted at Radiology Department DHQ Teaching Hospital D.I.Khan for 10 months from March 2013 to December 2013.
Materials and Methods: This comparative, cross-sectional study was conducted in the Department of Anatomy, Gomal Medical College, D.I.Khan, Pakistan from March 2013 to December 2013. Sample Size was 100 women selected by consecutive non probability sampling technique. Sample size was calculated using online calculator Raosoft. Inclusion criteria were women aged 18-50 years, married, fertile and infertile. Color Doppler sonoscape with multi frequency transvaginal probes were used in measurements on any day in the start of menstrual cycle by the same observer. The volume was calculated by applying formula for ellipsoid called Prolate ellipsoid formula. The total volume was represented by sum of volume of two ovaries. Data collection site was out patient department of Radiology DHQ Teaching Hospital, D.I.Khan. Demographic variable were age groups, height, weight and presence of fertility. Research variables were ovarian volume and follicle count. Mean and standard deviation were calculated for ovarian volume and follicle count whereas frequency and percentages were calculated for age groups, BMI and presence of fertility. Descriptive statistics along with estimation of parameter was done at 95% confidence interval for proportion and mean. Student- t test was used for significance of difference in ovarian volume between fertile and infertile women with p value <0.05 considered significant. SPSS was used for data analysis.
Results: The correlation between age, BMI and fertility parameters (ovarian volume and follicle count) was non-significant (0.105) in fertile females whereas highly significant negative correlation (-0.75) was observed between age and antral follicle counts in infertile females.
Conclusion: Ovarian reserve is directly affected by age and weight of females specially among fertile women.

Key Words: Ovarian reserve, antral follicle count, ovarian volume, sonography and BMI.

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INTRODUCTION

The term ovarian reserve refers to the remaining collection of oocyte-granulosa cell, at a required age, which will be available for reproduction[1]. Fertility decreases significantly in the early 30,s and most of the females are infertile at 45 years of age. In historical units, the rates of infertility who got married at the ages of 20-24, 25-29, 30-34, 35-39 and 40-44 years were 6%, 9%, 15%, 30% and 64% respectively[2].

The linear age is known to be the main determinant of ovarian reserve but the rate of ovarian maturity varies from person to person so other tests are required for the evaluation of ovarian reserve. Estimation of ovarian reserve will help in foreseeing the remaining reproductive life span and predictable success of assisted reproductive techniques (ART) like in vitro fertilization (IVF)[3,4,5]. The beginning and conservation of reproductive functions depends upon an ideal body weight in females[6]. More than 30% of the women in the age group of 25-44 years are overweight and 20% are obese according to an international survey. Overweight women have increased threat of menstrual problems and anovulation while obese women even with regular menstrual cycles have reduced fertility[7].

BMI is defined as weight in KG divided by height in meters (KG/M2). It is a measure to objectively calculate obesity[8]. Underweight females have BMI under 19kg/m2, overweight have over 25kg/m2 whereas obese have over 30kg/m2 all are associated with an increased risk for definite disorders[6].

Ovarian reserve and BMI are inversely related, with a decrease in ovarian volume associated with increase in

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BMI. This is clinically important as obesity is known to affect the fertility of a woman[9]. Now a day's ultrasound is considered to be a useful tool for the evaluation of current ovarian function[4,10]. The parameters we have selected for determining ovarian reserve are the ovarian volume and antral follicle count. The ovarian volume and antral follicle count are useful indicators of menopausal status[11]. Because of rapid increase in the use of transvaginal ultrasound, ovarian volume measurement has become very fast, precise and economical[12]. The size of the ovary is better described as volume because of changes in its shape and configuration. The volume is calculated by using the formula for an ellipsoid: the prolate ellipsoid formula which is calculated as length x breadth x width x 0.523. Antral Follicle Count is defined as number of follicles which are less than 10mm in diameter detected in the early follicular phase with the help of transvaginal ultrasound. The number of follicles less than 18mm are called antral follicles[13]. The number of follicles in the ovaries is directly related to the embryonic follicle pool from which they were recruited. So the numerical aspect of ovarian aging is characterized by the antral follicle count. As a result of progress and advancement in ultrasound technology we can now easily count antral follicles[14]. The threshold for the definition of low AFC is different according to different studies[15]. Inconsistency among cycles is more significant in young women and those with high AFC. So a young infertile female with low AFC but ovulatory, does not necessarily indicate poor ovarian reserve[16]. The diameters may be different as there is no consensus regarding the size of follicles that still will represent ovarian reserve[17].

MATERIALS AND METHODS

This comparative cross-sectional study was conducted in the Department of Anatomy, Gomal Medical College, D.I. Khan, Pakistan from March 2019 to December 2019. Sample Size was 100 women selected by consecutive non probability sampling technique after fulfilling inclusion and exclusion criterias. A written informed consent was obtained from all the subjects. Scan of the ovaries was carried out on any day in the start of menstrual cycle. All the measurements were done by the same observer using colour Doppler Sonoscape. Each ovary was scanned in three dimensions; D1 (Longitudinal), D2 (Antero posterior) and D3 (Transverse). The vol¬ume was calculated by applying formula for ellipsoid called Prolate ellipsoid formula (viz D1 x D2 x D3 x 0.523 cm3). The total volume was represented by sum of volume of two ovaries. Follicles 2 to 10mm in size were counted and sum of follicles in the two ovaries was noted. Demographic variable were age groups (18-26, 27-34, 35-42, 43-50 years) and BMI groups (Less than 20, 21-25, 26-30, Above 30) and presence of fertility (Yes, No). Research variable were ovarian volume in cm3 and follicle count. The height and weight of each patient was also noted to determine the BMI according to the formula:

Weight in kg/Height in m2

Statistical analysis: The data feeding and study was done on computer package SPSS (Statistical Package for Social Sciences). The results were given in the text as mean, standard deviation of significantly quantitative variables (age, weight, height). Mean and standard deviation of quantitative variables were evaluated by using student t-test for mean differences and found the correlation coefficient of ovarian volume, ovarian follicle count against age and BMI[18]. In all statistical analysis, only p-values <0.05 were considered significant. The results were presented as tables.

RESULTS

Highly significant negative correlation (-0.75) was observed between age and antral follicle counts. Similarly highly significant negative correlation was found between age and fertility parameters like ovarian volume in infertile patients. The fertility parameters are positively correlated with each other. The ovarian volume has highly significant positive association with antral follicle count.

Table No.1: Correlation coefficients of infertile group

	Age	height	weight	ov.vol TA	ov.vol TV	ov.fol.count	BMI
Age(years)	1						
Height(m)	-0.042	1					
Weight(kg)	0.38*	0.136	1				
ov.vol(TAS)cm^3	-0.80**	0.103	-0.41*	1			
ov.vol (TVS)cm^3	-0.89**	0.035	-0.42*	0.91**	1		
AFC	-0.75**	-0.003	-0.45*	0.81**	0.87**	1	
BMI(kg/m^2)	0.17	-0.354*	0.56**	-0.13	-0.13	-0.16	1

*, ** are significant at 1% and 5% level of probability respectively.

Table No.2: Correlation coefficients of fertile group

	Age	height	Weight	OV(TAS)	OV(TVS)	AFC	BMI
Age(years)	1						
Height(m)	0.094	1					
Weight(kg)	0.214	0.189	1				
Ov volume(TAS)cm^3	-0.94**	-0.001	-0.203	1			
Ov volume(TVS)cm^3	-0.96**	-0.089	-0.218	0.97**	1		
AFC	-0.95**	-0.076	-0.226	0.96**	0.98**	1	
BMI(kg/m^2)	0.105	-0.39	0.214	-0.22	-0.17	-0.16	1

*, ** are significant at 1% and 5% level of probability respectively.

Correlation Coefficient of Age and fertility parameters in fertile group: The association of age with fertility parameters in fertile patients was highly significant and negative. When the fertility parameters were correlated with each other they showed that they are highly significantly positively correlated with each other.

Comparison of ovarian volume between fertile and infertile groups according to BMI: The ovarian volume decreases as BMI increases. The volume is maximum (14.33cm^3) when BMI is lowest i.e. < 20kg/m^2.

Comparison of AFC in fertile and infertile groups according to BMI: The antral follicle count is inversely proportional to BMI i.e. as BMI increases the follicle count decreases. Antral follicle count is maximum in both fertile and infertile when BMI < 20kg/m^2.

Table No. 3: Comparison of ovarian volume in fertile and infertile patients of various BMI groups

BMI(kg/m^2)	Fertile	Infertile
less than 20	14.33	4.91
21-25	9.38	4.74
26-30	9.57	4.22
more than 30	8.77	4.95
SD	2.56	0.34

Table No.4: Comparison of antral follicle counts in fertile and infertile patients of various BMI groups

BMI(kg/m^2)	fertile	Infertile
less than 20	17	6.57
21-25	10.85	7.43
26-30	11.28	6.42
more than 30	10.88	6.53
SD	3.00	0.46

DISCUSSION

Our study showed the correlation between age, BMI and fertility parameters like ovarian volume and follicle count. In infertile group, the correlation between age and weight was significant (p value <0.01) whereas there was a significant negative correlation with ovarian volume (p value <0.05) which were similar to the observations made by Ernest in his study[19]. The correlation with AFC was highly negatively significant (p value < 0.05) and that with BMI was positive but non-significant. The correlation of height with BMI was negatively correlated and was significant (p value < 0.01). The correlation between weight and fertility parameters was significantly negative whereas BMI was positively correlated and highly significant. Volume and follicle count were positively correlated with each other and highly significant but their correlation with BMI was negative and non significant in the same way as a study conducted by Halawaty in premenopausal women in Egypt who didn't find any effect of obesity on AFC but correlation with ovarian volume was highly significant (p value < 0.05)[7]. This was in accordance with observations by Zaidi et al., who showed a significant negative correlation between volume and BMI in aged fertile females only[9]. Similarly Sammel did not find any significant correlation of BMI with AFC[20]. The reasons for these controversies might be due to the different characteristics of population used and different techniques used to measure ovarian volume and follicle count[7].

When the volume was compared in fertile and infertile females according to BMI it showed that volume decreases with increase in BMI. Halawaty et al., showed that ovarian volume was significantly reduced in obese than in non obese women but did not find any effect on follicle count[7]. It was also supported by Zaidi et al., which showed that there was a significant negative correlation between ovarian volume and BMI in old fertile women only[9]. But Sammel didn't find any correlation between volume and BMI[20]. We showed that at BMI <20 kg/m^2 the ovarian volume was maximum in fertile group which decreased to 9.38, 9.57 and 8.77 in BMI groups of 21-25, 26-30 and > 30kg/m^2 respectively. The decline in volume with BMI was gradual in infertile group.

The most important finding in our study was that decrease in volume and follicle count with BMI was more pronounced in fertile as compared to infertile females.

CONCLUSION

Ovarian reserve is directly affected by age and weight of females specially among fertile women.

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Original Article

Mortality Prediction in Renal Replacement Dependent Acute Kidney Injury Patients After Cardiac Surgery

Muhammad Muzammil

ABSTRACT

Objective: This study aims to identify the risk factors and clinical prognostic scores that have a significant predictive value in RRT-dependent AKI patients who developed the disease following cardiac surgery.

Study Design: A cross-sectional, analytical study

Place and Duration of Study: This study was conducted at the Intensive Care Unit in Bakhtawar Amin Trust Teaching Hospital Multan from 1ST September 2020 to 1ST February 2021.

Materials and Methods: A cross-sectional analysis of 35 cardiac surgery patients older than 18 years receiving RRT for treatment of cardiac surgery-related AKI. The Severity scores were recorded and potential risk factors associated with mortality in AKI were evaluated at the start of RRT. Our study defined these severity scores; "Acute Physiology and Chronic Health Evaluation (APACHE) II" as a general score, "Sequential Organ Failure Assessment (SOFA)" as an organ failure score, and "Liano score" as a renal disease severity score. Multivariable logistic regression analysis was also performed to assess the mortality-associated risk factors.

Results: 5 patients (14.2%) died during the hospitalization time. 28.5% continued dialysis even after hospital discharge. The area under curve score was 0.669 for Liano, 0.722 for SOFA and 0.672 for APACHE II. The logistic regression model showed 4 variables associated with patient mortality out of the 16 selected for model selection, "Glasgow coma score < 14 points (OR=3.206,95% Cl;1.020-9.776, P=0.0027) , MAP < 63.5 mmHg (OR = 3.763, 95% CI; 1.11-13.715, P = 0.032), preoperative serum creatinine >108.5 µmol/L (OR = 0.355, 95% CI; 0.234-0.873, P = 0.040), and postoperative platelet count < 115 × 109/L (OR = 3.829, 95% CI; 1.362-11.056, P = 0.020)" significantly affected the mortality of the patients.

Conclusion: Our study observed no relationship between mortality and other factors (demographic, surgical, preoperative, and postoperative variables). The SOFA score is the most reliable to predict the poor outcome at the start of RRT in both groups after 1 month following the cardiac surgery. Glasgow coma score less than 14 points, MAP less than 63.5 mmHg, preoperative serum creatinine greater than 108.5 mmol/L, and postoperative platelet count less than 115 × 109/L affected the mortality rate and were independent risk factors for lethal patient outcome.

Key Words: Acute Kidney Injury, Cardiac Surgery, Renal Replacement Therapy, Cardiac Surgery Outcome, Disease Related Mortality.

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INTRODUCTION

Around 2 million people undergo cardiac surgeries annually across the world[1]. Most of these patients face serious complications such as acute kidney injury (AKI) postoperatively[2]. The predisposing factors such as perioperative hemodynamic alterations, pre-existing renal injury, and pharmacological toxins related to cardiovascular surgery are considered as the common causes of AKI[3]. The incidence rate of AKI following a cardiac surgery ranges from 5% to 45% depending upon the cardiac surgery type and the diagnostic criteria for AKI[4]. However, AKI patients requiring dialysis are comparatively low, ranging between 1-6% whereas the overall mortality rate among the cardiac surgery-associated AKI cases could be as high as 19.0%[5]. The mortality is found to be significantly high in more than 50% of dialysis-dependent AKI than other infected patients[6]. Since AKI is associated with raised mortality rate, extended hospital stay, and high post-hospital death rate[7-8] most of the researches has been focusing on the detection of AKI at an early stage and the prediction of the disease[9]. Ineffective renal function in cardiac surgery patients is usually related to multiple organ failure. Therefore, the choice of renal replacement therapy (RRT) is generally made depending upon the progression of the disease and

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associated organ failure. Thus, the treatment for AKI is decided on subjective criteria. Various prognostic tools are available to evaluate the disease progression and risk of the lethal outcome but not one of them is specific for predicting the risk factors among patients who have undergone cardiac surgery, its type and duration as the "General illness severity scores" and "kidney-specific disease severity scores" do not account for these risk factors[10].

This study aims to identify the risk factors and clinical prognostic scores that have a significant predictive value in RRT-dependent AKI patients who developed the disease following cardiac surgery.

MATERIALS AND METHODS

A cross-sectional analysis of 35 cardiac surgery patients, 15 female, and 20 male, aged more than 18 years was conducted from 1ST September 2020 to 1ST February 2021 at Intensive Care Unit in Bakhtawar Amin Trust Teaching Hospital Multan.

All the patients receiving RRT for treatment of cardiac surgery-related AKI were included in the study. Whereas, the patients with preoperative need for RRT, both with renal and non-renal associated requirements for RRT, were excluded from the study. Following clinical indicators directed the need to start dialysis in severe AKI cases: clinical manifestations of uremia, metabolic acidosis, hyperkalemia, hypervolemia, elevated levels of serum urea and creatinine i.e. greater than 30 mmol/L and 600 µmol/L, respectively. The need for slow continuous RRT was predicted through arterial hypotension, hyper-hydration, or/and hyper-catabolism.

We analyzed 16 variables that were divided in four groups of potential risk factors responsible for lethal prognosis: (i) demographics (gender, age); (ii) pre-surgical (serum creatinine and eGFR levels; (iii) surgical data, including cardiopulmonary bypass (CBP) time and cardiac surgery types; and (iv) post-surgical variables, including vasopressors administration, temperature, sepsis, mechanical lung ventilation, mean arterial pressure (MAP), platelet count, oliguria, white blood cell (WBC), Glasgow coma score, serum creatinine level prior to starting the RRT procedures, at the day of initiating RRT.

The Severity scores were recorded at the start of RRT. We utilized the predictive ability of 3 widely used severity scores: “Acute Physiology and Chronic Health Evaluation (APACHE) II" as a general score, "Sequential Organ Failure Assessment (SOFA)" as an organ failure score, and "Liano score” as a renal disease severity score.

The patients with cardiac surgery were diagnosed with AKI if their serum creatinine level was equal to or greater than 26.5 µmol/L after two days or 1.5 fold more than the baseline, in the last week following the surgery. Patients with AKI requiring RRT were diagnosed with AKIN stage 3[11]. Patient survival was characterized as the survival time of one month after heart surgery. In addition, the hospital mortality rate was also assessed for the study participants. Microbiologically induced sepsis was noted when the positive blood culture coupled any 2 of the 4 body conditions: “(1) core body temperature greater than 38.3 °C or less than 36 °C; (2) heart rate more than 90 beats/min; (3) respiratory rate greater than 20 breaths/min; and (4) WBC count greater than 12,000/mm3 or less than 4000/mm3 or a normally ranged WBC count with more than 10% of immature forms”[12].

Statistical analysis: SPSS 20.0 software was used for the evaluation of recorded data. The mean for every suitable variable was calculated along with standard deviation (SD). To establish the significance of the difference between quantitative variables of both independent groups, Mann–Whitney-Wilcoxon test was utilized whereas the Pearson chi-square criterion was opted to compare qualitative data. If $P< 0.05$, it was considered statistically significant. Receiver operating characteristic (ROC) curves for 30-days mortality were built to assess the discrimination of each severity score (Liano, SOFA, and APACHE II). Area of 1.0 under the ROC curve indicates perfect discrimination while the area <0.5 suggests a less predictive value.

RESULTS

During the study, 35 patients underwent 280 RRT procedures. The average number of procedures for every patients was 5.44± 1.00 whereas the average duration of procedure for every patient was 9.25 ± 1.11 days. 12 patients (34.2%) were treated with intermittent hemodialysis (IHD) (total IHD procedures:168),12 (34.2%) received continuous venovenous hemofiltration (CVVH) or continuous venovenous hemodiafiltration (CVVHDF) (total number of procedures was 28 and 15 respectively), 11 (31.4%), received of these both treatments (total number of procedures was 70). 5 patients (14.2%) died during the hospitalization time. 20 patients (57.1%) showed improvement in kidney function and 10 patients (28.5%) continued dialysis even after hospital discharge.

Table I represents the information about the study patients and the data collected before and after the cardiac surgery in both survived and non-survived patients groups. There was a significant different between poor outcome scores and hospital stay duration in the two groups. The mean APACHE II, SOFA, and Liano scores of non-survivors was higher than that in survivors i.e (26.64±0.68, 16.42±0.53, 0.660±0.197) and (23.20±1.15, 12.52±0.992, 0.564±0.352) respectively. The average number of days spent by a survivors in hospital was longer (66.72±8.02 days) than in non-survivors (27.34± 3.02). But the difference

between age and gender, preoperative factors, surgical factors and postoperative factors was not significant when scores of both groups were compared. In addition the average number of RRT in survived patients was also not so different than in non-survived patients (9.92±2.94 and 6.64±1.23) respectively. The time of RRT procedures in survivors was 15.24±5.5 and 8.75±1.8 days in non-survivors.

Table No.I: Baseline Clinical History of Studied Population (N=30)

Factors	All (n=35)	Survivors (n=30)	Non-survivors (n=5)	P-value
Demographic and preoperative				
Age, years	69.22 ± 1.09	69.67 ± 2.69	69.06 ± 1.18	0.829
Female/Male, n (%)	15(42.8)/20(57.1)	12(40.0)/18(60.0)	3(60.0)/2(40.0)	0.142
Myocardial infarction, n (%)	15(42.8)	12(40.0)	3(60.0)	0.922
Chronic renal failure, n (%)	8(22.8)	5(16.6)	3(60.0)	0.073
Serum creatinine μmol/L	145.58 ± 8.87	143.10 ± 81.09	145.62 ± 88.89	0.896
eGFR using MDRD, mL/min/1.73 m^2	61.25 ± 3.92	67.78 ± 7.42	59.32 ± 3.10	0.300
Surgery				
Urgent surgery, n (%)	20 (57.1)	16(43.3)	4(13.3)	0.512
Cardiac surgery type				
Valve, n (%)	7(20.0)	7(23.3)	-	0.232
CABG, n (%)	18(51.4)	14(46.6)	4(80.0)	
CABG and valve, n (%)	10(28.5)	9(30.0)	1(20.0)	
Reconstruction of aorta, n (%)	-	-	-	
Others, n (%)	-	-	-	
SOFA score	15.64±0.52	12.52±0.992	16.42±0.53	0.0002
Liano score	0.632±0.18	0.564±0.352	0.660±0.197	0.03
Postoperative				
Hospitalization duration in ICU (days)	7.82 ± 1.16	8.62±1.99	7.42±1.32	0.650
Hospitalization duration in ICU before RRT initiation (days	6.72±0.92	5.62±1.02	7.02±0.92	0.427
Risk factors of AKI				
0, n (%)	7(20.0)	6(20.0)	1(20.0)	0.645
1–3, n (%)	22(62.8)	19(30.0)	3(60.0)	
>3, n (%)	6(17.1)	5(16.6)	1(20.0)	
Serum creatinine before RRT, mmol/L	401.44±15.34	450.55 ± 32.99	387.45 ± 16.25	0.045
Blood urea before RRT, mmol/L	28.88 ± 1.42	27.56 ± 2.54	29.33 ± 1.67	0.654
Serum potassium before RRT, mmol/L	5.43 ± 0.10	5.19 ± 0.17	5.49 ± 0.12	0.411
RRT modality, n (%)				
IHD	12 (34.2)	11(36.6)	1(20.0)	0.241
CVVH or CVVHDF	12(34.2)	9(30.0)	3(60.0)	0.604
IHD + CVVH or CVVHDF	11 (31.4)	10(33.3)	1(20.0)	0.167
Other outcomes				
Length of hospital stay, days	36.4 ± 3.33	66.72±8.02	27.34± 3.02	0.0002

Univariate analysis included some variables that were significantly different in both the patient groups. The logistic regression model showed 4 variables associated with patient mortality out of the 16 selected for model selection (Table II). According to the results, mortality and other factors (demographic, surgical, preoperative and postoperative variables) did not have any significant relation. According to the scores recorded, Glasgow coma score less than 14 points (OR=3.206,95% Cl;1.020-9.776, P=0.0027) , MAP less than 63.5 mmHg (OR = 3.763, 95% CI; 1.11-13.715, P = 0.032), preoperative serum creatinine greater than 108.5 μmol/L (OR = 0.355, 95% CI; 0.234-0.873, P = 0.040), and postoperative platelet count less than 115 × 109/L (OR = 3.829, 95% CI; 1.362-11.056, P = 0.020) significantly affected the mortality of the patients.

After the cardiac surgery, 30 patients survived within 1 month following the surgery. In our study, we also

aimed to demonstrate the clinical prognostic scores that have a significant predictive value in RRT dependent AKI patients who developed the disease following a cardiac surgery. The area under curve score was 0.669 for Liano and 0.672 for APACHE II. These scores indicate that severity scores do not have significant predictive values. On the other hand, area under curve score for SOFA was 0.722, which indicates that it has high predictive value (Table III). Consequently, at the start of RRT procedure, SOFA score proved most reliable to predict the poor outcome in both groups after 1 month following the cardiac surgery.

Table No.2: Relation between the mortality of patients with AKI after cardiac surgery and variable in model of multivariable logistic regression analysis (N=30)

Variable	Coefficient estimate	Odds ratio (95% Cl)	P-Value
Glasgow coma points	0.550	3.206 (1.020-9.776)	0.0027
Mean arterial blood pressure	0.652	3.763 (1.11-13.715)	0.032
Postoperative platelet count	0.563	3.829 (1.362-11.056)	0.020
Preoperative serum creatinine	0.540	0.355 (0.234-0.873)	0.040

Table No.3: Area under curve scores for SOFA, APACHE II and Liano (N=30)

	SOFA	APACHE II	Liano
Area under curve (AUC)	0.722	0.672	0.669
Standard error	0.065	0.062	0.067
95% CI	0.610-0.852	0.560-0.790	0.540-0.782

DISCUSSION

Following cardiac surgery, AKI is among the most common and critical complications. It poses a great risk of mortality after the surgery, more complications, longer hospital stays, and high medical costs. Several efforts have been made to lessen the incidence of AKI but none of them have been significantly effective. Increased mortality rate (2.4-19%) has been observed in cardiac surgery-associated AKI patients than in patients who were not diagnosed with AKI (1-8%)[13]. This indicated that mortality is increased 4 times when patients develop AKI after undergoing cardiac surgery.

However, the severity of AKI greatly affects mortality. Unlike many studies, we have studied the patients who developed AKI which required Renal replacement therapy. According to research, the death rate in acute renal injury patients treated with RRT is more than 40-50%[14]. In our study, the mortality rate was low (14.2%). The exceptional low mortality rate can be attributed the short study period and smaller sample size. In a study conducted by Brazilian investigators analyzing AKI following heart surgery[15], the mortality rate in AKI patients as compare to non-AKI patients was 55% and 7.1% respectively.

We evaluated 16 variables to estimate their relation to poor outcomes in AKI patients who required RRT after cardiac surgery. There are not many studies conducted to assess the factors who directly contribute to increasing the rate of mortality in acute kidney injury patients that required RRT after cardiac surgery. Mukhoedova et al.[16] demonstrated 18 variables in patients who underwent cardiac surgery and developed AKI and it was revealed that APACHE II severity score (25 ± 1 scores), severe concomitant hepatic failure, the number of organ dysfunctions, artificial ventilation, high doses of inotropic, oliguria, moderate-to-severe concomitant post hypoxic encephalopathy are the predictive factors of lethal outcome in AKI patients.

We also recorded the clinical prognostic score and determined the one with the highest predictive value. As the results indicated, SOFA has a high mortality rate predictive ability, and Liano and APACHE II have low predictive scores. In RRT dependent acute kidney injury after heart surgery. In Malov et al.[17] the analysis showed that the area under curve value of APACHE II, SOFA, and Liano was recorded as 0.821, 0.855, 0.842 respectively that indicated their good predictive ability. These results were different as compared to those obtained in our study.

Our study did have some limitations which are important to mention. Our study was single-centered and had a short duration, had age limitation, and was only of patients with AKI requiring RRT after cardiac surgery, we may have missed some parameters like cardiac failure, serum lactate level and LVEF (left ventricular ejection fraction) while recording results. We estimated the post-surgery severity scores and risk factors only at the start of RRT procedures. Some mortality associated factors were not evaluated in the multivariate analysis due to these limitations in our study.

CONCLUSION

Our study observed no relationship between mortality and other factors (demographic, surgical, preoperative, and postoperative variables). The SOFA score is the most reliable for prediction of mortality at the start of RRT in both groups after 1 month following the cardiac surgery. Glasgow coma score less than 14 points, MAP less than 63.5 mmHg, preoperative serum creatinine greater than 108.5 mmol/L, and postoperative platelet count less than 115 × 109/L affected the mortality rate

and were independent risk factors for lethal patient outcome.

Author's Contribution:

Concept & Design of Study:	Muhammad Muzammil
Drafting:	Muhammad Muzammil
Data Analysis:	Muhammad Muzammil
Revisiting Critically:	Muhammad Muzammil
Final Approval of version:	Muhammad Muzammil

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

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Original Article

Evaluation the Effect of Honey for Control of Infection in Patients with Sore Throat

Zia us Salam Qazi[1] and M Irfan ul Akbar Yousufzai[2]

ABSTRACT

Objective: The objective of this study to evaluate the effect of honey for control of infection in patients with Sore throat.

Study Design: Case-control study

Place and Duration of Study: This study was conducted at the department of ENT of Federal Post-Graduate Institute Shaikh Zayed Hospital, Lahore and Department of Physiology of Islam Medical College, Sialkot from March 2019 to July 2020 for a period of 15 months.

Materials and Methods: Patients were randomly assigned to one of two groups: study or control. We had 200 patients in the research group. Left over 200 patients in the control group were put only on antibiotics, anti-inflammatory drugs and gargles without honey. The patients were assessed after 5 days, 10 days, and 15 days after starting the treatment.

Results: Both Male and female patients were equal in this study. Honey-using trial participants recovered from sore throats faster than the control group. In terms of individual signs and symptoms, the study group recovered from fever substantially faster than the control group within 5 days. In the study group, indications of oropharyngeal congestion also recovered faster. In both groups, there was no significant difference in the number of patients who were lost to follow-up.

Conclusion: Honey prompts quicker recuperation of signs and manifestations of sore throat. Thus, we can infer that admission of honey adjuvant treatment would help patients with sore throat.

Key Words: Honey, sore throat, infection

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INTRODUCTION

In the case of stingless bees, honey is harvested from wild bee colonies or hives of domesticated bees, a procedure known as beekeeping or apiculture. It is reported to have antibacterial as well as wound-healing properties[1] Honey is mostly composed of carbohydrates and water, but it also contains vitamins B and C, as well as a variety of minerals such as calcium, potassium, and zinc.[2]

Beekeeping, or apiculture, is the process of collecting honey from wild bee colonies or hives of domesticated bees.

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It has been demonstrated that it possesses broad range a ntibacterial properties against pathogenic bacteria and o ral bacteria such as staphylococcus and pseudomonas. [3] Honey is hygroscopic, which means it can absorb moist ure from the air. [4] One of the most prevalent symptoms of patients who attend our ENT outpatient department is a sore throat (OPD). Allergies, reflux illness, nasal discharge, and tonsillitis are only few of the inflammatory and infectious reasons. Honey has been shown to have anti-inflammatory and antioxidant properties in studies.[5] Allergies, reflux illness, nasal discharge, and tonsillitis are only few of the inflammatory and infectious reasons. A sore throat might be caused by a virus or an infection. [6] Local populations have been reported to use honey for pharyngitis and respiratory problems in several investigations.[7] No logical information is accessible in writing in regards to something very similar. Subsequently, we intend to direct this review to see whether honey plays some part as an antibacterial, mitigating, and cancer prevention agent in therapy of sore throat. The target of this study, to assess the impact of honey for control of inflammation and irritation in patients with sore throat.

MATERIALS AND METHODS

This study was conducted in the department of ENT of Federal Post graduate Institute Shaikh Zayed Hospital, Lahore and Department of Physiology of Islam Medical College, Sialkot from March 2019 to July 2020. The authorization of Institutional Ethical Committee was taken. Patients having a history of diabetes, allergies to pollens and bees, allergies to honey, those who were already receiving therapy for a sore throat, and those who dislike honey were all excluded. The authors of this study examined and followed up on all of the patients. Patients were randomly assigned to one of two groups: study or control. We had 200 patients in the research group. Left over 200 patients in the control group were put only on antibiotics, anti-inflammatory drugs and gargles without honey. The patients were assessed after 5 days, 10 days, and 15 days after starting the treatment.

Statistical: SPSS for Windows version 20 was employed for all statistical analyses.

RESULTS

A total of 400 patients were taken for this study. Complaints of sore throat patients were taken. Data were analyzed after collection. The age of patients 20 years was taken in this study. There was an equal incidence of sore throat in all the age groups. Both Male and female patients were equal in this study. Honey-using trial participants recovered from sore throats faster than the control group. In terms of individual signs and symptoms, the study group recovered from fever substantially faster than the control group within 5 days. In the study group, indications of oropharyngeal congestion also recovered faster. In both groups, there was no significant difference in the number of patients who were lost to follow-up.

Table No.1: Participant characteristics

	Honey+ Antibiotics (n=200)	Antibiotics Control (n=200)
Age (years)	20.4 + 15.2	20 .3 + 15.3
Male /Female (%)	75/75	75/75
Body weight (Kg)	68.9 + 10.8	67.3 + 11.1
BMI (kg/m2)	23.8 + 2.5	23.2 + 2.5

Table No.2: Time to total recovery from sore throat

Time Taken	Test (Honey+ Antibiotics) group (n = 200)	Control (Honey) group (n = 200)
<5 days	96	82
5-10 days	62	69
10-15 days	28	33
Not recovered after 15 days	14	16

Table No.3: Relief of signs of sore throat at initial Visit

Sign	Test (Honey+ Antibiotics) group (n = 200)	Control (Honey) group (n = 200)
Fever	80	65
Oropharyngeal congestion	200	200

Table No.4: Patient satisfaction

Patient satisfaction	Test (Honey+Antibiotics) group (n = 200)	Control (Honey) group (n = 200)
Completely satisfied	170	130
Somewhat satisfied	30	70

DISCUSSION

This study looked into the role of honey as an anti-inflammatory, antibacterial, and antioxidant agent. The study's goal was to see how effective honey is at reducing inflammation and infection in sore throat patients, as well as how it affects patient satisfaction and any potential side effects. Tonsillitis or pharyngitis can cause a sore throat, which is fairly prevalent in everyone's life.[8] According to Bisno, infective etiology was found in 44% of patients with sore throat. [9] Nine patients (5%) in our trial required hospitalization due to high-grade fever, acute odynophagia, dehydration, and other pulmonary problems. Even after 15 days of treatment, 15 (8%) of the patients in our research had residual or recurrent illness. Honey is a popular household substance that has been used for a variety of purposes for centuries.[10] It consists of 181 components [11], with fructose, glucose, fructooligosaccharides, amino acids, vitamins, minerals, enzymes, and water making up the majority. [12] Invertase, amylase, and glucose oxidase are the three primary enzymes found in honey. [13] Hydrogen peroxide produced by glucose oxidase has antibacterial properties. Honey has been used as an antiseptic in Indian, Egyptian, and Greek literature throughout history. [14] Recognition antimicrobial activity of honey was done by Van Ketel, in 1892. [15] According to Al-Waili and Boni study show that anti-inflammatory effect of honey ingestion is present.[16] Honey is said to diminish the movement of cyclooxygenase-1 and cyclo oxygenase-2, in this way showing mitigating effect.[17, 18] Honey decreases prostaglandin E2 and alpha 2 in blood prompting torment relief.[19] In our review, we discovered better help and more prominent patient fulfillment in concentrate on bunch utilizing honey. The symptoms of honey are uncommon. It can cause stinging torment due to acidic pH.[20] No long-lasting protection from honey has been noted.[21] In our study, no results of side effects of honey were observed.

CONCLUSION

Honey is an effectively accessible family item which has mitigating, against infective and cancer prevention agent properties in the therapy of sore throat. Honey prompts quicker recuperation of signs and manifestations of sore throat. Thus, we can infer that admission of honey adjuvant treatment would help patients with sore throat.

Author's Contribution:

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Original Article

Research Priorities in Speech Pathology / Therapy in Pakistan: A Cross Sectional Survey

Priorities in Speech Pathology / Therapy

Sikandar Ghayas Khan[1], Premkumar Rajagopal[2], Amna Rashid[1], Malik Muhammad Qasim[1], Madiha Sikandar[1] and Rabia Ghayas[3]

ABSTRACT

Objective: To find out Research priorities in Speech Pathology /Therapy, Lahore Pakistan.
Study Design: Cross sectional study
Place and Duration of Study: This study was conducted at the Department of health Professional Technologies, the University of Lahore from January 2016 to July 2016.
Materials and Methods: Convenient sampling technique was use. The Sample Size 270 Generated by Saunders on the bases of total population. Closed ended questions have been developed from literature review and expert opining, and distributed to around 300 participants. Questionnaires were distributed among HODs, teachers and students. Part A and B. Part A of questionnaire contained personal information, part B is about research activities in Institution.
Results: Most of the respondents were between age 25 to 30 years. 86.75 % SLPs are female and only 13.35% are male. Most of the participants having Master 100(37%), only 5(1.9%) participants were Ph.D degree holder. About 58% to 94% of participants were responded that they have no published article in national, international journal and there was no journal prescription of institute. P value was less than 0.05 in responses of teachers and students.
Conclusion: Research concludes that most of participants have no journal prescriptions and they were not publishing article. It is dire need to promote research culture in speech pathology department.
Key Words: Speech Therapy, Research in Speech Therapy, Pakistan

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INTRODUCTION

The term Speech and Language treatment (SLT), Speech and Language pathology (SLP) is, is responsible for assessment, evaluation and treatment of communication disorders and swallowing issues. They also work on voice, fluency, resonance, cognition, language and hearing of any age group.

Speech and Language pathologist are also responsible for overall health of caregivers, quality of life of patients and its impact on their lives.[1]

The survey of 1998-1999 was repeated in 2009-2010 in Karachi covering a larger number of educational institutions, clinics and hospitals; only to reveal a horrific worsening to 32% in the prevalence of communication, and feeding-swallowing disorders[2].

A study reasoned that as expected, at present there are just seven qualified Speech Language Pathologists/ Therapists (SLPs/SLTs) every one of whom have qualified abroad to take into account the requirements of these 22 million people the country over more than 22 million people in a general populace of more than 160 million experienced discourse, dialect, gulping as well as hearing issue.[3]

Research published in 2017 about the awareness of stuttering and self-therapy of stuttering highlights that most of the patients have awareness about stuttering but they do not know about self-therapy of stuttering. Researcher also found that most patients who has awareness of their problem, feel ease in applying self-help therapeutic strategies and these are helping them more than traditional treatment plan of stuttering. Speech therapy or Psychotherapy, both focus on the concept that there are no single criteria which can be employed to treat the speech problems of stutter. Individual differences are considered to choose the therapeutic plan[4].

Khan (2015), published research on awareness of Augmentative and Alternative communication (AAC) device, use for persons those have complex communication need. Results of this study show that in different areas the knowledge of AAC devices are 40%

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to 80%[5]. Khan also wrote a letter to editor with the title of communication for all[6]. Journey of Speech therapy in Pakistan is progressing day by day and Speech Pathologists are developing tests and therapeutic techniques for assessments and treatment of communication and swallowing disorders. In this regards an exploratory research conducted by Pervaiz and developed Checklist for the Assessment of Pragmatic Language Impairment[7].

Although there are some studies present related to speech and Language Pathology department in the literature. But no study is found in the literature to describe the research activities in speech pathology.

MATERIALS AND METHODS

This cross-sectional survey was conducted to find out the research activity in speech and language in Pakistan. The study employed descriptive survey design. Descriptive survey is a method of collecting information by interviewing or administering a questionnaire for a sample of individuals[8]. Data was collected from higher education institution offering BS, post grade diploma, Master and MS in Speech and language Pathology /Therapy. The study targeted all speech and language pathology institutes in Pakistan. According to records held at the Pakistan Higher Education Commission office, there are 16 institutes in the country offering speech and language pathology/therapy courses, BS (10), Masters (1), MS/M. Phil (4) and PGD (1). Therefore, the target population was all the 16 head of departments, 108 teachers and 451students.The Sample Size 270 Generated by Saunders on the bases of total population.[9] The research instruments that were used for this study were questionnaires. These closed ended questions have been developed from literature review and expert opining, and distributed to around 300 participants. Questionnaires were distributed among HODs, teachers and students. The questionnaire has two sections, part A and B. Part A contained personal information, part B is about research activities in Institution.

Most widely used method for approximating internal consistency reliability was calculated through Cronbach's alpha. Cronbach's alpha is a function of the average correlations with in items and the number of items in the scale.[10] Value of Cronbach's alpha is 0.879. Data was collected during January 2016 to July 2016. Researcher himself visited to the different institutes and gates the return permission from competitive authorities for data collection. Once permission was granted the researcher proceeded to the Heads, Teachers and Students.

RESULTS

The above table shows that most of the respondents are falling between age 25 to 30 years. 86.75 % SLPs are female and only 13.35% are male. Most of the participants having Master 100(37%), M. Phil/MS 35(13.0%) and FSC 71(26.3%). Only 5(1.9%) participants were Ph.D. degree holder.

Table No.1: Demographic Information of Respondents

Sr. No:	Options	Frequency(%)
Age of respondent	15 to 30	231(85.6)
	31 to 45	29(10.7)
	46 to 60	10(3.7)
Gender of respondent	Male	36(13.3)
	Female	234(86.7)
Category of respondent	Head of department	4(1.5)
	Teachers	41(15.2)
	Students	225(83.3)
Type of Institute University	Public	165(61.1)
	Private	105(38.9)
Qualification	Diploma	12(4.4)
	BS_SLP	29(10.7)
	MS/M.Phil.	35(13.0)
	Ph.D.	5(1.9)
	Master	100(37.0)
	FSC	71(26.3)
	B.A	18(6.7)

Table No. 2: Research Work and Resactvities in Speech and Language departments

Variables	Sub variables	Frequency	%tage
Number of articles published in National HEC accredited journal	No	236	87.4
	1 to 3	22	8.1
	4 to 6	4	1.5
	7 to 10	2	.7
	More then 10	6	2.2
Number of articles published in National HEC accredited journals in last year	No	241	89.3
	1 to 3	25	9.3
	4 to 6	4	1.5
Number of articles published in impact factor journals:	No	244	90.4
	1 to 3	18	6.7
	4 to 6	6	2.2
	7 to 10	2	.7
Number of articles published in impact factor journals in last year	No	254	94.1
	1 to 3	14	5.2
	4 to 6	2	.7
Subscription of national journals related to speech and language pathology	No journal available	158	58.5
	1	26	9.6
	2	22	8.1
	3	16	5.9
	More then 3	48	17.8
Subscription of international journals related to speech and language pathology	No journal available	186	68.9
	1	4	1.5
	2	76	28.1
	3	4	1.5

Table No.3: An Independent Sample T-Test

Variables	Category	N	Mean	Std. Deviation	t	df	p
Research Work	Teacher	45	6.73	2.895	12.016	268	.000
	Student	225	4.11	.705			

An independent sample t-test was applied to find the difference between both categories (teachers and students). Table above depicts the results that there is statistically significant difference found between teachers and students.

DISCUSSION

Most of the respondents are falling between age 25 to 30 years it means they recently joined the Speech and Language field. 86.75 % SLPs are female and only 13.35% are male, this result is opposite to the culture and ethnic prospect of Pakistan, but these results are similar to working ratio of male and female persons in health care professions.[11]

From the results it is clear that the majority of head respondents were between 15-30 years 231(85.6%). Only few 10 (3.7%) fall in category of 46-60 years. It was also believed that as one advanced in age the more experience they gain hence this would have earned the head teacher the headship positions in their respective institutes. On the other hand, class teachers from this study some had just joined the teaching fraternity and yet to gain the required experience to head an institute. Abe said that quality of education depends on the quality of teachers and certifications of the teachers. Student's achievements are directly related to the teacher's qualification. Rotational training and qualification gave professional skills, knowledge of subject and techniques which is gain from education[12]. Another paper published in 2011 highlighted academic qualification teachers who are academically qualified and those that are professionally qualified are engaged to carry out instructional process. Academic qualification includes the hold degrees like, B.Ed., B.Sc. Ed, B.A. Ed, and M.Ed and so on[13].

Research performance of universities is now matter for global association[16]. Table 3.8 shows respondent number of article publish in national 10.8% and international journals 5.9% in last year and total number of articles publish in national 10.4%and international 9.6% journals. It may be due to hectic schedule, high workloads, passionate clinical practice left a little time with practitioners to focus on research publication but institutes must encourage people to participate in research activities. Malik said in 2002 cited Ibrahim in Humanizing Research Culture System through Quality Assurance Practices in the Universities of Pakistan (2016) due to the of system in higher education commission does not match to modern education , lack of train researcher and teachers , lack of facilities, teacher students ratio, inadequate assessment system, HEC unable to achieve the international goals and quality is not up to the mark now a days in higher education[14,15].

Presently, there are several hurdles for research and publication; recent attempts to upgrade skills of research methodology and scientific writing are encouraging, but need to be sustained; the traditional role of clinician, teacher is being replaced with that of clinician, teacher and researcher. Suggestions for future included; combined workshops on research methodology and scientific writing skills; continuous institutional support system for research and publication, and effective mentorship.[16] Organization of research conferences, workshops and seminars promote the culture of research and development in the universities R & D[17].

Student's enrolment in SLP program of universities are highest in percentage is 61 to 70. Student's enrolment is directly related to quality services of universities, results of students, demands of program and research works. Student's enrolments increase due to demand and supply of the outcomes and quality of the staff. The higher the service quality the more satisfied the customers. Thus, satisfaction is based on customer expectations and perception of service quality.[18]

CONCLUSION

Results of this study showed that some of the students and teachers have published there research articles in national, international and Impact factor journals. However, there is dire need to develop research culture in department of speech and Language pathology in Pakistan. For this purpose encouragement of teachers and student through honorarium and promotion play an important role.

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

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Original Article

Assessment of Pregnant Females' Anxiety and Health Concerns During COVID-19 Pandemic

Sarwat Memon[1], Nisa Mohsin[1], Amber Naeem[1], Fauzia Rahim[1], Amna Salman[1] and Andsaba Memon[2]

ABSTRACT

Objective: To determine level of anxiety in pregnant females during covid-19 using CAS scale and to determine pregnant women's maternal and fetal health concerns during COVID-19.

Study Design: Descriptive Cross sectional study

Place and Duration of Study: This study was conducted at the Outpatient department of Obstetrics and Gynaecology Isra University Hospital Hyderabad from January 2021 to March 2021 for a period of 03 months.

Materials and Methods: A convenience sampling technique was used to collect data from 180 pregnant women who had no previous psychiatric, missed abortion, or ectopic pregnancy history. A standardized CAS scale was used to assess each participant's level of anxiety about COVID-19, followed by a self-structured questionnaire to assess women's concerns about foetal and maternal health in the context of COVID-19. Frequency was calculated for all variables.

Results: The bulk of our patients were over 35 years old and multigravida, according to our results. Corona related anxiety was found in 63.8% of patients, and it had an impact (58%) on their lives, both in terms of their health (41.3%) and the health of their unborn child (53.8%).

Conclusion: Anxiety was shown to be present in majority of pregnant females with most of them being worried about the health of their unborn child.

Key Words: CAS scale, anxiety in pregnancy, corona related anxiety, health concerns, pandemic, mental health

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INTRODUCTION

One of the most crucial milestones in a woman's life is her pregnancy. It affects their health and behavior in a variety of ways, including physical, emotional, and social changes[1]. They are prone to sleep disturbances, mood swings, negative thoughts, exhaustion, and difficulties concentrating, among other circumstances that make them exceedingly worried, such as duties of other children, family caregiving, work shores, and so on[2,3,4,5]. Although anxiety is a natural response to any stressful event, its severity can impair not just women's mental and physical health but also that of their children, putting their pregnancy at risk[4-7].

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Pregnant mothers are frequently concerned about the health of their unborn child and the outcome of childbirth. Anxiety has been associated to preeclampsia, low birth weight, intrauterine growth restriction[8], premature birth[9], cleft lip and palate, still birth, neonatal death[10], autism, ADHD, and neurodevelopmental disorders[11].

Many additional questions have led a strong psychological impact amongst this population relating to continuation of pregnancy, its results on newborns, probabilities of vertical transmission, concerns of isolation just in case of positive result of Covid -19[3]

Similarly, imbalances in availability of health care, uncertainty in the provision of routine essential medical services, antenatal services, staff deployment and shortages, lengthy and crowded appointments has affected also impacted their quality of life[3]. As pregnant women need daily antenatal care from maternity services and other reproductive health services, there are increased possibilities of exposure towards infection to both mother and therefore the child[2,12].

According to the literature, the prevalence of anxiety and its impact on pregnant women differs depending on specific circumstances. Pregnancy-related anxiety affects 10–25% of women in underdeveloped nations[13]. According to other studies, it is 53.8% 83.3%[14,15]. In Italy, a survey of 178 pregnant women found that 46.6% of them were concerned about foetal

malformations, 65% were concerned about intrauterine growth limits, and 51% were concerned about premature birth[6]. Another study in Iran used general anxiety questionnaires to assess pregnancy related anxiety (PRA) and found prevalence rates of 32.5% and 40% respectively[16,17]

In light of the above prevalence of anxiety and its impact on maternal and foetal health in international studies, as well as the facts that we lack infrastructure, inadequate provision of proper and timely antenatal and postnatal care, limited access to health-care facilities, and the added burden of this pandemic, this study was conducted on the local population with the aim of determining the level of increased anxiety and assess their concerns about both fetal and maternal health during COVID-19 so that timely management, proper referrals and employment of strategies for anxiety reduction, and provision of appropriate measures for antenatal and postnatal can be arranged during COVID-19 to avoid any negative outcomes both to the mother and the fetus, to ensure safe and health pregnancy for patients.

MATERIALS AND METHODS

This cross sectional study was conducted at out-patient department Obstetrics and Gynaecology Isra University Hospital Hyderabad from January 1st 2021 to 15th march 2021. Using a convenience sampling technique, data from 180 pregnant females with the exception of those with past psychiatric, ectopic pregnancy, or missed abortion history was acquired after informed consent. The confidentiality of each patient was respected. A standardised CAS scale was used to measure each participant's anxiety level about covid-19, followed by a self-structured questionnaire to assess the concerns of women regarding fetal and maternal health amid of covid-19. Frequency was calculated for all the qualitative variables.

RESULTS

The majority of pregnant females in our sample were in the above 35-year-old age group, according to sociodemographic data. Most of them were in their second trimester and multigravida (Table:1).

Table No.1: Sociodemographic Data of Pregnant Females

Age	Frequency	Percentage	Total
Below 25 years	29	21.66%	180
25-35 years	56	31.11%	
>35 years	85	47.23%	
Gestational phase			180
1st trimester	11	6.11%	
2nd trimester	86	47.7%	
3rd trimester	83	46.1%	
Parity			180
Primigravida	53	29.4%	
Multigravida	127	70.5%	

Anxiety level concerning covid-19 was measured using CAS scale, it was evident in 63.8% of patients (table: 2).

Table No.2: Corona Virus Related Anxiety Based On Cas Scale

	Frequency	Percentage
Positive	115	63.8%
Negative	65	36.1%
Total	180	100%

58% of patients were affected by this pandemic outbreak with 53.8% showing concerns about unborn child while 41.3 % were worried about themselves. (Table:3)

Table No.3: Concerns of Patients Regarding Maternal and Foetal Health During COVID-19

	Frequency	Percentage
Concerns about self	56	41.3%
Concerns about unborn child	43	53.8%
Concerns about both	05	4.8%
Positive impact on total	104	58%

DISCUSSION

This study was aimed to assess the level of anxiety and health concerns of patients regarding maternal and foetal health during covid 19 pandemic. Demographic data was divided into three aspects i-e age, gestational age and parity. Majority of patients fall into age range of over 35 years (47.3%), followed by 25-35 years (31.11%), and finally below 25 years (21.66 %). Comparing our findings with other studies, 71.4% of patients were between the ages of 26-35 and 10.1% in the over 35 year age group[20]. Another study reported 89.06% of patients in below 35-year age group whereas 10.94% in the over 35 year age group[18].

Most of the participants of our study were either in their 2nd or 3rd trimester with only minimum difference respectively i-e (47.7%) & (46.1%) followed by 6.11% in first trimester. When compared to other studies, one found quite similar results i-e 2nd trimester 48.7% and 3rd (51.2%) whereas majority of studies have reported their patients in 3rd trimester 53.5%[19], 49.8%[20] and 33.6%[19], 40.7%[20].

A large number of patients (70.5%) were multigravida in present study. Other studies shows contradicting outcomes, with the majority being primigravida individuals, i.e. 59.7% vs 31.4% (multigravida)[13], 61.9% vs 38.1% (multigravida)[19], and 38.7% vs 4.8%[20] (multigravida). Table:1

Using a cutoff score of > 9 on the CAS scale to measure corona-related anxiety in pregnant females, 63.8% were found to suffer from anxiety (Table 2). Another study conducted in Pakistan shows 84% of patients had covid-19-related anxiety[17], compared to 24.5%[18] and 29.19%[19] in Wuhan. However, researches

have also reported patients with minimal anxiety level i-e 63.6%[14] and 69.4%[19].

53.8% patients were found to be concerned about the health of their unborn child, while 41.3% about themselves (Table 3). When we compared our findings to other literature, 63.4% were worried about their child while 50.7% about themselves[13]. Another study reported fetal health concerns amongst pregnant women to be 46.6% whereas 22.1% showed self concerns[14].

CONCLUSION

Anxiety was shown to be present in majority of pregnant females with most of them being worried about the health of their unborn child.

Author's Contribution:

Concept & Design of Study:	Sarwat Memon
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Final Approval of version:	Sarwat Memon

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

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Original Article

Frequency of Measles with Complications in COVID Pandemic

Sardar Khan, Zahir Said, Sajjad Hussain, Ashfaq Ahmed, Ibrar Aleem and Fazal Rabbani

ABSTRACT

Objective: To determine the frequency of measles with complications in covid-19 pandemic.
Study Design: Retrospective study
Place and Duration of Study: This study was conducted at the Department of Paediatrics, Saidu Group of Teaching Hospitals, Swat from December 2020 to May 2021.
Materials and Methods: Three hundred and eighty-seven children were enrolled. Demographic information such as anthropometry, measles complications, vaccination history, and prior outcome of measles patient's admission within 15 days was taken from institute records.
Results: The prevalence of unvaccinated subjects was 113 (29.2%). The measles complications involve an unvaccinated state, encephalitis, and being stunted as compared to pneumonia ($p<0.05$). Within 15 days of admission, 35 (9%) children died.
Conclusion: The fatality rate from measles complications was 9% in the study population. Half of the children were vaccinated despite having measles complications. Non-vaccination, malnutrition, and encephalitis were associated with a higher risk of death from measles complications.
Key Words: Measles, Complications, Mortality, COVID Pandemic

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INTRODUCTION

Measles is one of the most infectious pathogens and a leading cause of morbidity and mortality, accounting for approximately 2.6 million deaths worldwide each year. Routine immunization against measles disease has been significantly affected by the surging pandemic. Due to paradigm shift, the nation prioritized the current pandemic instead of vaccinating measles patients arose 117 million measles cases in only 37 countries.[1,2] Despite the availability of effective vaccine and their implementation by the World Health Organization (WHO),measles is viral and risky pathogenesis causing significant contribution to childhood morbidity and mortality.[3] About 6.8 million positive diagnosed measles cases and 112, 000 mortality were reported worldwide during 2017.[4]

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A tripled increase in measles cases was reported in the first six months of 2020 despite the vaccination efforts domain in Pakistan.[5]

Children with measles developed one or more complications in 30 to 40% of cases.[6] Profound immunosuppression and transient damage to mucous membranes might lead to all the complications of patients with diagnosed measles. The children might develop measles complications and death after three months.[7] Diarrhoea is developed in one out of twelve measles patients. The severity and illness duration of measles may be caused by the measles virus itself or secondary bacterial infections. The prevalence of measles mortality increases up to 57-85% due to the development of pneumonia.[8]

The corona virus pandemic (COVID-19) significantly affected the essential health care system, elective surgeries, and cancer care.[9] Vaccine-preventable diseases is strongly influenced in term of disease burden on children due to childhood vaccine delays.[10] At the same time, the positive effects of the COVID-19 pandemic must be fairly debated. Citizens' strong commitment to hand washing and personal hygiene, as well as increased awareness of other preventive measures, have created windows of opportunity not only to reduce paediatric admissions due to respiratory diseases[11], but also incorporate public health science into public policies.

The measles epidemiological transition has been reported in the present study in Pakistan in 2020-2021. Globally, it has been challenged for eliminating the measles disease.[12]

In 2019, a measles flare-up happened that originated from a hesitance to be inoculated for strict reasons, suggesting the significance of considering heterogeneity while carrying out immunization strategy.[13] Notwithstanding, series of COVID-19 cases have been reported after the first positive case at Wuhan Laboratory, China on 31st December 2019 worldwide. World Health Organization (WHO) declared the severe and globally spread disease as a pandemic on 11th March 2020. Preventive measures need to be taken to halt this widespread disease globally.

Major risk factors responsible for measles complications include young age, non-vaccination, immune deficiency, malnutrition, vitamin A deficiency, overcrowding, and lack of other health care facilities. Severe complications are encephalitis and pneumonia.[14] In Pakistan, measles is an endemic disease for the last few years. Higher mortality has been observed in the hospitalized children for measles and its complications. Hence, measles complications need to be identified for clinical and better management of measles among children. In the present study, attempt has been made to determine the frequency of measles complications in COVID-19 pandemic.

MATERIALS AND METHODS

This retrospective study was carried out on children with measles complications admitted to the Paediatrics Department of Saidu Group of Teaching Hospitals, Swat for the period during 1st December 2020 to 30th May 2021. Information such as anthropometry, measles complications, vaccination history, and prior outcome of measles patient's admission within 15 days was taken from institute records. Informed written consent was obtained from all the patients' parents. Collection of data was done from hospital medical records. Demographics and baseline characteristics such as age, gender, weight, height presence of complications such as gastroenteritis, pneumonia, encephalitis, hospital stay, vaccination history, and presentation month and year were recorded. Weight, height, and malnutrition were calculated based on WHO standard calculator and WHO definition was followed for measles and its complications. According to WHO, suspected measles patients would have the following symptoms non-vesicular rash, generalized erythematous maculopapular, rash appearance after 2-4 days, conjunctivitis, cough, and coryza. Pneumonia was standardized based on WHO chest in drawing and respiratory rate. Neurological disorientation or deficits lethargy fits, headache, and irritability were involved in central nervous system consideration. Death within 15 days of measles diagnosis was defined as measles-related death until by some other causes. Vitamin A capsule, broad-spectrum intravenous (IV) antibiotics, and chloramphenicol eye drops were the broad spectrum of WHO standards. The data was entered and analyzed through SPSS-21. $P<0.05$ value was considered significant.

RESULTS

Sixty-nine (15.1%) were below 10 months of age were excluded. The reason for 69 children the exclusion was not too old to be vaccinated. Out of the remaining 387 children, the prevalence of unvaccinated subjects was 113 (29.2%). The measles complications involve an unvaccinated state 53 (13.7%), encephalitis 34 (8.8%), and being stunted 56 (11.8%) as compared to pneumonia 244 (63.2%) ($p<0.05$) as shown in Table 1. Within 15 days of admission, 35 (9%) children died. Out of 387 children, 234 (60.5%) were male and 153 (39.5%) were females as shown in Figure 1. The age-wise distribution of the children is shown in Table 2. The highest number of measles cases was reported in the age range of 1 to 5 years old children while the lowest cases were in children of age more than 5 years. Table 3 demonstrates the vaccination status of measles-diagnosed children. After adjusting confounding parameters for measles patients, children with stunted nutrition status, non-vaccinated and encephalitis had a higher frequency of mortality compared to vaccinated children as shown in Table 4.

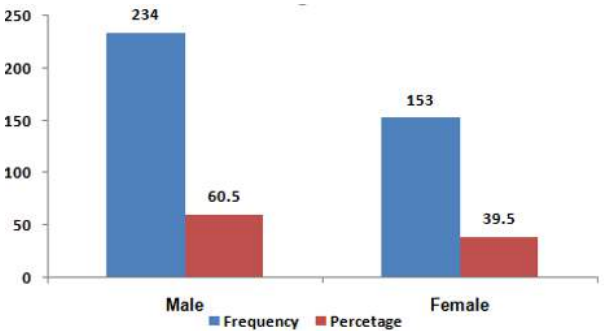

Figure No.1: Gender distribution of measles diagnosed 387 children

Table No.1: Prevalence of Measles complications (n=387)

Complications	No.	%
Unvaccinated	53	13.7
Encephalitis	34	8.8
Pneumonia	244	63.2
Being stunted	56	11.8

Table 2: Age-wise distribution of measles diagnosed 387 children (n=387)

Age	No.	%
10-12 months	87	22.4
1-5 years	217	56.1
>5 years	83	21.5

Table No.3: Vaccination status of measles diagnosed in 387 children

Vaccination status	No.	%
One dose	51	13.2
Two doses	223	57.6
Unvaccinated	113	29.2

Table No.4: Factors associated with admitted children's mortality due to measles complications

Factors	AOR	CI 95%	P value
Measles vaccination status			
Unvaccinated	2.59	(1.5-6.19)	0.019
Nutritional Status			
Stunted	5.17	(2.29-11.68)	<0.0002
Complications			
Encephalitis	8.18	(2.59-24.89)	<0.0002

DISCUSSION

Before the pandemic of coronavirus (COVID-19), measles was one of the surging diseases worldwide which cost the highest figure of death almost 208500 lives in 2019 since 1996.[15] WHO reported that the lack of primary drive of measles vaccination on a timely basis and with two doses resulted in such a high incidence and mortality rate.[16] Despite the safe and effective vaccine availability, the morbidity and mortality of measles in Pakistan is still growing, especially in children and young populations.[17] In 2020, a downward trajectory of measles cases from 6781 to 1975 has been observed with pandemic.[18] While 1240 confirmed cases have been reported up till April 2021.[19] The higher cases were reported in the same duration compared to 2021 cases given by The Sub-regional Reference Measles Surveillance Laboratory, Pakistan statistics.[20]

Since the pandemic arrival, measles cases in Pakistan had been declined while the lowest cases 229, 123, 235, and 360 were reported during COVID-19 peaks in April to mid-August, 2020 as compared to2019 cases during the same months. A similar downward trajectory has been observed in 2021 compared to the 2020 measles cases. About 150 cases were reported in one week of March (23-27) 2021 alone. It has been reported that the immunity achieved by the vaccinations could not be responsible for the measles cases downfall in Pakistan because of measles vaccination coverage about 95%.[21]

The present study identified and addressed some of the key risk factors and complications related to measles. Mortality risk in children with pneumonia is a lower risk than encephalitis as measles complication. Non-vaccination is another risk factor for children with higher mortality with measles complications. The subsequent reduction in morbidity and mortality of measles associated with nutritional intervention improvement and regular vaccination findings will help managers, clinicians, and paediatricians to improve children's health. Other studies found similar results in a similar clinical setting.[22-24] In previous studies conducting indifferent cities of Pakistan, the fatality rate was reported within a range <1% to 19% in measles diagnosed children which matched our study findings and fatality rate. A number of factors such as nutritional, infection age, study population either rural or urban, socio-economic status, health care access and availability, and population immunological status play a majorroles in fatality rate.[25] Even in developing countries, measles outbreaks had similar complications with hospitalization cost, low mortality, and high morbidity.[26]

In the current study, measles-diagnosed children with encephalitis as a measles complication had a higher prevalence of mortality compared to pneumonia-infected measles children. Similarly, high risks of neurological complications were reported in previous studies.[27] Abnormal immune responses to the basic protein of myelin with measles rash in few days causes post-infection encephalomyelitis or by encephalitis itself.[28] A progressive viral infection known as measles inclusion body encephalitis (MIBE) can cause measles mortality among children. This MIBE of individual brain immune-compromised in acute measles causes death within a month. Another finding of the current study that matched others' previous findings was the higher prevalence of measles cases among young age of 1 to 5 years.[29] A higher measles mortality rate was found in non-vaccinated children compared to the one or two-dose vaccinated population in the current study, because the vaccinated children had lesser chance of severe measles. It also reduces the mortality rate among measles diagnosed children.[30]

The current study had certain limitations despite having multivariate analysis reduction in the current study. Firstly, this was a single-centered based study due to which the collected data was too small compared to the whole country's measles cases. Secondly, no comparison was made between measles-diagnosed children and the control group.

CONCLUSION

The fatality rate from measles complications was 9% in the study population. Half of the children were vaccinated despite having measles complications. Non-vaccination, malnutrition, and encephalitis were associated with a higher risk of death from measles complications.

Author's Contribution:

Concept & Design of Study:	Sardar Khan
Drafting:	Zahir Said, Sajjad Hussain
Data Analysis:	Ashfaq Ahmed, Ibrar Aleem, Fazal Rabbani
Revisiting Critically:	Sardar Khan, Zahir Said

Final Approval of version: Sardar Khan

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

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Original Article

Impact of Different Location of Incisions on Surgically Induced Astigmatism (SIA) after Phacoemulsification: A Comparative Study

Attaullah Shah Bukhari[1], Suhail Ahmed Shah[2], Abdual Qadeem Soumro[3], Mazhar Ali[4], Ashiq Hussain[5] and Muhammad Faaz Malik[3]

ABSTRACT

Objective: To evaluate the Impact of different locations of incisions on surgically induced astigmatism (SIA) after phacoemulsification.

Study Design: Longitudinal study

Place and Duration of Study: This study was conducted at the Khairpur Medical College and Teaching Hospital, Khairpur Mir's from July 2020 to December 2020.

Materials and Methods: A longitudinal study in which 100 patients with Keratometric Astigmatism of 1.5 D or less were included in the study after their consent. The participants were divided into two groups based on the type of incision. Group A received a Limbal incision, whereas, in Group B, a clear corneal incision was carried out. The pre and post-operative Keratometry K1 and K2 readings were recorded and tabulated on a data sheet. Data were analyzed using SPSS Version 21.0 and the paired t-test was applied to compare the mean K1 and K2 values of the different types of incisions at different sites (Superotemporal and Superonasal).

Results: Significant differences were seen in the K1 and K2 (P=0.002, P=0.039) Superotemporal readings in Group A. No significant difference was seen in the K1 and K2 (P=0.339, P=0.337) Superonasal readings in Group A. Significant difference was seen in the K1 and K2 (P≤0.001, P≤0.001) Superotemporal readings in Group B. Significant difference was seen in the K1 and K2 (P≤0.001, P≤0.001) Superonasal readings in Group B.

Conclusion: Both successfully showed less SIA post-operatively, however, Limbal incision induced less SIA after cataract surgery.

Key Words: Impact of Different Location, Surgically Induced Astigmatism (SIA), Phacoemulsification

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INTRODUCTION

Pakistan is a third-world country in which most of the population is poor and lives in rural areas. Pakistan is another country filled with cataract patients and suffers from it the same way other countries do.

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Eye related issue is common worldwide, with 45 million people being blind with visual acuity of less than 3/60. Furthermore, half of the people residing in developing countries, similar to Pakistan are blind due to cataract[1]. The leading cause of blindness in Pakistan is also due to cataracts[2-3]. Cataract related surgery is one of the most frequently occurring surgical procedures on the plant, with about 19 million per annum cataract patients having to undergo cataract surgery, with studies suggesting this number to go up to 30 million by 2020[4]. Phacoemulsification is now considered to be the gold standard in treating cataract, replacing manual extracapsular cataract surgery because it is simple, safe, quick, and produces lesser amount of corneal astigmatism[5]. Furthermore, it is associated with lesser complications than its predecessor extracapsular cataract surgery which can cause macular and corneal edema, rupturing of the posterior capsule, and endophthalmitis[6-7]. Phacoemulsification is a procedure that has come into the knowledge of many patients and is more demanded by the patients due to its favorable outcomes, however, there are still some post-operative complications

associated with Phacoemulsification[8-9]. One of these is surgically induced astigmatism (SIA). To obtain the desired outcome, reduction in SIA and correcting any residual astigmatism is crucial in modern cataract surgery[10-11]. The relation of SIA is linked to the type and location of the incisions made during surgery. These types of incisions include scleral, clear corneal, and posterior Limbal incisions, being carried out at different locations such as temporal, Superotemporal, Superonasal, and superior. Various studies have investigated SIA with regards to the type and location of incisions being carried out[12-13]. These types of studies are anecdotal in the country; therefore, a comparative study was conducted to evaluate the Impact of different locations of incisions on surgically induced astigmatism (SIA) after phacoemulsification

MATERIALS AND METHODS

After seeking the required approval from the institutional review board to carry out this study, a longitudinal interventional study was conducted at the Khairpur Medical College and Teaching Hospital from July 2020 to December 2020. In this study, there were 100 patients selected with equal gender distribution based on the convenience sampling technique. Patients with a keratometric astigmatism of 1.5D or less and who were enlisted for cataract surgery were included in this study. The patients were divided into two groups based on the type of incision to be performed. In Group A, a Limbal incision was to be carried out, whereas, in Group B, a clear corneal incision was to be performed. In both, groups, the site of incision was to be Superotemporal and Superonasal. Before the inclusion of the participants, they were informed thoroughly about their inclusion in the study, and they were only included in the study once written and verbal consent was acquired from them. Surgery was performed on all the patients by an experienced and well-qualified surgeon, with the Pre and Post-Operatively K1 and K2 readings being recorded. The procedure of giving the incision was carried out using topical anesthesia solution, in which Superotemporal incision was given in the right eye and Superonasal incision was given in the left eye. The size of the incision was 2.8mm Wound was eventually closed by corneal hydration without suture. Data were recorded and tabulated on a datasheet, analyzed using SPSS version 21, and the mean K values were compared using paired t-test with the level of significance being kept at P ≤0.05.

RESULTS

Figure 1: Shows the gender distribution in the two groups

Figure 2: Shows the pre and post-operative Superotemporal Keratometry

Figure 3: Shows the pre and post-operative Superonasal Keratometry

Table 1: Shows the comparison of Pre and Post-operative mean Keratometry values in Group A and B.

Figure No.1: Shows the gender distribution in the two groups

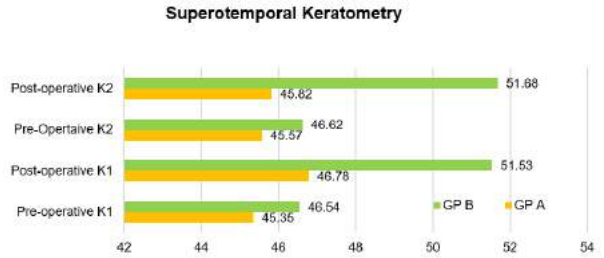

Figure No.2: Shows the pre and post-operative Superotemporal Keratometry

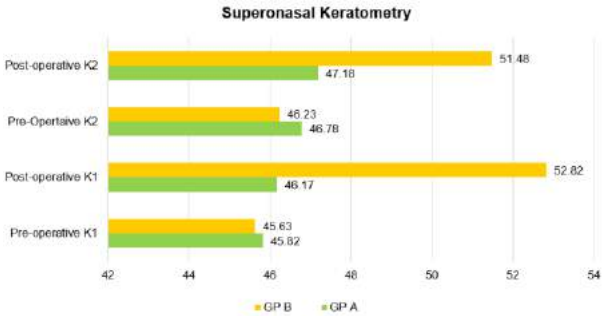

Figure No.3: Shows the pre and post-operative Superonasal Keratometry

Table No.1: Shows the comparison of Pre and Post-operative mean Keratometry values in Group A and B

Pre and Post-Operative P-Value	
Compare the Mean Superotemporal K Readings of Group A	
K1	0.002
K2	0.039
Compare the Mean Superonasal K Readings of Group A	
K1	0.339
K2	0.337
Compare the Mean Superotemporal K Readings of Group B	
K1	≤0.001
K2	≤0.001
Compare the Mean Superonasal K Readings of Group B	
K1	≤0.001
K2	≤0.001

Paired t-test, p-value ≤0.05

DISCUSSION

SIA depends primarily on the size, type, and size of the incision, as well as the position and comfort of the surgeon that is performing this surgery[13]. There is scarcity in Pakistan on studies concerning which type and location of the incision are best suited to reduced SIA in patients, and since cataract is a highly concerning issue at hand in the region, more studies need to be conducted similar to ours. In our study, we conducted two different types of incisions, Limbal incision and the clear corneal incision at Superotemporal and Superonasal locations. Our study showed that both of the types of incisions produced a redundant SIA, however, Limbal incision induced less SIA than the clear corneal incision. Ernest et al, (2011) in his study showed similar results to our study when he compared surgically induced astigmatism between Limbal incisions and clear corneal at the time of cataract surgery. His study concluded that Limbal incision induced significantly less SIA relative to clear corneal incision[14]. This reduced induction of SIA is significant, as it will lead to a better visual and refractive outcome in patients. The literature also states that Limbal incisions offer a much faster healing rate and having greater resistance to deformation during pressure than those in the cornea[15]. Furthermore, clear corneal incisions also increase the susceptibility of endophthalmitis[16]. It can be concluded that in terms of surgical safety, Limbal incisions don't have any demerits. Reducing the width of the Limbal incision width can also have an impact on the amount of SIA, as shown by another study in which is the incision size was 2.2mm as compared to the 2.75mm group, there would be a lesser amount of SIA, corneal flattening and torque after one week (P: = .003, .006, and .014, respectively)[17]. Superotemporal and temporal incisions produce less SIA, this can be seen in our study and another study which stated that temporal incisions are associated with little SIA. Furthermore, it stated that if there are higher levels of preoperative astigmatism, superior incisions are more favorable and provided better outcomes when combine methods are not applied[18]. Our study shows that both Limbal and clear corneal are good methods of incisions, but surgeons should lean more towards Limbal incisions due to it producing little SIA. In the left eye, Superonasal incisions should be done, whereas in the right Superotemporal incisions should be carried out.

CONCLUSION

Both Limbal and clear corneal incision reduce SIA, however, a lesser amount of SIA is seen in Limbal incision.

Author's Contribution:

Concept & Design of Study:	Attaullah Shah Bukhari
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Data Analysis:	Mazhar Ali, Ashiq Hussain, Muhammad Faaz Malik
Revisiting Critically:	Attaullah Shah Bukhari, Suhail Ahmed Shah
Final Approval of version:	Attaullah Shah Bukhari

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

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Original Article

BMI Status of 1st Year Medical Students of Medical College of Karachi – A Cross Sectional Study

Syed M. Maqsood[1], Zeba Saeed[1], Riaz Ahmed Bhutto[1], Pavan Kumar[2], Shahid Kamran[3] and Irfan Khan[1]

ABSTRACT

Objective: To determine the BMI status of first year medical students.
Study Design: Cross-sectional study
Place and Duration of Study: This study was conducted at the This study was conducted at Al-Tibri Medical College & Hospital, Isra University campus, Karachi, from July 2019 to December 2019.
Materials and Methods: All 89 students enrolled in first year MBBS class were involved in the study. Data was evaluated using SPSS version 25.
Results: Mean age of students was 19.64. Females were n=50 (56.2%) and males were n=39 (43.8%). The mean Body Mass Index was 21.98. First year male medical students overweight and obese are n=17 (43.6%). Female medical students overweight and obese are n=15 (30%). The overall daily physical activity done by the students is n=60 (67.4%).
Conclusion: Study reveals majority of first year medical students falls into the category of having normal BMI and female students are more physically active in their daily chores.
Key Words: BMI, First year medical students, Overweight, under weight

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INTRODUCTION

The prevalence of non-communicable diseases is increasing day by day, and creating a major public health problem in all age groups, all over the world and fortunately most of these diseases are preventable only through the modification of life style[1]. Obesity and overweight are killing 2.8 million people each year. WHO announced obesity as an epidemic globally[2]. In obesity large amount of fat is stored in the body and can lead to cardiac diseases, type 2 diabetes, obstructive sleep apnea, certain types of cancer, asthma, osteoarthritis and decreasing life expectancy[3]. Obesity affects roughly 20-40% of children worldwide. In humans, the body mass index (BMI) is used to classify overweight and obesity. It is calculated by dividing a person's weight in kg by the square of his height in meters (kg/m^2) [4].

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In Pakistan the prevalence of obesity and overweight is about 9-46%, different studies conducted in Pakistan reported different statistics regarding abnormal weight among medical students[5]. In Past obesity and overweight was considered problems of only developed countries[6], taking high-calorie foods and a non-active life style have increased the threefold rate of obesity in developing countries over the last two decades. Result of many scientific studies conducted among university students in different developing countries like India, Bangladesh, and China indicate a high prevalence of obesity[7]. The developing countries are facing a lot of problems because of urbanization among them dietary and life style changes are prominent, especially in children and adult. Increase use of salted snack foods, gum, candy, sweet desserts, fried fast food, and sugary carbonated beverages, hamburgers, pizza, and tacos in children and young population with the lack of healthy diet is alarming and on other hand mobile phones, laptop, computers, online games increase the screen time increases the health problems[8]. Our country is also facing these problems and now obesity is emerging as an important non communicable disease in Pakistan[8]. This behavior and lack of physical activity are behind the increasing trend of non-communicable diseases in community[9]. The medical students also belong from this community; they are more vulnerable because of their increased study time. They are future doctors and role models for the community. The purpose of this study is to find out their BMI, eating behavior and physical activity.

MATERIALS AND METHODS

Study Design: Cross-sectional study.
Sample Size: 89 students.
Site of study: Al-Tibri Medical College & Hospital, Isra University, Karachi.
Duration of study: July 2019 to December 2019.
Inclusion Criteria: All first year medical students of Al-Tibri Medical College.
Exclusion Criteria: Not willing to participate in the study, second, third and fourth year MBBS student & Students from other disciplines of Isra University.
Data Collection Procedure: Every student's age, sex, height in meters, and weight in kilograms were collected using a closed ended questionnaire. Standard registered scales and a non-stretch tape mounted to a level vertical wall were used to measure body weight to measure and height to the nearest 0.1 kg and 0.5 cm respectively. The scales were checked for accuracy by weighing an object of known weight to minimize measurement errors. The BMI was determined using the following formula: weight (kg)/height (m^2). Using the following cutoff points adapted from the WHO criteria which is as follows:

BMI	Nutritional Status
Below 18.5	Normal Weight
18.5-24.9	Underweight
25.0-29.9	Overweight
30.0-34.09	Obesity Class I
35.0-39.09	Obesity Class II
Above 40	Obesity Class III

The data obtained were compiled and analyzed by using SPSS version 21.0 software.

RESULTS

Mean age of students was 19.64. Females were n=50 (56.2%) and males were n=39 (43.8%). The mean Body Mass Index was 21.98. Students living in Isra hostel were n=32 (36%), residing in Karachi city with the family were n=52 (58.4%) and student who rented privately owned accommodation were n=5 (5.6%).

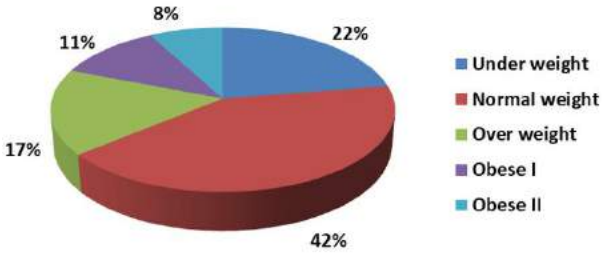

Figure No.1: Shows the BMI categories of first year medical students

First year male medical students who were underweight are n=7 (17.9%), normal weight n=15 (38.5%) and those who are overweight and obese are n=17 (43.6%). Female medical students who were underweight are n=13 (26%), normal weight n=22 (44%) and those who are overweight and obese are n=15 (30%).

The overall daily physical activity done by the students is n=60 (67.4%), students who do not perform physical activity daily are n=28 (31.5%) and finally the students who sometimes do the physical activity daily is n=1 (1.1%).

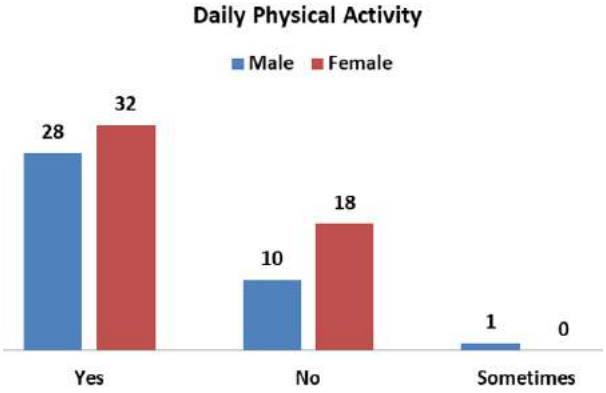

Figure No.2: Shows the daily physical activity carried out by Males and Females medical students of first year

DISCUSSION

In our study the mean age of medical students was 19.64% with standard deviation of 1.73 as compared to study conducted by Kerwani[9]The mean age of the students was 20.69 years with a standard deviation of 1.41 years. The results of our study regarding the gender43.8% were male and 56.2% were female, were same as compared to multicenter study conducted in Pakistan[10]. The study conducted by Mani[11], 65(43.3%) were female 85(56.7%) were male in this study 70% students living in hostel but in our study the result were vice versa, 56.2% were female and 36% students living in hostel, the reason can be Karachi is a economical hub of Pakistan and all over county the people come and live here so the majority of the students is living at home. Female ratio is more in our study, reason behind the females are more serious about their study and their career and they choose medical profession by their own choice because it is a noble profession and upgrade the status of female in our male dominant society. A study conducted on medical students and house officer 71.6% join this medical profession by their own choice[12]. In current study 22.5 % were under weight, 16.9% were overweight as compared to 21.34% students were underweight study conducted in India[13] and 25% were overweight study conducted in Bahawalpur[14,] the difference because of eating habits culture and festivity, they like to consume more meat and dairy products like butter, ghee and high caloric die.

CONCLUSION

Study reveals majority of first year medical students falls into the category of having normal BMI and female students are more physically active in their daily chores.

Author's Contribution:

Concept & Design of Study:	Syed M. Maqsood
Drafting:	Zeba Saeed, Riaz Ahmed Bhutto
Data Analysis:	Pavan Kumar, Shahid Kamran, Irfan Khan
Revisiting Critically:	Syed M. Maqsood, Zeba Saeed
Final Approval of version:	Syed M. Maqsood

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

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Original Article

Occurrence of Angular Cheilitis Among Dental Patients of Sindh Province: A Cross-Sectional Study

Daud Mirza[1], Seema Naz Soomro[3], Saima Salman[4], Parveen Memon[3], Abdullah Alarifi[5] and Syed Ahmed Omer[2]

ABSTRACT

Objective: To determine the occurrence of angular cheilitis (AC) among private dental patients of Sindh Province.
Study Design: Cross-sectional study
Place and Duration of Study: This study was conducted at various dental clinics of Sindh Province from January 2019 to June 2020 for a period of six months.
Materials and Methods: A total of 70 patients diagnosed with angular cheilitis were included in this study, after obtaining the consent from patients, the data was transferred to SPSS version 23 for analysis. The chi-square test was applied in which p value 0.05 was considered significant.
Results: In this study, 70 patients clinically diagnosed with Angular cheilitis were participated with a mean age 63.07 and SD ±11.08. The reason for AC was evaluated and the most common reason found in both the genders was poor denture construction 34 (48.57%) followed by loss of vertical dimensions or attrition 19 (27.14%) and nutritional deficiencies 11 (15.71%). The cross-tabulation between reasons of AC with gender showed insignificant findings with a p-value of 0.34.
Conclusion: Poor denture fabrication, loss of vertical dimension of prosthesis and nutritional deficiencies were identified as a causative factor. Large sample size is required to obtain meaningful estimate of AC among dental patients.
Key Words: Candida, Candida Albicans, Cheilitis, Staphylococcus aureus, angular cheilitis

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INTRODUCTION

Angular Cheilitis (AC) is defined as inflammation at the corner of mouth. The word 'Cheil' (Greek word) denotes for lip and suffix 'itis' specifies inflammation.[1] This condition is also known by several names such as angular stomatitis, angular cheilosis and commissural cheilitis.[1,2] Clinically angular cheilitis may affect one or both angle of mouth. The patient may complaint soreness, pain, ulceration cracking, bleeding, keratosis and mild ulceration. This condition may become painful on opening of mouth and may last to several days[3] in some cases.

The etiology of angular cheilitis is not well understood but the possible factors involved are: loss of vertical height of the prosthesis. It may be due to prolonged use of denture wearing or fall off inter maxillary space / reduced in vertical dimensions. This may be due to attrition of teeth which is most commonly occurs with advance age.[2] The loss of vertical dimension may result in over-closure of the jaws which will produce occlusive folds at the corner of mouth where saliva tends to collect and the skin subsequently becomes macerated, fissured, secondarily infected and becomes colonized mainly with Candida and few bacterial species such as Staphylococcus aureus species.[4,5] Other contributing factors include nutritional deficiencies, systemic diseases, elderly prolonged denture users and immunocompromised, such as HIV-infected, diabetes mellitus, and anemia patients.[6] Evidences have shown the association of angular cheilitis with oral candidiasis and bacterial pathogens such as staphylococcus aureus and β-hemolytic streptococci.[7] Some medical procedures like bariatric surgical and ileal resection may manifest nutritional deficiencies. Other conditions like chronic pancreatitis, chronic gastritis, and Crohn's disease are the possible risk factors for nutritional deficiencies. Study has shown that vitamin B deficiency (cynocobalmin, riboflavin and folate),[8] mineral

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deficiencies (iron/zinc) and general protein malnutrition are also associated with angular cheilitis.[9]

Literature has shown the evidence that angular cheilitis may affect both genders. However, it may involve people of young to elderly age group. The gender difference in occurrence of AC has also been reported in different studies. Study conducted in Ahmedabad in India showed high predilection in females than males,[1] similar finding was also observed in Ritchie study.[9,10] The research has shown that angular cheilitis may occur between 2nd to eight decades of life.[6]

The treatment of angular cheilitis is depends on the underlying cause and should be treated accordingly. Antifungal ointment is prescribed if candida is observed.[10] It is emphasized that the dentist must know the exact etiopathogenesis and clinical presentation of angular cheilitis so that they can diagnose easily and provide treatment to their patient to improve the quality of life.[11] The aim of this study is to investigate the occurrence and etiological factors with respect to gender.

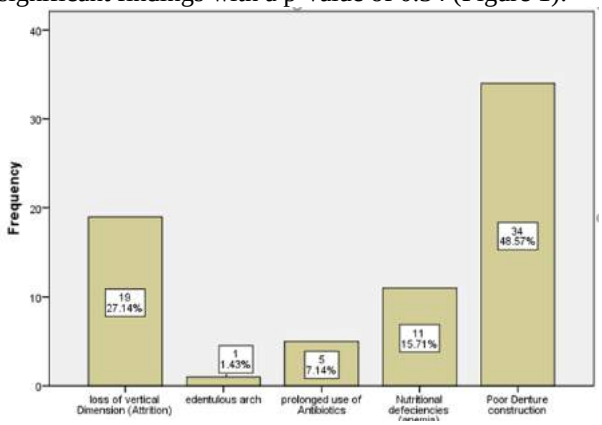
MATERIALS AND METHODS

This cross-sectional study was carried out in private dental clinics of Sindh Province from January 2019 to June 2020. A non-probability convenient sampling technique was used. The permission for data collection was obtained from the owners of private dental practice and an informed consent was also taken prior to oral examination of patients. A total of 70 diagnosed cases of angular cheilitis (AC) were participated in the study. The study included both male and female patients which were divided into three age groups (10- 30, 31-60, 61-90 years). Angular cheilitis was diagnosed on the basis of clinical presentation seen at the time of examination. The sign and symptoms include soreness, pruritis, swelling or cracking, pain, burning sensation, bleeding, ulceration and deep folds at the corner of the mouth.

The exclusion criteria included patients who refused to give consent. The data was recorded on a proforma and evaluated by Statistical Package for the Social Sciences (SPSS) version 23. To know the significance and frequency of angular cheilitis between genders and reasons were analyzed by using Chi-square test. P-value < 0.05 was considered significant.

RESULTS

A total number of 70 clinically diagnosed patients of angular cheilitis were included in this study, out of which 31(44.3%) were males and 39(55.7%) females. The Mean age was 63.07 and SD ±11.08. The minimum and maximum age reported was 38 and 88 years. The reasons for angular cheilitis was also investigated and correlation with gender, was also made which revealed that poor denture construction was the major etiological factor reported in both the genders 34 (48.57%). This was followed by loss of vertical dimensions or attrition 19 (27.14%) and nutritional deficiencies 11 (15.71%) whereas use of antibiotics reported 5 (7.14%) and edentulous arch reported only 1 (1.42%). The angular cheilitis is shown in figure 1. The cross-tabulation between reasons of AC and gender showed in significant findings with a p-value of 0.34 (Figure 1).



*Insignificant p-value 0.34

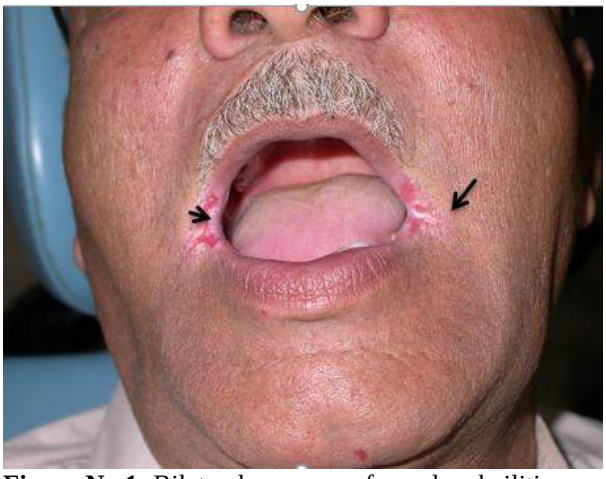


Figure No.1: Bilateral presence of angular cheilitis

DISCUSSION

Angular cheilitis is basically an unpleasant condition leading to cracks, fissuring, occasionally it may cause bleeding at the angle of mouth. The present study was aimed to investigate the occurrence of angular cheilitis among dental patients who visited different dental clinics. The term angular cheilosis, commissural cheilitis, angular stomatitis, are synonyms for angular cheilitis.[12]

Globally angular cheilitis may involve both the genders. The prevalence of angular cheilitis may vary from study to study in different parts of the world. A local study conducted in Pakistan among elderly population showed prevalence of AC ranging from 0.7 to 3.8% [13] whereas Kelly and colleagues[6] reported 0.2 to 15.1% in children. However, higher predilection was also

observed between 3rd to 6th decades of life. Thumb sucking, lip licking and biting corners of the lips are common factors, whereas sagging at the commissures of the mouth poses risks to AC in older patients.[11]

Literature has shown the evidence of deficiency of vitamin B, folic acid and iron as predisposing factors. Study by Shin revealed that anemia has been associated with angular cheilitis in as much as 11.3% to 31.8% of patients in different studies.**[14]** Present study results reflected nutritional deficiencies which were similar to Parlak study.[15] A Turkish study conducted in a Duzce Province in a western black sea showed 9% prevalence which was in accordance with present study findings.[15] A clinical and microbiological study conducted by AP Dias on Southern Chinese patients highlighted that infective agents were isolated from 37(54%) samples of AC and growth of Candida and Staph: aureus was reported.[16]

Lugović-Mihić and colleagues states that AC was predominantly seen among diabetics and psychiatric patients. Furthermore, patients who used certain drug therapy (isotretinoin), and less frequently seen in primary hypervitaminosis.[17,18,19]

Studies conducted by Fox et al, Ohman and colleagues revealed that angular cheilitis was observed in 2^{nd} – 8^{th} decade of life.[20,21] In present study majority of patients were observed between 3^{rd} to 8^{th} decades of life. This was very close to Ohman study. Oza and Doshi demonstrated that the occurrence of AC was more common among females, this may be due to hormonal variation during pregnancy, menstruation, menopause and anemic condition.[1] The current study also supported Oza study findings. A case series on AC among COVID-19 patients found decrease of vertical dimension to be a major local factor.[22] Similarly, in current study, the loss of vertical dimension was the 2^{nd} most common etiological factor seen which also supported Abanoub Riad study.[22] Loss of vertical dimension was also observed in Anitha and colleagues study which was in accordance with our current study. Weight loss in some patients could cause loss of facial elastic tissue, skin turgor, and reduce the vertical dimension of the facial structures causes pooling and stasis of saliva at the commissures of the mouth and eventual maceration of the skin and mucosa.[23]

The diagnosis of AC can easily be made on clinical grounds. The treatment of AC depends on infectious and noninfectious etiology. For infectious type fungicidal medication should be applied at the labial commissures of lips thrice a day for 2 weeks period. Other medications include the use of Nystatin 100,000 units/mL ointment applied twice daily.[9] Ketoconazole 2% cream and Clotrimazole 1% cream can also be used. Miconazole 2% cream topically (with or without hydrocortisone 1%): Mixed staphylococcal and candidal infections respond best to this treatment. Topical antiseptics and antibiotics include: Fusidic acid 2% cream (with or without hydrocortisone 1%) applied QID topically as an antistaphylococcal regimen for AC.[9].

CONCLUSION

To conclude the angular cheilitis, present study findings can be attributed numerous local etiological factors such as poor denture construction, loss of vertical dimensions of prosthesis/jaws and nutritional deficiencies. In authors opinion a multicenter study should be conducted to further evaluate the etiological factors of angular cheilitis.

Author's Contribution:

Concept & Design of Study:	Daud Mirza
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Original Article

Crawford Tube Stenting after Failed Medical Treatment and Failed Probing in Patients with Congenital Nasolacrimal Duct Obstruction

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ABSTRACT

Objective: Assess reduction in post-operative symptoms after Crawford tube stenting in patients with congenital nasolacrimal duct obstruction (CNLD)

Study Design: Experimental / longitudinal study

Place and Duration of Study: This study was conducted at the Isra postgraduate institute of Ophthalmology, Al-Ibrahim eye hospital Karachi from January-2020 to December-2020

Materials and Methods: After seeking approval, a longitudinal study was conducted in which 103 patients aged 1-5 years with CNLDO were selected. In all the patients probing was carried out. After probing, a Crawford tube stent was inserted through the upper and lower punctum with the probes removed and the free ends tied to the nose. Data was analyzed using SPSS Version 21.0. Post stratification, Chi-square/Fisher exact test will be applied to assess significant association between success of the treatment. P-value<0.05 will be considered significant.

Results: 103 patients were included in the study, 70 (68.6%) male and 33 (31.4%) female with the mean age of patients being 3.1±1.7 years. No significant difference was seen in the 1st week and 1st month regarding discharge and regurgitation test (P=0.310, P=0.555). However, significant difference was seen in the 3rd month after treatment (P≤0.000).

Conclusion: Crawford tube stenting is an effective procedure after medical and probing has failed in patients with congenital nasolacrimal duct obstruction.

Key Words: Crawford Tube Stenting, Failed Medical Treatment, Failed Probing, Patients.

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INTRODUCTION

Nasolacrimal duct obstruction (NLDO) is an obstruction found in the lacrimal system that most commonly produces the symptom of Epiphora[1]. NLD can be either an acquired condition, or it may be congenital in nature. Congenital Nasolacrimal Duct Obstruction (CNLDO) is a highly prevalent disorder found in the pediatric population. Studies of epidemiology have reported the incidence of CNLDO to be from 5-20%[2].

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The reason for the development of CNLDO is a mechanical obstruction in the nasolacrimal duct (NLD) located near the valve of Hasner. Fortunately, the rate of spontaneous resolution of CNLDO is said to be 90% within the first year[3]. The clinical signs and symptoms of the disease include excessive tearing, mucopurulent or mucous discharge, along with a positive regurgitation test[4-5]. If CNLDO doesn't resolve spontaneously then medical management is necessary. Management of CNLDO includes conservative medical management that can include the administering of antibiotics, massaging of the lacrimal duct, and even probing[6-7]. If the above mentioned management techniques fail to resolve the obstruction and symptoms surgical procedures can then be carried out, with Dacryocystorhinostomy (DCR) being the most common procedure[8-9]. DCR can be carried out either externally or through an endoscopic approach. External DCR in children is reported to have an excellent success rate[10]. However, the success rate of Endoscopic DCR is also said to be approaching that of External DCR[11]. The method that surgeons adapt, either being Endoscopic or External DCR still remains controversial, with some being in favor of the external DCR approach, while

some advocate for using endoscopic DCR which is a less invasive method with various different stent materials especially silicon[12-14]. Since CNLDO is a very common issue in across the world, and with data in the Pakistan being very anecdotal concerning silicon Crawford tube, a longitudinal study was conducted to assess Crawford tube stenting after failed medical treatment and failed probing in patients with congenital nasolacrimal duct obstruction.

MATERIALS AND METHODS

This experimental / longitudinal study was conducted after being granted approval from the Institutional review board at Isra postgraduate institute of Ophthalmology, Al-Ibrahim eye hospital Karachi for six months from January-2020 to December-2020. The study took place for a period of 6 months in which 103 patients aged 1-5 years with CNLDO was included through Non-probability sampling technique. The children were included in the study after taking consent from their parents or guardian regarding their inclusion in the study. Once adequate consent was taken and the patients were eligible for the study, other factors of trauma to eye, use of any eye drops, and history of active infection of the eye were taken into account. Before Crawford tube was commence, a probing range from 0.70 to 1.10mm in diameter was conducted through the upper and lower punctum. After probing the Crawford tube stent consisting of two probes was passed through first the upper punctum and then through the lower punctum, the probes then are removed and the free ends tied to the nose. All of these procedures will be performed under strict supervision with experienced consultants working in the facility. After the completing of intubation, the patients will be called for follow up on the 1st week, 1st month, and the 3rd month. At every follow up visit, patient will be evaluated for mucopurulent discharge, Epiphora, and regurgitation test. A successful treatment will be considered once there is an absence of Epiphora and discharge. At the end of 3rd month, the Crawford tube will be removed. Data was analyzed using SPSS 21.0, Mean ± SD will be computed for age. Frequency and percentage will be computed for gender, epiphora, mucous discharge and regurgitation. Post stratification, Chi-square/Fisher exact test will be applied as appropriate to assess significant association between age, gender and success of the treatment. P-value<0.05 will be considered significant.

RESULTS

A total of 103 patients were included in the study.70 of these were male and 33 females. Mean age of the patients was 3.1± 1.7 years. On presentation 90 patients had discharged, 70 had epiphora and regurgitation was present in 88 patients.

Table No.1: Demographic data presented as frequency and percentage

Factors	Frequency (%)
Gender	
Male	70 (68.6%)
Female	33 (31.4%)
Mean Age	3.1± 1.7 years
Eye	
Right	73 70.6%)
Left	30 (29.4%)

Table No.2: Symptoms after 1st week of Surgery

Symptoms	**Frequency**		
	Yes	**No**	**P-Value**
• Discharge	71	32	p=0.310
• Epiphora	33	70	
• Regurgitation	69	34	

Table No.3: Symptoms after 1st month of Surgery

Symptoms	**Frequency**		
	Yes	**No**	**P-Value**
• Discharge	61	42	p=0.555
• Epiphora	26	77	
• Regurgitation	71	32	

Table No.4: Symptoms after 3rd month of Surgery

Symptoms	**Frequency**	
	Yes	**No**
• Discharge	50	53
• Epiphora	13	90
• Regurgitaion	53	50

DISCUSSION

Patients are not immediately subjected to surgical intervention when dealing with CNLDO, instead observation is first considered. Later on, medical management and probing is initiated. Once we have exhausted all the options, only them surgical treatment might be considered necessary. In our study, a Crawford tube was used to treat CNLDO. Our study showed that in the 3rd month of post-operative follow up, a significant reduction in symptoms and obstruction was seen. This finding is a similar finding to another study, in which all patients showed a reduction in symptoms after undergoing double silicon intubation, stating that it is an alternative to DCR in children who had undergone conventional treatment for nasolacrimal obstruction[15]. The procedure that we performed was simple and very effective as it was able to relive the symptoms of CNLDO. Another study conducted by Memon et al (2012), in which olive tip silicon intubation was used to resolve CNLDO showed that an overall success rate of 89% was seen in children aged 12-48 months of age. 92% success rate in children under the age of 2 years (P<0.0001), and 90% in children aged 2-3 years (P<0.0001). The study

concluded that silicon intubation with an olive tip is highly successful as primary treatment[16]. We removed the Crawford tube at the end of the 3rd month, another study has shown that a greater treatment outcome can occur if the silicon tube was placed in situ for more than 6 months[17]. Using silicon tube is also beneficial because of the fact that it prevents the formation of granulation tissue which could have created obstruction around the newly created patent tract[18]. Crawford tube can be used to only treat symptomatic Epiphora in patients in which there isn't any nasolacrimal duct obstruction, as demonstrated by Tong et al (2016) who showed that Crawford tube is simple, safe, and effective in relieving functional Epiphora[19].

CONCLUSION

Crawford tube stenting in patients with failed medical treatment and failed attempts of probing in patients with congenital nasolacrimal duct obstruction is an effect means of treatment. It is relatively simple and can be done with minimal complications. We recommend that this should be used more often. Larger and multicentric studies are needed for assessing results better.

Author's Contribution:

Concept & Design of Study:	Anum Fatima
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Pattern of Dental Health Status Among Sensory Impaired Children of District Lahore: Influence of Parental Socioeconomic Status

Dental Health Status Among Sensory Impaired Children

Fariha Fayyaz[1], Shariq Ali Khan[1], Muhammad Abdullah[1], Rizwan Saghir Chatha[1], Mariam Fatima[2] and Hira Asgher[1]

ABSTRACT

Objective: To determine the degree of oral health knowledge, attitudes, and practices among parents and children. To determine the association between dental health and parental socio-demographic characteristics, children's tooth brushing, dental health care access, and barrier to health care.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Department of Public Health, Azra Naheed Dental College / Superior University, Lahore from the period of one year November 2017 to November 2018.

Materials and Methods: The quantitative methods of observation were used in this cross-sectional research design. The dental assessment was carried out effectively by evaluating school children aged 5 to 15 years, and demographic data was also acquired with the assistance of the school administration at the time of the assessment. A study was undertaken in five special schools in Lahore's urban and periurban districts with five types of sensory impairment.

Results: In the frequency distribution test, parent/child knowledge, behavior, and oral health practices were analyzed. The correlation between important factors and dental diseases were analyzed with the Chi-square test. The tests were performed with version 22 of SPSS.

Conclusion: To promote the oral health of sensory impaired school-aged children, socioeconomic factors such as socioeconomic status, toothpaste availability, tooth brushing frequency, dental screening at school, and utilization to dental care evaluation and oral health knowledge of students and parents must be prioritized.

Key Words: Dental health, sensory impaired, socioeconomic status

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INTRODUCTION

Dental health is seen as a crucial component of a person's overall health."[1]. Dental diseases are the most prevalent disease that affects a considerable proportion of society, particularly among school-aged children. Around 500 million people are estimated to be disabled worldwide, and this number is rising every day[2].

According to the American Health Association, disability is the root of many problems, including the inability of disabled children to use their mental, social and physical abilities to interconnect effectively, and they have a significantly higher rate of dental disease, which necessitates special attention from the general public[3]. Blindness, hearing problems, speech problems, and other mental illnesses significantly affect the child's oral health[4]. Because of their sensory, motor, and intellectual limitations; disabled children are less conscious of their oral health hygiene and are more prone to dental disorders[5]. Most children suffer from dental caries that are the most common chronic childhood disorder that interferes with a child's ability to talk and engage in everyday activities due to acute discomfort and disruption of normal daily activities[6]. Disabled children also suffer as a result of their parent's and caretaker's ignorance. This neglect harms the children's mental and overall well-being[7].

The financial situation of a family can impact children's health and well-being since it will limit to avail dental treatment, such as dental screening[8,9,10].

Schools play an essential role in the dental health of a child; the school's dental team is responsible for yearly dental screening of schoolchildren, especially those with disabilities; they need to pay particular attention to

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their daily medical checkups and dental care[11-15]. According to the study, students lack knowledge of educational and preventive approaches for oral health hygiene, and dental education is required to enhance awareness and raise standard practices[16].

Sensory deficient children are classified as "special needs population"[17]. These people have a poor understanding of their oral health and suffer from a higher rate of dental illness and more difficulty in receiving oral health care[18]. Sensory disabled children require the same level of health care as the healthy population. However, it has been observed that they have worse oral health than the general population.[19,6].

After all, sensory impaired children are unable to explain their issues, which will hurt their daily lives and their negligence will hurt their psychosocial well-being[6,20-22].

The current study examines the critical factors that contribute to problems with a child's oral health when they have a sensory handicap.

MATERIALS AND METHODS

The quantitative methods of observation were used in this cross-sectional research design. The dental assessment was carried out effectively by evaluating school children aged 5 to 15 years, and demographic data was also acquired with the assistance of the school administration at the time of the assessment.

A study was undertaken in five special schools in Lahore's urban and periurban districts with five types of sensory impairment children. The Punjab University – Ethical Review Committee gave their approval to the study. At the time of data collection, permission letters with the study's purpose were delivered to the selected schools. Teachers, parents, and caregivers were also asked for their permission to collect data to evaluate children's oral cavities. Letters were written and delivered to their respective schools.

Lists of operational schools for sensory impaired children were sought from the special education department. It was verbally communicated by the department of special education that we could only access one-third of enrolled students. All schools were selected and approached for the study. Only five special education schools gave permission. The complete list of enrolled students was 1183 of these five schools. Total 237 students were studying in every school on average. One-third of enrolled students was calculated, and the figure was 79 students from each school, which was the limitation incurred on the researcher to select only one-third of students from each school. So the final sample size from every two schools was 78 students. 79 student's names were selected from the total names list of each school through the lottery method. These names were shared with schools authorities. Date and time of examination of these students was agreed between researcher and schools authorities, and data was collected.

After scrutiny of data, due to the absence of some children on the days of examination and non-cooperative behavior, the researcher could get only 50 students from three schools. 53 and 55 from students from the fourth and fifth classes. This number of 53 and 55 were rounded off, and 50 sensory impaired children were selected for the study. The mean age of students, including boys and girls, was found to be between 9 and 13 years old in the study. Principal informants were chosen from each school's class instructors and administrative staff.

To gather data from the target group, the quantitative standardized questionnaire utilized in this study was developed from the WHO oral health evaluation process for children (WHO, 2013). The questionnaire is divided into two parts. (1) socioeconomic status of parents, availability of toothpaste, frequency of tooth brushing, access to dental health care, utilization of dental treatment, last visit to the dentist, screening in school, barriers to access health care utilization were added, and (2) questions about dental problems and diseases including such dental caries, gingival bleeding, tetracycline poisoning,

Data Collection Procedure

Statistical Analysis: The knowledge, attitude, and practices of parents and children on oral health status were analyzed using the frequency distribution test, and the association between important factors and dental illnesses was analyzed using the Chi-square test. The tests were run using SPSS version 22.

Inclusion Criteria: The disabled children with mild to severe sensory disabilities (boys and girls) aged 5 to 15 years was the inclusion criterion.

Exclusion Criteria: Exclusion criteria included children over the age of 15 who had a significant sensory handicap.

RESULTS

Table No.1: Descriptive Analysis

	Frequency	%	Valid %	Cumu-lative %
Valid				
Male	171	68.4	68.4	68.4
Female	79	31.6	31.6	100.0
Total	250	100.0	100.0	

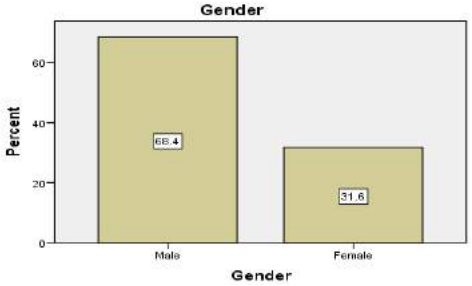

Figure No.1: Descriptive Analysis

Table 1 and Figure 1 reveal that there were 171 (68.4%) male children and 79 (31.6%) female children out of a total of 250 children.

Table No.2: Income

		Frequ-ency	%	Valid %	Cumu-lative%
Valid	Average	163	65.2	65.2	65.2
	Good	87	34.8	34.8	100.0
	Total	250	100.0	100.0	

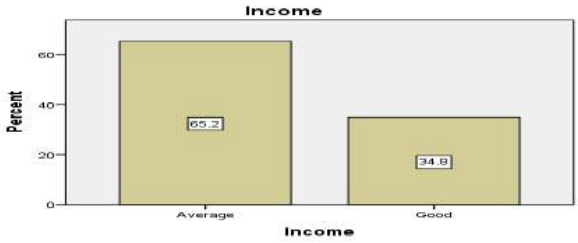

Figure No.2: Income

Table and figure no. 2 reveal that the monthly income of 163 (65.2%) children's parents were average while 87 (34.8%) children's parents had a good income.

Table No.3: Social Status

	Frequ-ency	%	Valid %	Cumu-lative %
Non - Working	132	52.8	52.8	52.8
Working	118	47.2	47.2	100.0
Total	250	100.0	100.0	

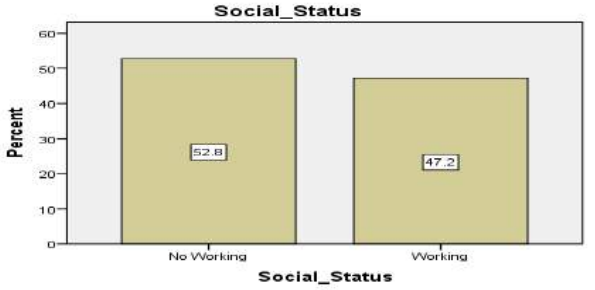

Figure No.3: Social status

Table and figure 3 illustration that from the total sample size of 250, the social status of the 132 (52.8%) children's parents were not working, and the social status of 118 (47.2%) children's parents were working.

Table No.4: Toothpaste Availability

		Freq-uency	%	Valid %	Cumu-lative %
Valid	No	11	4.4	4.4	4.4
	Yes	239	95.6	95.6	100.0
	Total	250	100.0	100.0	

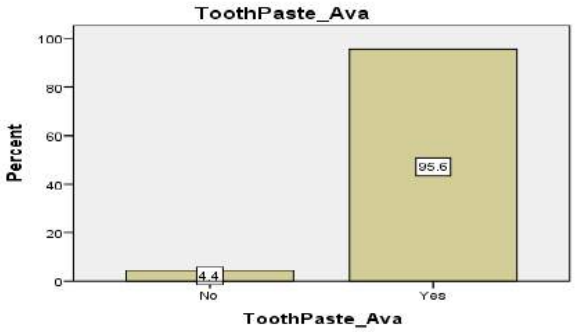

Figure No.4: Toothpaste Availability

Table No.5: Frequency of tooth brushing

		Freq-uency	%	Valid %	Cumu-lative %
Valid	Once a day	204	81.6	81.6	81.6
	Twice a day	46	18.4	18.4	100.0
	Total	250	100.0	100.0	

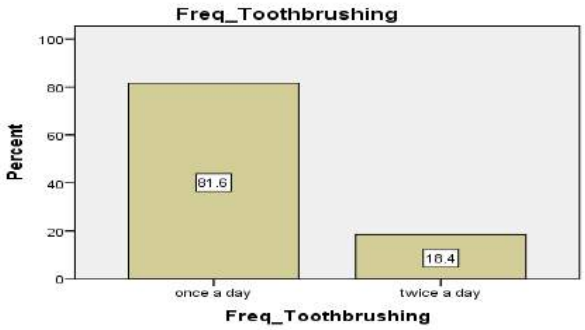

Table No.5: Frequency of tooth brushing

Table & figure No. 4 shows that from a total of 250 children, 11 (4.4%) of children have mentioned the unavailability of the toothpaste while other 239 (95.6%) mentioned the availability of the toothpaste.

Table 5 and Figure 5 reveal that out of a total of 250 children, 204 (81.6%) clean their teeth once a day and only 46 (18.4%) brush their teeth twice a day.

Table No.6: Dental Health Access

		Freq-uency	%	Valid %	Cumu-lative%
Valid	No	126	50.4	50.4	50.4
	Yes	124	49.6	49.6	100.0
	Total	250	100.0	100.0	

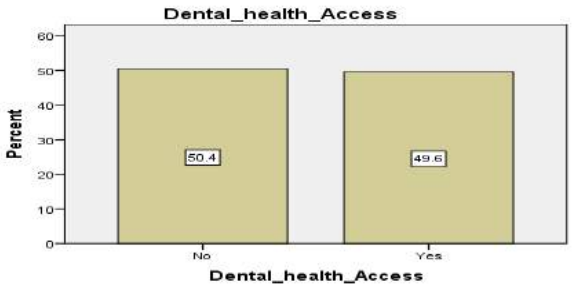

Figure No.6: Dental Health Access

Table no. 6 and figure no. 6 demonstrate that 126 (50.4%) of children have no access to dental health care and 124 (49.6%) have access to dental treatment.

Table No.7: Last visit to dentist

		Freq-uency	%	Valid %	Cumu-lative %
Valid	Never	188	75.2	75.2	75.2
	Within last year	57	22.8	22.8	98.0
	Last 3 years	3	1.2	1.2	99.2
	Last 5 years	2	8	8	100.0
	Total	250	100.0	100.0	

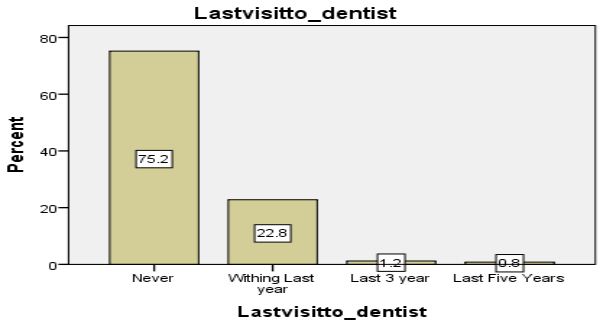

Figure No.7: Last visit to dentist

Table and figure no. 7 show that out of a total of 250 children, 188 (75.2%) have never had a dental checkup, 57 (22.8%) have visited dentist in the previous year, 3 (1.2%) have visited their dentist in the previous three years, and only 2 (0.8%) have visited their dentist.

Table No.8: Dental Treatment Utilization

		Freq-uency	%	Valid %	Cumul-ative %
Valid	Never	166	66.4	66.4	66.4
	Within last year	84	33.6	33.6	100.0
	Total	250	100.0	100.0	

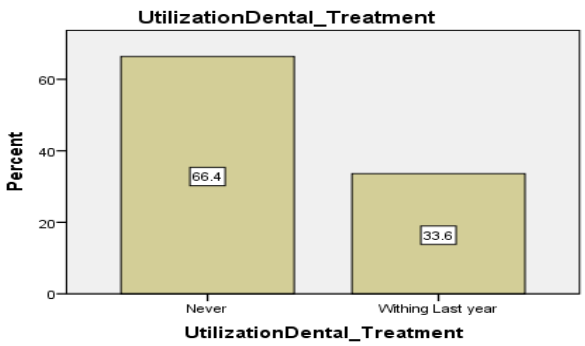

Figure No.8: Dental Treatment Utilization

Table 8 and figure 8 demonstrate that 166 (66.4 percent) of children have never had a dental checkup and treatment, while 84 (33.6 percent) have had treatment within the last year.

Table No.9: A Barrier to Access to Utilization of Health Care

		Frequency	%	Valid %	Cumul-ative %
Valid	Lack of knowledge of parents/ caretaker	193	77.2	77.2	77.2
	Lack of knowledge of students	57	22.8	22.8	100.0
	Total	250	100.0	100.0	

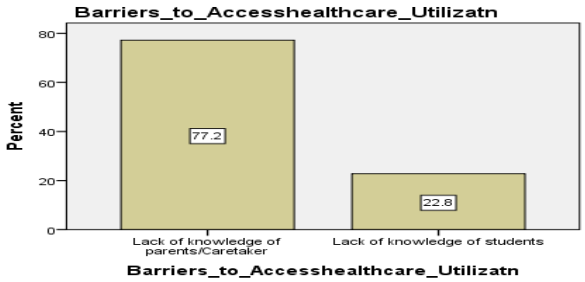

Figure No.9: A Barrier to Access to Utilization of Health Care

Table No.10: Chi-Square Tests

	Value	**Df**	**Asymp. Sig (2-sided)**
Pearson chi-square	1.367[a]	4	.850
Likelihood ratio	1.764	4	.779
Linear-by-linear association	1.051	1	.305
N of valid class	250		

Table and figure no. 9 demonstrate that 197 (77.2%) children do not have access to health care because of their parents' lack of information about dental health and treatment, whereas 57 (22.8%) children do not have access to health care because of their lack of awareness about dental health.

Accessibility to dental health has an insignificant (P=0.85) link with permanent teeth inspection, according to Table 10.

DISCUSSION

In this study, which looks at the knowledge, attitudes, and habits of parents of sensory-impaired children and parents of normal children of high school age; the relationship between demographic characteristics and oral diseases was examined. There were 171 (68. 4%) males and 79 (31. 6%) females out of a total of 250 children according to the findings. On clinical examination, 20% of the children were found to be normal, 20% to have a hearing impairment, 20% to have a speech impairment, 20% to be blind, and 20% to be mentally retarded. 65.2 percent of children had an average monthly income, while 34.8 percent had an excellent monthly income. The current study found that the percentage of children who have never visited a dentist is greater, which is consistent with earlier studies that demonstrate that the percentage is higher among hearing and vision impaired school-aged children due to parental neglect and a lack of information (23).

61 children have permanently healthy teeth, 18 children have permanent teeth caries, 0.8% are permanent caries, 1.6% of permanent teeth for children are missing because of caries and only one child (0.4%) has permanent teeth. Similarly, 3 teeth (1.2%) were missing because of traumatism, and 1 (0.4%) had a wide range of difficulties. Whereas 101 (40.4%) children were without gingival bleeding and 149 (59.6%) children were having, gingival bleeding. 28 (11.2%) children had no treatment done before; 54 (21.6%) children had prevention and routine treatment, 93 (37.2%) children had their scaling promptly, and 66 (26.4%) children needed immediate treatment because of pain caused by infection. (8, 24-26) (21).

CONCLUSION

The objectives of this research are to study the knowledge, attitudes, and practices of parents of school-going children regarding their children's oral health. Along with that, the relationship between main population factors such as gender, parents' income and socioeconomic status has been compared with tooth burn, oral mucosal lesions, tooth traumas, gingival bleeding and previous interventions. Therefore, schoolchildren with oral and dental disorders were found that leads to young people's general dental health being poor.

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

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Original Article

Impact of Social Media on Mental Health among Medical Students of Private Medical College, Sargodha

Muhammad Usman Ghani[1], Muhammad Mohsin Rana[2], Amina Iqbal[3] and Muazzam Fuaad[2]

ABSTRACT

Objective: To evaluate the degree of impact and relationship between the use of the social media on student's mental health.

Study Design: Descriptive cross sectional study

Place and Duration of Study: This study was conducted at the Medical Students of Rai Medical Collage, Sargodha Pakistan from 10 March 2020 to 10 May 2020.

Materials and Methods: The sample of the study was selected through non-probability volunteer sampling techniques. It was consisting of 150 WhatsApp users comprising of 41 male and 109 female students. Data were collected through a self-developed questionnaire WhatsApp use patterns questionnaire (WUPQ) for measuring the uses of social media networks. To measure the depression and anxiety level of the respondents Hospital Anxiety and Depression Scale (HADS) was used.

Results: Results shows social media usage has positive and significant correlation with mental health.

Conclusion: A proper formatted assessment for these psychological abnormalities must be part and parcel of all such programs with special focus on underline causative role of non-judicious use of social media.

Key Words: Social media, mental health, anxiety, depression

Citation of article: Ghani MU, Rana MM, Iqbal A, Fuaad M. Impact of Social Media on Mental Health among Medical Students of Private Medical College, Sargodha Med Forum 2021;32(9):163-167.

INTRODUCTION

Social media is the latest technological engine for the virtual and real time sharing. It's find its application among common interest's groups, shared sociopolitical groups and professionals, being the few examples. Its user friendly programming has almost hypnotized more than half of the internet users who are daily surfing the social media, out of 7.5 billion total net connect people 4 billion are hooked[1].

Pakistanis are following the trend, Pakistan telecommuting authority PTA has recently announced to connect 70 million users through it landline, 3G, 4G and recently broadband services. Facebook has emerged the leading social media platform[2] while twitter and my space follow it closely, many at time people use all three.

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The social media has proven its capacity to influence the public opinion, be it cultural, social trend and fashion, religious and political views by overwhelming the intelligentsia by continues bombarding of information skewed to their wastage interest. like all other phenomena when you deviate from "AITDAAL", under users are left behind while over users are intoxicated. It's a common observation that children, adolescents and our youth are easily and deeply influenced by any new idea. There are not mature and enough and educated enough to critically analyzed this flood of information. The continuous indulgence leaves very little space for reflection, the most important and high grade intellectual factor in personality development. This over indulgence leads to addictive attachment to the social media. All the recent literature focuses on this negative impact manifest as withdrawal from closed family and friends circle, loss of tolerance to the challenging viewpoints, behavior problems[3] in family social and school interaction. Irresistible urge of salience when not backed by the proper educational and intellectual background leads to personality disorders and mood disorders.

Facebook accomplished more than 500 million active subscriptions in 2011 with sharp upward future projections in Pakistan 44 thousand new users subscribe to Facebook every week[4]. These networks are latest weapon for all the interest's groups in sociology, politics, business. As more and people are being

approached and influenced by social media especially adolescent and young groups, its impact on interpersonal relationships, personality development and mental health leads to be critically evaluated. This is extremely Important to keep our interwoven fabric of national, cultural and religious ideologies intact[5]. Social scientist and psychologist have pointed out the negative impact of this addictive attachment to social media manifesting as well-known personality deficiencies like loneliness and narcissism and psychological diseases like anxiety, depression and compulsive behavior[6]. College youth is known to be moody age group when they are unhappy and low in mood they are depressed when they are under pressure of studies, competition, the routine up and down of interpersonal relationships they become anxious and tense. Though the social media has connected them very well with the family friends and groups of common interests but it has come at the cost of emotinol and physical closeness, a vital component of personality development. Romantically speaking they don't have a personal to hug with and don't have a shoulder to cry on. On the other hand, the larger expression of yourself, your intellectual work, your achievements are shared on a much larger platform through social media[7].

Depression and anxiety are interconnected two bars of a seesaw one may, stay into depression for a variable period and or may roll into anxiety or swing between the two states many times a day. The subjective feeling of tension, apprehension and un-necessary worry are the unpleasant emotional state called anxiety, it is caused by uncontrolled activation of the sympathetic nervous system. These daily mood swings greatly hamper the academic and co-curricular achievement. Poor school attendance, difficulty in concentration lack of motivation and interest are commonly blamed by the students on range of physical symptoms like headache, appetite and GI issues, sleep disturbances, muscle aches and pain and so on so forth.

MATERIALS AND METHODS

Study Design: Descriptive cross sectional study

Methodology: Quantitative correlation research design was adopted following the pragmatist research paradigm. The respondents of the study were investigated in relation to the use of social media and Depression. The respondents of the study were consisting of all the Medical Students of Rai Medical Collage, Sargodha Pakistan. The selection of the respondents was made on the bases of the opportunity they have in using WhatsApp and their trends towards social media. Due to time and resources constraints the study was delimited to Medical Students of Rai Medical Collage, Sargodha. The sample of the study was selected through non-probability volunteer sampling techniques. It was consisting of 150 WhatsApp users comprising of 41 male and 109 female students. Data were collected through a self-developed questionnaire WhatsApp use patterns questionnaire (WUPQ) for measuring the uses of social media networks. To measure the depression and anxiety level of the respondents Hospital Anxiety and Depression Scale (HADS) was used. Data were collected personally by the researcher from the students. The collected data was placed into SPSS. 22 and the relationship between variables were predicted by Correlation, ANOVA and descriptive analysis**.**

RESULTS

Table No.1: Pearson Correlation for the role of use of the social media and mental health

Variables	F	%
Gender		
Male	41	27.3
Female	109	72.7
Current Education		
Third Year	48	32.0
Forth Year	37	24.7
Final Year	65	43.3
Lower-middle	2	1.3
Middle	101	67.3
Upper-Middle	28	18.7
Upper	13	8.7
Whatsapp usage per-day		
1-2h/day	27	18.0
3-5h/day	43	28.7
6-7h/day	12	8.0
over 8h/ days	68	45.3
Content of current feature of whatsapp used by sample		
Test message	122	81.3
Photos	11	7.3
Videos	7	4.7
Forwarding info	10	6.7
What social networking platform do you use most?		
Facebook	34	22.7
Whatsapp	76	50.7
Others (Instagram etc.)	40	26.7

(N=150) *p<0.005

	Variables	1	2
1	WUPQ	-	.168*
2	HADS	.168*	-

WUPQ= WhatsApp Use Pattern Questionnaire and HADS= Hospital Anxiety and Depression Scale.

Psychometric properties of variables include mean, standard deviation, and alpha reliability. The relationship between variables was predicted by Correlation, ANOVA and *t*-test. The target sample of study was one-hundred and fifty students.

Table 1 shows social media usage has positive and significant correlation with mental health. It means as WhatsApp usage increases risk of Anxiety and Depression increases.

Table 2 shows Pearson Correlation for the role of use of the social media and mental health. Most the variables show positive and significant correlation with each other. While use of social media and depression shows a negative and non-significant correlation.

Table No.2: Pearson Correlation for the role of use of the social media and mental health. (N=150)

	Variables	1	2	3	4
1	WUPQ	-	-.010	.229**	.168*
2	D	-.010	-	.213**	.347**
3	A	.229**	.213**	-	.392**
4	HADS	.168*	.347**	.392**	-

Table 3 shows the relationship of between number of hours students spend on social media and its impact on their mental health and depicted a positive and significant correlation between both variables as the hours of time spend on social media increases the risk of mental illnesses increases.

Table No.3: Relationship of between number of hours students spend on social media and its impact on their mental health

Variables	HADS	pntr2
HADS	1	.335**
pntr2	.335**	1

Table 4 depicts that all variables show non-significant relationship with socio-economic status

Table No.4: One-way ANOVA for Socio-economic status along Study Variables (N=150).

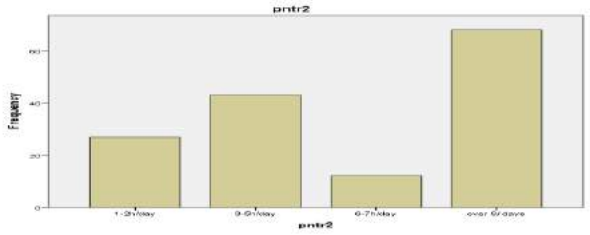
Variables	Category 1 lower-middle (*n* = 2)		Category 2 middle (*n* = 101)		Category 3 upper-middle (*n* = 28)		Category4 middle *(n=13)*	95%Cl		*F*	*P*
	M	*SD*	*M*	*SD*	*M*	*SD*	*M* *SD*	*LL*	*UL*		
WUPT	24.00	1.41	24.26	2.38	23.85	2.25	24.23 2.3	11.29	38.70	.229	.876
HADS	15.00	8.48	11.70	4.54	10.2	4.03	11.76 4.32	-61.23	91.23	1.22	.305

WUPQ= WhatsApp Use Pattern Questionnaire and HADS= Hospital Anxiety and Depression Scale.

Table No.5: Frequency hours/day students spends on using WhatsApp.

WhatsApp usage per-day	**Frequency**	**Percent**
1-2h/day	27	18.0
3-5h/day	43	28.7
6-7h/day	12	8.0
over 8h/ days	68	45.3

This table depict that 27 students use 1-2h/day Whatsapp, 43 students uses 3-5h/day, 12 students use 6-7 h/day and 68 students use over 8h/day.



Bar Chart No.1: Bar-Chat representation to show the frequency hours/day students spends on using WhatsApp.

Table 6 shows the prevalence rate of mental illness among sample. Mental health of about 29 students was recorded to be normal while, 54 of the students were at borderline and 67 students were observed being suffering from mental illness.

Table No.6: The prevalence rate of Depression and Anxiety

HADS Scores	Frequency	Percent
Normal	29	19.3
Borderline	54	36.0
Abnormal	67	44.7

DISCUSSION

Our result need to discuss. Time usage and mental health irrespective of time spent and how much time spent with depression.

Like any other technology both positive and negative uses and their implication remains in the spot light of mass media, same applies on the impact of social media on students. In the conservative societies like ours were even the loud and bold expression of normal ideas raises eyebrows. The IT industry naturally will always highlight the positive side of the social media usage. It is the role of mental health scientist and social scientist to pin point and highlight the negative impact of the excessive addictive use of social media especially among the youth like college students Rosen, Cheever, and Carrier [8] coined the term i-Disorder to describe the negative relationship between internet usage and psychological health. 45% of students in ours study reported more than 8 hours of daily WhatsApp use, at par with their Indian counterpart in Chennai[9]. This purposeless and almost addictive over view of smart

phone results in time distortion. Like the karachites our medical students spend most of the time on text messaging rather than academic search and sharing. Our students chat more frequently on WhatsApp (81%) while the poor African country Ghana reported 72% daily time on text messaging. This cross-sectional report is good enough to sound the alarms in teachers and parental communities. In another study on college student's the different variables of FB usage like time spent, number of friends, use for image management and use for general information or relevant academic searches were analyzed. It was found that these have a strong relationship and their excessive and non-productive use has a strong predictive ability for anti-social personality disorder, major depressive disorder, bipolar mania, compulsive disorder and narcissism and even dysthmia[8-11].

The negative role of excessive social media use on mental well-being has been documented by multiple studies[12]. The problem starts with the purposeless use, non-productive sharing and excessive time spent. Rosen et al[13] reported that our virtual generation has become addicted to the habit of checking messages impulsively. This has been termed as phantom Vibration Syndrome (PVS) where PVS[5] victim is obsessed with frequently checking the messages and have a knee jerk reflex for vibration alerts of the messages and exhibit anxiety when stopped form doing so like in a class room or during meeting. The Hearty Soul [14] reported a direct relationship between the time spent and depression. They also reported that Fb and twitter time doesn't help student's in reducing the stress and staying more focused.

The positive aspects of social networking in the era of science and technology and its implication for the students in term of positive use cannot be neglected or downplayed. Kaur and Bashir reported the ease of socialization, broader communication, unlimited learning opportunities and access to health information especially sexual health as the positive effect of these networking facilities.[9] Depression, online harassment, cyber-bulling, fatigue, stress, suppression of emotional and decline of intellectual ability where described as the major negative effects. Strickland[15] pointed out that 11 to 18 old youth being the most active user are at the highest risk of developing mental health issues, anxiety and or depression being the most prevalent and directly related to the time spent on social media, FB[16] in their study. Davila[4] reflected that severe depression in young individuals with it associated reduced interpsonal interaction and social isolation can even lead to suicidal tentdencies[4,17,6]. As expected Reich et al.[18] documented the pivotal role of social relationships with better mental health. A good friend circle, real not the virtual is the best cushion to absorb the emotional traumas of day to day life[19].

CONCLUSION

A safe health and productive use of social media must have addressed its impact on mental health personality development and achieving full potential of any youth especially the high school, collages and higher professional educational institutes. The issue of addictive hooking, non-productive use sexting/texting, physical social isolation and reduced time allocation for physical activities must be the part and parcel of all carrier development counselling, motivational programs and poor academic performance remedial programs must address these core issues. A proper formatted assessment for these psychological abnormalities must be part and parcel of all such programs with special focus on the underline causative role of non-judicious use of social media.

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