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**Editorial**

# Strategy to Reduce the Premature Deaths from Cancer

**Mohsin Masud Jan**

Editor

The goals to cut the cancer risk are to promote research, prevent cancer, improve patient services, raise awareness and mobilise the global community to make progress against cancer.

It is important that we renew our commitment towards our shared goal of fighting cancer. Together, we can reach the target of reducing the number of premature deaths from cancer and non-communicable diseases by one third by 2030.”

Around 3.7 million people can be saved if we act now through strategies on prevention, early detection, and by providing quality treatment in a timely manner. Around 70pc of all cancer deaths occur in the least developed parts of the world.

We can change this through a five-pronged strategy, as also enshrined in our mission statement. This includes activities directed towards prevention of cancer, early detection, therapeutic and palliative services, education and training of healthcare professionals, and research.

In Pakistan, it is estimated that over 170,000 new cancer cases are reported every year. The most cost-effective and sustainable intervention against cancer is to stop it before it develops or in early stages of its development through primary and secondary prevention strategies. There are many types of cancers that can be prevented if people choose healthy behaviours to lower their risk. Vaccinations are available for infections such as human papillomavirus (HPV) that can cause cervical cancer and for hepatitis B (HBV) and hepatitis C (HCV) that can lead to liver cancer. In Pakistan, liver cancer was recorded as one of the top ten commonest cancers seen at the Shaukat Khanum Memorial Cancer Hospital and Research Centres (SKMCH&RC) between 1994 and 2019 amongst all age-groups. Cervical cancer was recorded as one of the top ten cancers seen in adult females at SKMCH&RC in the same period. Ensuring you and your loved ones are vaccinated against these

infections can lower the risk of developing these preventable cancers in our population. According to a study, 27pc of cancers are related to tobacco and alcohol use. Avoiding tobacco can significantly reduce your risk of many types of common cancers including lung cancer and oral cavity cancers. Lung cancer as well as lip and oral cavity cancers were in the list of top ten common cancers seen at SKMCH&RC over a study period of twenty-five years. Increasing sun protection habits can lower your risk of skin cancer, which is one of the top ten most frequently reported cancers in adult males according to the Punjab Cancer Registry Report, the research centre official said.

For certain types of cancers, screening can detect early lesions that can be removed or treated before they can become cancerous, such as for cervical cancer and colorectal cancer. Similarly, screenings for breast cancer and lung cancer are available that can detect these cancers in early stages when treatment works best. Breast cancer is consistently recorded as the single most common cancer seen at SKMCH&RC over the years, a type of cancer that is completely curable if detected in early stages. Therefore, committing to age-appropriate cancer screenings and knowing the early signs and symptoms of common cancers and accessing care timely can lower the number of pre-mature deaths from cancer. In Pakistan, the unique operating model of the Shaukat Khanum Healthcare System ensures equity in accessing quality cancer care. Our emphasis on quality of life means we provide holistic care including physical pain management through palliative medicine and mental well-being through psychology and psychiatry services. We are committed to the target of reducing premature deaths from cancer every day. You can help us achieve this goal by choosing healthier habits including opting for vaccinations, cancer screenings, avoiding tobacco and adopting an active life-style.

## Arteritis an Initial Experience at CPEIC, Multan

Maham Munir Awan<sup>1</sup>, Muhammad Aftab Akbar<sup>2</sup>, Muhammad Zubair Zaffar<sup>3</sup>, Afshan Noreen<sup>4</sup>, Syed Naseem Bukhari<sup>3</sup> and Faisal Yunus<sup>5</sup>

## ABSTRACT

**Objective:** To identify the Takayasu Arteritis (TA) among teenagers & adults patients of South Punjab (Pakistan).

**Study Design:** Prospective Study

**Place and Duration of Study:** This study was conducted at the radiology department of Chaudry Pervaiz Ellahi Institute of Cardiology, Multan (Pak) for a period of one year from April 2016 to April 2017.

**Materials and Methods:** All patients underwent color doppler ultrasound study for limb ischemia, renal vascular hypertension and carotid doppler ultrasound for stroke like symptoms followed by CT angiography using Toshiba Aquilion 128 slice CT scan and low-osmolar contrast media. Inclusion criteria to establish diagnosis was based on the American College of Rheumatology criteria. SPSS 20 was used to compile and consolidate the data findings.

**Results:** A total of 4012 patients were studied from them 56% were females and 44% were males, mean age of these patients were  $26.34 \pm 5.12$  years. Amongst them six patients were diagnosed with the disease (TA) from them (83.3%) patients were females and one was male (16.7%). All the six patients radiologically diagnosed as Takayasu Arteritis were further pathologically and clinically evaluated. Mean C-reactive protein (CRP) was  $3.60 \pm 2.60$  mg/L while mean ESR  $44.33 \pm 29.78$  mm/hr and mean wall thickness was  $4.46 \pm 1.86$  mm.

**Conclusion:** CT Angiography is a very useful and reliable method of diagnosing Takayasu Arteritis, assessing disease activity and a guide to treatment & follow-up.

**Key Words:** 128 Slice CT Angiography, Computed Tomography Angiography, Takayasuarteritis, Pulseless Disease, South Punjab, CPEIC, Pakistan

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## INTRODUCTION

Takayasu arteritis alternatively known as pulseless disease and aortic arch syndrome named after Dr. Mikito Takayasu in 1908; is an inflammatory and stenotic disease of medium and large sized arteries characterized by a strong predilection for the aorta and its major branches<sup>1</sup>. Vessels of arms, kidneys and arteries to the brain are exposed to frequent effects whilst coronary and pulmonary arteries retain less frequent effect.

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Although causation of Takayasu Arteritis is yet to be discovered but it is assumed to be an auto-immune disorder where immune defense instead of protecting body cells start attacking them. Extensive research has revealed prevalence of Takayasu Arteritis in Asia among teenagers and young adults resulting in consistent high blood pressure<sup>2</sup>. On the contrary, it is very rare in North America and Europe<sup>3</sup>. Emergence of Takayasu Arteritis is commonly experienced among women below the age bar of 40 and in contrast of emergence with males; the ratio of one male to nine females of thousand patients is collectively witnessed across the globe<sup>4,5</sup>. Distribution of lesion in the aorta is localized in 37.5% with abdominal aorta involvement in adults and thoracic + abdominal involvement in children. Diffuse involvement occurs in 62.5% with thoraco-abdominal predilection<sup>6</sup>.

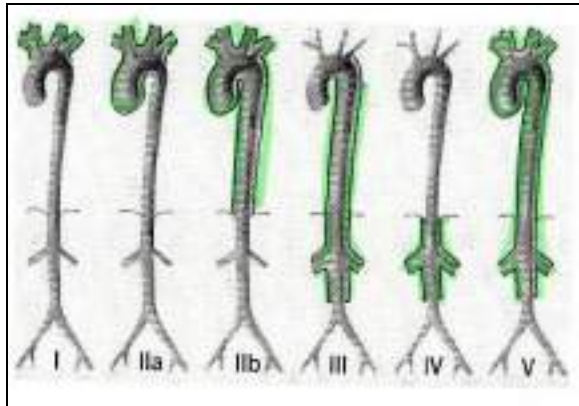
Descending thoracic Aorta is maximally affected area. Aortic arch has more distal involvement than proximal. Patients present with constitutional symptoms of Headache (50%-70%), Malaise (35%-65%), Arthralgias (28%-75%), Fever (9%-35%) & Weight loss (10%-18%)<sup>7</sup>. Pan-arteritis with marked intimal proliferation, fibrosis, scarring and vascularization of media, disruption, degeneration of elastic lamina, and narrowing of lumen with or without thrombus formation resulting in segmental stenosis or aneurysm. Complications occur mainly due to arterial occlusion



leading to limb ischemia, renal failure, cardiac ischemia or stroke<sup>8</sup>.

Types of TA

Type I	Branches of the aortic arch(Classic Type)
Type IIa	Ascending aorta, aortic arch, and its branches
Type IIb	Type IIa region plus thoracic descending aorta
Type III	Thoracic descending aorta, abdominal aorta, renal arteries, or a combination
Type IV	Abdominal aorta, renal arteries, or both
Type V	Entire aorta and its branches



Sharma Criteria for Diagnosis of TA <sup>8</sup>	
<b>Major criteria</b>	<ul style="list-style-type: none"> <li>• Left mid-subclavian artery lesion</li> <li>• Right mid-subclavian artery lesion</li> <li>• Characteristic signs and symptoms of at least one-month duration</li> </ul>
<b>Minor criteria</b>	<ul style="list-style-type: none"> <li>• High ESR</li> <li>• Carotid artery tenderness</li> <li>• Hypertension</li> <li>• Aortic regurgitation or annuloaorticectasis</li> <li>• Pulmonary artery lesion</li> </ul>

Takayasu Arteritis is a very rare disease and so far, no specific study regarding its prevalence in South Punjab region of Pakistan has ever been conducted. Chaudhry Pervaiz Elahi Institute of Cardiology, Multan (CPEIC) being the hub of vascular diseases receives a large number of young patients with limb ischemia, high blood pressure and cardiac issues which encouraged us to probe and found TA as a rare cause. In this study selected patients with prevalence of TA suspected on color doppler ultrasound study were further evaluated with CT angiography using Toshiba Aquilon 128 slice CT scan<sup>10</sup>. This study is scheduled as research methods, lab & radiological investigations, imaging findings, discussion and finally conclusion will be stated at the end of this paper.

## MATERIALS AND METHODS

This paper is a prospective study and the study population consisted of 4012 patients who were referred to our Radiology department of Chaudhry Pervaiz Elahi Institute of Cardiology (CPEIC), Multan between April, 2016 and April, 2017. All patients underwent color doppler ultrasound study for limb ischemia, reno vascular hypertension and carotid doppler ultrasound for stroke like symptoms followed by CT angiography using Toshiba Aquilon 128 slice CT scan and low-osmolar contrast media. MIP, MPR and 3Dreconstruction of images data done with slice thickness 0.5mm including curve planar reformation (CPR) to display tortuous vessels along its long axis, multiplanar reconstruction (MPR) for anatomical information of vessels, volume rendered images to see the extension of luminal lesions and following the collaterals after arterial occlusion. Bolus of contrast was given at the rate of 4 to 6ml per second with automated injector, total volume of contrast was 80 to 100ml and patients were scanned in 15 to 20 seconds using breath hold technique.

Inclusion criteria to establish diagnosis was based on The American College of Rheumatology criteria. Referred patients from Cardiology Department between ages 15 to 40 years and either sex, with raised CRP and ESR levels, intermittent claudication, blood pressure difference of more than 10mmhg in both arms, decreased brachial artery pulse, reno vascular hypertension, bruit over subclavian, carotids or aorta, and shortness of breath or chest discomfort<sup>11</sup>. Exclusion criteria includes patients with S. creatinine more than 1.5mg/dl, history of iodine allergy, pregnancy and those who refused for consent. SPSS 20 was used to compile and consolidate the data findings.

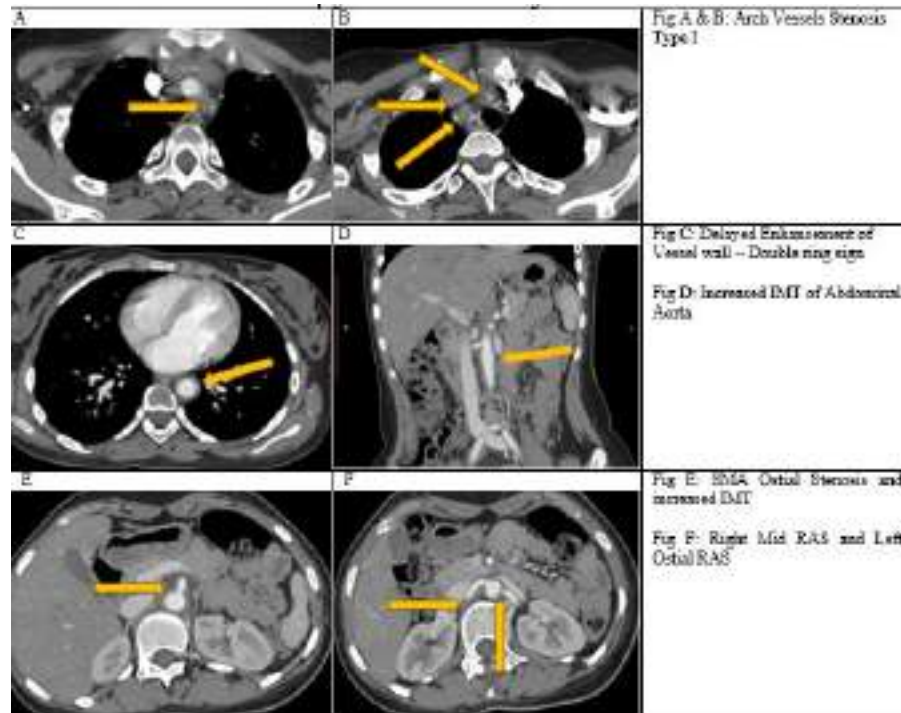
## RESULTS

Amongst the total 4012 patients referred to our Radiology department, 56% of the patients (2,247) were females whereas 44% of the patients (1,765) were males. Based on the inclusion criteria between ages 15 to 40; mean age of these patients 26.34±5.12 while 69 percent of the patients (2,768) were aged from 15 to 30 years whereas 31% of the patients (1,244) were from ages 31 to 40 years.

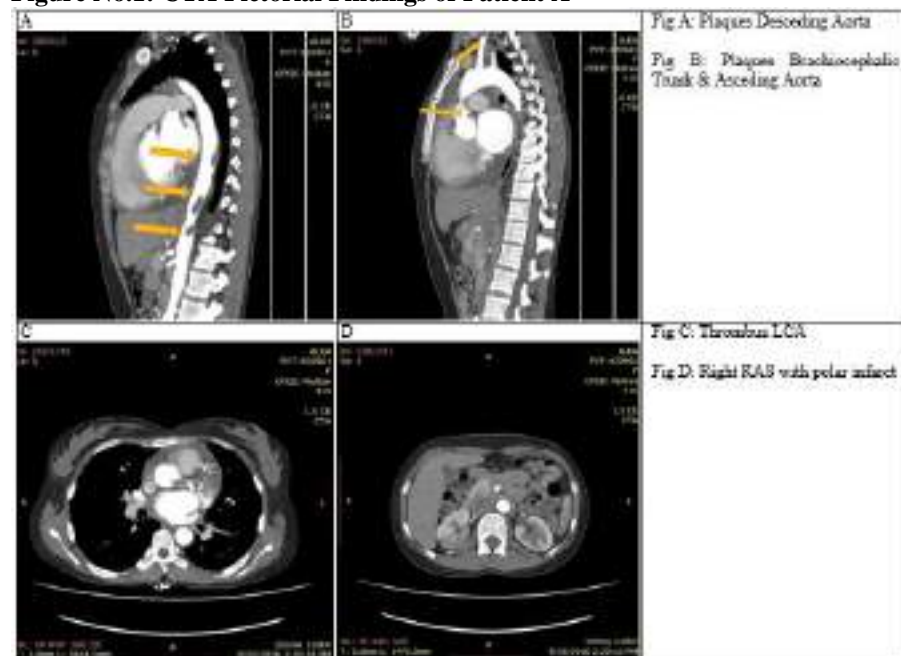
**Imaging Findings:** All the patients reported with Takayasu Arteritis were young with age ranging from 18 to 36 years. Mean age of these patients was 25.33±6.02 years (ranges from 18 to 36 years) Five out of six (83.3%) patients were females and one was male (16.7%). All patients showed the presence of stenosis involving different primary branch vessels. The degree of stenosis also varied from patient to patient. Stenosis being the hallmark of Takayasu Arteritis and its presence among all patients encouraged further evaluation. Three patients (50%) showed hyper-enhancement of vessel wall in delayed arterial phase representing active phase of the disease process.

**Table No.1: Clinical and Radiologic Data on Patients with Takayasu’s Arteritis**

Clinical and Radiologic Data on Patients with Takayasu’s Arteritis							
Patient	Age (yrs)	Sex	Stenosis	CRP (mg/L)	ESR (mm/hr)	MWT (mm)	Delayed Hyperenhancement
A	22	F	Present	5.0	100	4.5	Present
B	18	F	Present	0.3	20	2.3	Absent
C	26	F	Present	5.5	40	4.5	Present
D	36	M	Present	0.3	18	2.5	Absent
E	24	F	Present	6.0	48	7.0	Present
F	26	F	Present	4.5	40	6.0	Absent



**Figure No.1: CTA Pictorial Findings of Patient A**



**Figure No.2: CTA Pictorial Findings of Patient B**

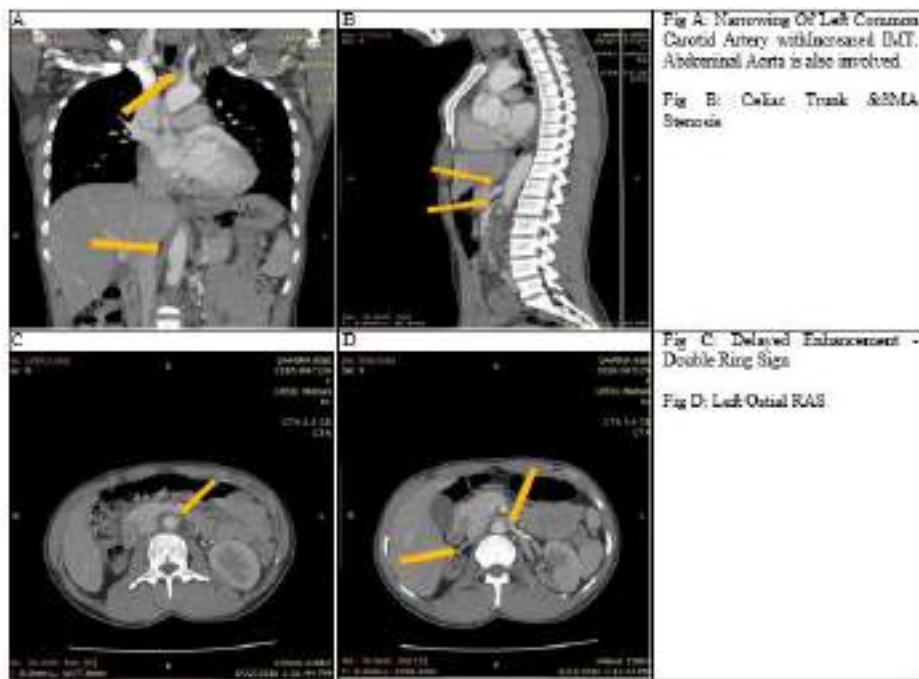


Figure No.3: : CTA Pictorial Findings of Patient C



Figure No.4: CTA Pictorial Findings of Patient D

All the six patients radiologically diagnosed as Takayasu Arteritis were further pathologically and clinically evaluated. Mean C-reactive protein (CRP) was  $3.60 \pm 2.60$  mg/L while mean ESR  $44.33 \pm 29.78$  mm/hr and mean wall thickness was  $4.46 \pm 1.86$  mm. It was found that those patients which showed delayed

hyper-enhancements of the vessel walls also had increased C-reactive proteins levels. ESR was also found to be higher in patients with delayed hyper-enhancement of vessel walls (Figure 1-4). This showed that three patients were going through active phase of disease process.

## DISCUSSION

Takayasu Arteritis also known as aorto-arteritis is a type of vasculitis of unknown etiology of the vessel walls. It has higher incidents in young females and more common among Asians. Takayasu Arteritis is pan-arteritis, inflammatory mononuclear infiltrates with intimal proliferation, fibrosis, scarring and vasculization of media. This study describes our initial experience of diagnosing Takayasu Arteritis and defining its types according to involvement of major aortic branches using CT angiography protocol in delayed arterial phase<sup>12</sup>. This method showed arterial wall hyper-enhancement which represented active phase of the disease.

Although all the six patients had characteristic stenosis. Three of them showed delayed hyper-enhancement of the vessel wall with slightly increased mean wall thickness none more than 5.0mm<sup>13-15</sup>.

Patient A, young female aged 22 presented with complaints of hyper tension and bilateral cold upper extremities, showed segmental irregular stenosis/occlusion of major aortic arch vessels at their origin including right brachio-cephalic trunk, left common carotid and left sub-clavian artery. Diffused circumferential wall thickening and delayed vessel wall hyper-enhancement of thoracic<sup>16</sup> and abdominal descending aorta up to iliac bifurcation with involvement of SMA and right renal artery. She was diagnosed as Takayasu Arteritis type I classic with type III in acute active phase. ESR was reported at 100mm at first hour with CRP at 5.0 mg/L.

Patient B, young unmarried female aged 18 years presented with constitutional symptoms on examination; patient had hypertension. She was referred to our department for ultrasound abdomen and renal artery doppler which showed multiple thrombi along the posterior wall of abdominal aorta adjacent to the diaphragm, parvustardus pattern in both intra renal arteries and wedge shaped lower polar hypoechoic area with no vascular supply seen in right kidney. Patient was advised for abdominothoracic CT angiography which showed left ostial renal artery stenosis with collaterals formation. Right renal artery stenosis with lower polar infarct. Thrombus visualized in left main coronary artery with left ventricular hypertrophy and thrombus in LV apex. Multiple plaques and thrombi were observed in aortic root, descending thoracic and upper abdominal aorta and braciocephalic trunk<sup>14-16</sup>.

Patient C was a young female aged 26, presented with light headedness, hyper tension and pain abdomen. She was referred for carotid Doppler which showed significantly reduced Doppler flow in left common carotid artery and renal artery Doppler was also done which showed parvustardus pattern of flow in bilateral intra renal arteries. Right kidney was also smaller in size.

CTA findings reported as narrowing of left common carotid artery at its origin with narrow caliber throughout its course in neck. Intima and media thickening and wall irregularity with delayed hyper-enhancement giving a double ring sign were seen in the abdominal aorta. Significant narrowing from the origin of right renal artery throughout its course up to right kidney with a streak of contrast passing through it. Right kidney was smaller in size with a cranio-caudal length of 4.9cm. Ostial narrowing seen in left renal artery with normally outlined course and caliber of distal vessel. Multiple collateral channels were seen extending from left external iliac vessel supplying the mid portion of left renal artery. Left kidney was normal in size. Partial stenosis of major abdominal aortic branches involving origins of celiac trunk superior mesenteric arteries. The origin of inferior mesenteric artery also showed significant narrowing with multiple collateral channels arising from lumbar arteries. Patient was diagnosed Takayasu arteritis type IV with involvement of left common carotid artery (CCA)<sup>14, 16</sup>.

Patient D, middle aged male at 36 years presented with numbness of both arms. Doppler study of both upper limbs showed parvustardus pattern of flow in both limbs arterial systems up to distal sub-clavian arteries. CT aortogram was suggested to rule out proximal disease. CTA of Abdomino Thoracic aorta showed short segments of significant narrowing identified in both proximal sub-clavian arteries. Area of significant stenosis identified in proximal abdominal aorta with post stenotic fusiform aneurysm involving suprarenal part of distal aorta. The segment of narrowing is suprarenal below the origin of SMA. Aneurysmal dilatation of ascending aorta also seen. Short segment stenosis is also noted in proximal right common iliac artery. Cardiac size was also enlarged<sup>7, 15-16</sup>.

Patient E, young female aged 24 years presented with hypertension, numbness/ pain in right arm. Patient was referred to us for abdominal and carotid doppler. Right kidney was small echogenic with right renal artery stenosis. Carotid doppler showed dilated right common carotid artery, bilateral increase intimal medial thickening of 22mm on right and 16mm on left side. Patient was advised for abdominothoracic CT aortogram which showed increased mean wall thickness in arch of aorta (7mm), descending thoracic and abdominal aorta with calcification. Bilateral common carotid arteries also showed increased mean wall thickness. Focal stenosis at the origin of left ECA with multiple collaterals visualized filling distill portion of ECA and its branches. Right subclavian artery showed focal stenosis more than 70% just after crossing the first rib. However, contrast was trickling through it. Left subclavian artery is stenosed after origin of costo-cervical trunk with multiple collaterals reconstruing blood in axillary artery. The length of stenosis segment was 6.2cm. Left CCA had narrow caliber. MWT was

also increased in SMA and celiac trunk at their origin. Narrow right renal artery with small sized right kidney. Patient F, young female aged 26 years was diagnosed earlier as a case of Takayasu Arteritis. She was hypertensive at presentation and was taking treatment. CT Aortogram was carried out which showed aneurysmal dilatation seem involving ascending aorta, lower portion of descending thoracic aorta which measured 3.2cm in sagittal section, IMT was increased involving major arch vessels, descending thoracic aorta, abdominal aorta, and origin of celiac trunk and SMA causing their narrowing & significant stenosis at celiac trunk with MWT of 6.0mm in descending aorta<sup>15-16</sup>. Main pulmonary trunk was also involved with increased IMT and narrowing of right and left pulmonary arteries measuring 6.4mm and 10mm respectively<sup>14</sup>. Stenosis seen at the origin of right renal artery.

## CONCLUSION

CTA is very useful and reliable method of diagnosing TA and assessing disease activity and a guide to treatment/follow-up. Findings of the procedure include vascular stenosis, occlusion, aneurysm as well as mural wall thickenings and plaques formation. Delayed contrast enhancement of the vessel wall giving a double ring sign correlated with raised serum markers suggesting active disease. In our view all patients with suspected vascular stenosis should undergo MSCTA as a standard diagnostic workup protocol in furnishing the diagnosis of TA.

### 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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# Evaluation of Peripheral Oxygen Saturation after Wearing Different Face Masks and Related Anxiety in Healthcare Workers Amid COVID-19 Pandemic at A Tertiary Care Facility in Province of Sindh

Oxygen Saturation after Face Masks in Healthcare Workers

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## ABSTRACT

**Objective:** To evaluate peripheral oxygen saturation after wearing different face masks and related anxiety in healthcare workers amid COVID -19 Pandemic at a tertiary care facility.

**Study Design:** Cross-Sectional, Observational and Comparative Study

**Place and Duration of Study:** This study was conducted at the Isra University Hospital Hyderabad from June 2020 to July 2020.

**Materials and Methods:** The study was done on group of healthcare workers of the tertiary care hospital; sample size was 57. Informed consent was obtained from all enrolled participants. Proforma was designed and filled by each participant. Data was analysed on SPSS version 22. Chi square test was applied for statistical significance.

**Results:** Gender distribution of participants in study population male were 39 (68.4%), female 18 (31.6%). Most common age group was 20 – 40 year (89.5%) age range 22 – 66 year. Peripheral Oxygen Saturation was not affected with wearing different masks in different ventilation areas except poorly ventilated area which was environmental. Anxiety related to wearing masks amid Covid – 19 pandemics was statistically significant < 0.05.

**Conclusion:** It is concluded that there is no effect on peripheral oxygen saturation after wearing different masks in different ventilation areas except poorly ventilated area which was due to environment. There is statistically significant value < 0.05 for related anxiety in healthcare workers after wearing face masks amid COVID - 19 pandemic.

**Key Words:** SpO2 level, Face masks, Healthcare workers, related anxiety, COVID – 19 Pandemic

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## INTRODUCTION

The novel coronavirus disease 2019 (COVID – 19) pandemic, the outbreak was first identified December 31, 2019 in Wuhan city of china. WHO declared COVID – 19 global pandemic in March 11, 2020. First cases of COVID-19 occurred in Karachi and Islamabad Pakistan in February 26, 2020 and become peak in the middle of June 2020. Fear and anxiety developed in the public regarding wearing masks.

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The normal saturation of peripheral oxygen (SpO<sub>2</sub>) level with pulse oximeter ranges from 95 – 100 percent, age older than 70 years SpO<sub>2</sub> level of 95 percent is acceptable level. In Younger age SpO<sub>2</sub> level could reach up to 99-100 percent<sup>1</sup>

The Centers for Disease Control and Prevention (CDC) recommends that everyone should wear a mask or cloth face covering in public places, like a grocery store or pharmacy amid COVID-19 Pandemic. The CDC doesn't recommend masking for children less than 2 years due to risks of suffocation. It has been reported that asymptomatic people can transmit the COVID-19 and become important sources of the disease. To reduce the role of asymptomatic or mildly symptomatic people transmission of COVID-19, universal use of face masks in addition to hand hygiene and social distancing seems extremely useful. Consequently, preparing the healthy child to use face masks is strongly needed<sup>2,3</sup>

According to Wickham most people can perform any exercises with a face mask on, they will monitor how they are feeling while exercising and look for specific symptoms such as lightheadedness, dizziness,



numbness or tingling and shortness of breath. You need to stop exercising and sit down and take a break.<sup>4</sup>

The World Health Organization (WHO) released guidance on June 16, 2020, that people shouldn't wear face masks while exercising because it could reduce the ability to breathe comfortably. Some people suggest that medical masks (also known as surgical masks) trap exhaled carbon dioxide and cause retention of CO<sub>2</sub> in blood. The WHO says the prolonged use of surgical masks doesn't lead to CO<sub>2</sub> intoxication nor deficiency of oxygen.<sup>5</sup> A mask is a core component of the personal protective equipment (PPE). Healthcare workers need when caring for symptomatic patients with respiratory viral infections, in conjunction with gown, gloves, and eye protection. It is also clear that masks serve symbolic roles. Masks are not only tools, but they are also magic that may help increase healthcare workers' perceived sense of safety, well-being, and trust in their hospitals. Although such reactions may not be strictly logical, we are all subject to fear and anxiety, especially during times of crisis<sup>6</sup>.

## MATERIALS AND METHODS

The study was carried out on group of healthcare workers of Isra University Hospital; from June 2020 to July 2020, sample size was 57. Informed consent was obtained from all enrolled participants. Proforma was designed and filled by each participant. Pulse oximeter was used to measure peripheral oxygen saturation (SpO<sub>2</sub>) level.

Data was analysed on SPSS version 22. Chi square test was applied for statistical significance. Ethical approval was sought.

### Inclusion Criteria:

1. Age above 20 years and below 70 years
2. Healthcare workers
3. Willing for participation

### Exclusion Criteria:

1. Age below 20 years and above 70 years
2. Participants with Asthma or COPD
3. Refusing for participation

## RESULTS

Table 1. shows demographic distribution of participants in the study population, males were 39 (68.4%), female 18 (31.6%). Most common age group was 20 – 40 year (89.5%) age range 22 – 66 year, mean age was 32.36 ± 1.41 years.

Table 2. shows distribution of participants according to profession of healthcare workers, doctors 32 (56.2%), nurses 17 (29.8), technicians 04 (7.0%), and non – technicians 04 (7.0%).

Table 3. shows peripheral oxygen saturation (SpO<sub>2</sub>) level with and without face mask in different ventilation

areas. SpO<sub>2</sub> level dropped to 95 – 96 % in poorly ventilated area with mask and without mask respectively as compared with ventilated and open area 98 – 98% with mask and without mask respectively.

Table 4. shows distribution of SpO<sub>2</sub> level with different masks in different ventilation areas. SpO<sub>2</sub> level dropped to 95 – 96 % in poorly ventilated area with mask and without mask respectively as compared with ventilated and open area 98 – 98% with mask and without mask respectively. Wearing surgical mask along with N95 mask did not affect the SpO<sub>2</sub> level in ventilated and open areas.

Table 5. shows comparison of participants feeling or not feeling suffocation / anxiety after wearing face masks, Chi square test was applied which was statistically significant value < 0.05.

**Table No.1: Distribution of participants according to demographic characteristics (n=57)**

Variables	Frequency	Percent
<b>Age groups</b>		
20 - 40 years	51	89.5%
41- 66 years	06	10.5%
Total	57	100.0%
<b>Gender</b>		
Male	39	68.4%
Female	18	31.6%
Total	57	100.0%

Mean age (Mean ± SD = 32.36 ± 1.41 years)

**Table No.2: Distribution of Healthcare worker according to profession (n=57)**

Hospital Staff	Frequency	Percent
<b>Medics</b>		
Doctors	32	56.2%
Nurses	17	29.8%
<b>Paramedics</b>		
Technician	04	7.0%
Non - Technician	04	7.0 %
Total	57	100.00%

**Table 3. Distribution of SpO<sub>2</sub> level with and without face mask in different ventilation areas (n=57)**

Level of Ventilation*	SPO <sub>2</sub> with mask	SPO <sub>2</sub> without mask
Poorly Ventilated area	95%	96%
Ventilated area	98%	98%
Open area	98%	98%

\*Poorly ventilated = Single door, no window. Ventilated = > 1 door and > 1 window. Open = Green space

**Table No.4: Distribution of SpO2 level with different masks in different ventilation areas (n=57)**

Types of mask	Number of Participants	Ventilation area and Spo2 level %					
		Poorly ventilated		Ventilated		Open	
		With mask	Without mask	With mask	Without mask	With mask	Without mask
Surgical mask	24 ( 42.1%)	95	96	98	98	98	98
N95 mask	19 ( 33.3%)	95	96	98	98	98	98
Both (Surgical mask+N95 mask)	14 (24,6%)	95	96	98	98	98	98

**Table 5. Comparison of participants feeling or not feeling suffocation / anxiety after wearing masks (n=57)**

Suffocation/Anxiety	Number of participants	Gender		Age	
		Male	Female	< 35 years	> 35 years
Feeling suffocation	22 ( 38.6%)	11	11	18	5
Not feeling suffocation	35 (61.4%)	28	7	25	9

X<sup>2</sup> = < 0.05

## DISCUSSION

Governments are making masks mandatory in indoor, public places to help curb the spread of the coronavirus that causes COVID-19 pandemic. There are some anti-mask groups, people spreading misinformation about wearing masks might reduce one’s oxygen level. According to Dr. Susy Hota – medical director of infection prevention and control at Toronto’s University Health Network there is no medical or scientific evidence that shows that wearing a mask could reduce blood oxygen level or accumulation of carbon dioxide<sup>5,10</sup>

This study was conducted to assess peripheral oxygen saturation (SpO2) level after wearing different masks and related anxiety in healthcare workers of tertiary care hospital Hyderabad, Pakistan amid COVID – 19 pandemics. Our study population comprised of young healthcare workers < 40 years 51 (89.5%) which didn’t showed drop in SpO2 level after wearing different masks in ventilated and open areas. There was drop in SpO2 levels with wearing masks in poorly ventilated areas which was due to environment.

Consistent studies include Esposito S et al (Italy 2020)<sup>3</sup>, Klompas Michael et al (USA 2020)<sup>6</sup>, Kim MN et al (Korea 2020)<sup>7</sup>, Dugdale CM et al (USA 2020)<sup>8</sup>, and Roy D et al (India 2020)<sup>11</sup>,

Inconsistent studies are Grayson Wickham (USA 2020)<sup>4</sup>, Sharma SK et al (India 2020)<sup>9</sup>, Feng S et al (China 2020)<sup>12</sup> – texture of cloth was different.

## CONCLUSION

Our study concluded that there is no effect on peripheral oxygen saturation after wearing different masks in different ventilation areas except poorly ventilated area which was due to environment. There is statistically significant value < 0.05 for related anxiety in healthcare workers after wearing mask amid COVID-19 pandemic. Poorly ventilated areas be avoided as SpO2 level is affected.

### Author’s Contribution:

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 Revisiting Critically: Saima Siraj, Shamsuddin Solangi  
 Final Approval of version: Saima Siraj

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

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# Central Corneal Thickness from a Subset of Normal Population in Pakistan Using Anterior Segment Optical Coherence Tomography

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## ABSTRACT

**Objective:** To measure central corneal thickness and study its association with intraocular pressure (IOP), age and gender.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the tertiary eye care health centre during Feb 2019 and Feb 2020 for one year.

**Materials and Methods:** 324 normal individuals were recruited. They followed the routine eye examination protocol and in the end we performed anterior segment OCT on one eye of each participant.

**Results:** The mean CCT was found to be 533.01 $\mu$ m and mean the IOP was 12.6mmHg. When we compared CCT with age, significant correlation was not found (Pearson's correlation coefficient (R) = 0.022, P-value = 0.692). Similar results were obtained when CCT was tested against IOP (Pearson's correlation coefficient (R) = 0.056, P-value = 0.315). The difference of CCT between the two gender was also not significant (p-value = 0.774).

**Conclusion:** The CCT from our study was not found to be associated with age and intraocular pressure. Also the difference in CCT values of males and females was not statistically significant.

**Key Words:** Corneal Thickness, Anterior Segment, Optical Coherence, Tomography

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## INTRODUCTION

Cornea is the outer most transparent layer of the eye. Along with protection, cornea also adds to the refractive power of the eye<sup>1</sup>. The corneal thickness varies from periphery to the central region, being thinnest at the center<sup>2</sup>. The famous landmark study Ocular Hypertension Treatment Study (OHTS) has reported that corneal thickness can be used as an important predictor for the primary open angle glaucoma. According to OHTS, people with a corneal thickness of less than 555 $\mu$ m have a three-fold greater risk of developing glaucoma within 5 years as compared to the people having central corneal thickness of 588 $\mu$ m<sup>3</sup>.

This clearly signifies the role of central corneal thickness in the normal eyes. IOP is created when aqueous humor exerts force on the structures of the anterior chamber of eye<sup>4</sup>. It is most commonly measured by applying a contact tonometer to the middle portion of the cornea. Literature suggests that changes in intraocular pressure may result in change in corneal thickness<sup>1</sup>.

Numerous studies have been carried out to measure corneal thickness; most of which have involved a contact method, ultrasound pachymetry<sup>5</sup>. Other researchers have employed an instrument called "Corneal Topographer" for the same purpose<sup>6</sup>. Although it is more sensitive than pachymetry, a topographer has a different set of limitations<sup>5</sup>. With the advent of Anterior Segment optical coherence tomography (AS-OCT), more accurate results for the corneal thickness have been obtained<sup>7</sup>. Research data from different sources has shown that AS-OCT is a more sensitive and reliable tool for the estimation of corneal thickness<sup>8</sup>. This study explores corneal thickness in a subset of normal Pakistani population and its relationship with IOP and other baseline characteristics like age and gender.

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## MATERIALS AND METHODS

This was a cross sectional study conducted at a tertiary care eye hospital. Purposive sampling technique was used for the recruitment of cases and included patients coming for eye checkup. Sample composed of 324 normal individuals. Patients with any ocular disease were excluded. We also excluded the patients with systemic or endocrine disorder e.g. hypertension and diabetes.

Thorough eye examination was performed by an experienced ophthalmologist. Intraocular pressure was measured using Goldmann Applanation Tonometer. Nidek RS-3000 Advanced (Nidek, Japan) was used to measure the corneal thickness. The procedure was performed by a trained professional and all the standard protocols and guidelines were followed. All examinations were performed in dim light during 5pm and 8pm in the evening. The dedicated software, Navis-Ex was used to accumulate the data. The data was analyzed using IBM SPSS version 23. All quantitative variables are shown in mean and standard deviation whereas percentages and frequencies are used to depict the qualitative data. In all analysis, p-value of <0.05 was considered as significant.

## RESULTS

Data from a total of 324 normal individuals who met the inclusion criteria was taken in this study. Out of 324 normal subjects, 184 were males and 140 were females. Mean age of the normal participants was 43.55 years. (Table 1).

**Table No.1: Gender and mean age of study participants**

	Gender		Mean Age
	Male	Female	
Normal	184	140	43.55

The mean IOP of normal subjects was 12.6mmHg. The mean central corneal thickness was 533.01µm. Table 2 depicts these results.

**Table No.2: Mean IOP and CCT**

	Mean (Std. Deviation)
IOP (mmHg)	12.6 (3.03)
CCT (µm)	533.01 (35.27)

**Table No.3: Comparison of CCT between genders**

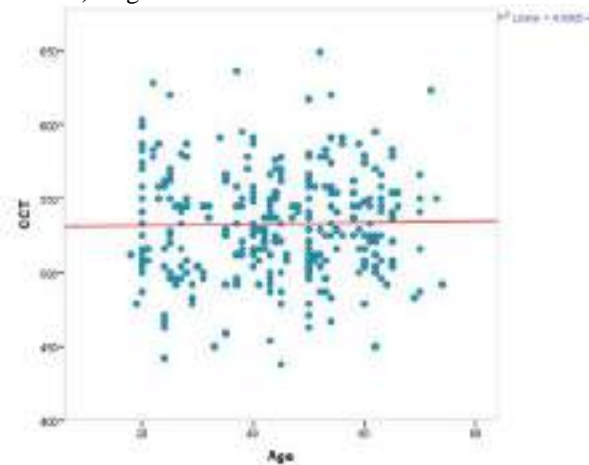
Gender	CCT (Mean)	Std. deviation	P-Value
Male	532.52	34.65	0.774
Female	533.66	36.19	

P- value ≤ 0.05 is considered as significant

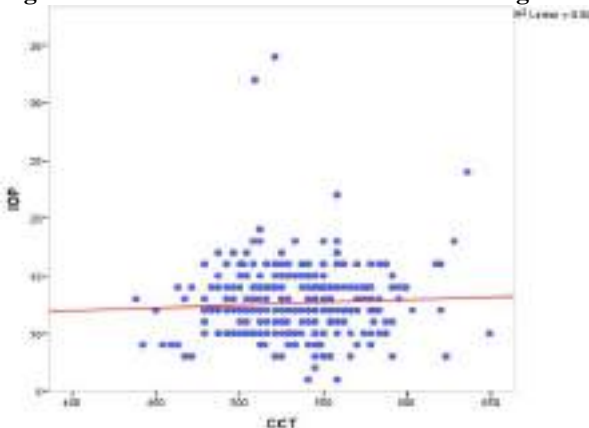
When CCT values were correlated with age of the individuals included in the study, no significant correlation was found (Pearson’s correlation coefficient (R) = 0.022, P-value = 0.692). This is shown in figure 1. Similarly when the mean CCT of different gender

was compared, the difference was non-significant (p-value = 0.774), as shown in table 3.

In the same way when we tried to look for any correlation between the intraocular pressure and central corneal thickness, it was also found to be insignificant (Pearson’s correlation coefficient (R) = 0.056, P-value = 0.315). Figure 2 shows this result.



**Figure No.1: Correlation between CCT and age**



**Figure No.2: Correlation between CCT and IOP**

## DISCUSSION

The present study is yet another attempt to measure the central corneal thickness in normal individuals, and to find its relationship with the intraocular pressure, gender and age of the participants by using AS-OCT. In the discussion that follows, we have compared our results with previous studies from Pakistan which have employed different modalities and thus our results differ in many ways.

According to literature, the first study that reported CCT in Pakistani population was carried out by R. Channa et al in 2009. They reported a mean CCT of 531.08 and 531.29 in the right and left eye respectively<sup>9</sup>. These results are quite similar to ours. A more recent study on corneal thickness was performed by Hashmani et al in 2017, which shows a median thickness value of 541microns. These findings are quite significant because they performed it on a very large

group of individuals (sample size = 5,171 eyes)<sup>6</sup>. However, they used data from participants with varying ages and the median age was 26 with the youngest age group between 11 to 20 years. In our study, we restricted the sampling to the lower age limit of 18 years. The difference of CCT values between these studies can be explained by the use of different method of measurement employed. Channa et al used Pachymetry and Hashmani's employed Pentacam for the assessment of CCT. On the contrary, we used anterior segment OCT for the same purpose. These three instruments have different working principles and show varying intra-observer variability<sup>10</sup>. AS-OCT has been proved to be a highly sensitive and accurate instrument in measurements of anterior segment structures<sup>11</sup>. It has maintained its reproducibility and sensitivity even when it was compared with other scheinplung imaging instruments<sup>12,13</sup>.

In the Indian population, we found that their CCT values are quite similar to our values. In a study conducted on 600 subjects from Uttar Pradesh region, the researchers found a mean CCT of  $532.44 \pm 31.46$  in the right and  $533 \pm 31.03$  in the left eyes of male participants. In females the value was  $525.63 \pm 31.72$  and  $526.26 \pm 33.86$  respectively<sup>14</sup>. Looking at other neighbors, in a Chinese study the mean CCT was found to be  $539.2 \pm 37.8$ <sup>16</sup>. Results of CCT values from different South East Asian countries show that our values follow the pattern of CCT values found in the Indian and Chinese population. As a part of Tehran Eye Study, mean CCT was calculated in the Iranian population and it was found to be  $555.6 \pm 39.9$  microns<sup>17</sup>. In another study carried out on South Indian population, the mean CCT values were 511.4 microns<sup>15</sup>. These differences of CCT values can be explained by the fact that these studies were performed on the people belonging to different ethnic groups, the genetic variations among these participants is also an important factor that cannot be neglected.

In our study, we did not find any significant correlation between ages and mean CCT. This result contradicts the findings of Mercieca and colleagues who demonstrated a significant negative correlation with age<sup>18</sup>. This finding is also supported by Weizer et al while working on a British cohort<sup>19</sup>. Archana Prasad reported a negative correlation of CCT with age but only in female subjects. The males showed non-significant results<sup>20</sup>. In a retrospective study on 5,171 eyes from Pakistani population, Hashmani and colleagues found a weak but negative correlation of CCT and age<sup>6</sup>. This can be explained by considering the fact that they included much younger participants as compared to our study participants. This age difference is sufficient to give variable results. Our findings of an insignificant negative correlation is also supported by a study carried out at Aga Khan University by Roomasa et al as they were unable to find any significant

correlation between age and CCT while looking at data from 200 eyes<sup>9</sup>. Similar results were reported in a more recent study by Wang et al from 1190 subjects<sup>16</sup>.

Although the males in our study had smaller values of CCT as compared to females, but this difference was not statistically significant. These findings are supported by the results from a study done on young students in Lahore<sup>21</sup>. This is also endorsed by a Nigerian study done on 359 subjects, as the researchers were unable to find any statistically significant difference in the corneal thickness among males and females<sup>22</sup>. In another study done on Karachi population, the researchers found thinner corneas in females as compared to males but this difference was not statistically significant<sup>23</sup>. Similar results are reported by a study done on 200 eyes by Roomasa and colleagues from Karachi<sup>9</sup>. The researchers of Tehran Eye Study, published in Cornea May 2009, have also reported that there is no significant difference between male and female in terms of central corneal thickness<sup>17</sup>. Contradictory data is reported by Hasmani et al, who found statistically significant difference between male and female corneal thicknesses with the male population having thinner corneas<sup>6</sup>. These differences can be explained by the variations in female sexual hormone level during different phases of menstrual cycle<sup>24</sup>. However, this association needs further investigation to validate association between these parameters.

In a previous study done on Karachi population, the IOP was found to be 13.86 in the right and 13.67mmHg in the left eye<sup>9</sup>. In 2010, Mazhar ul Hassan reported IOP values quite similar to ours i.e. 12.75 and 12.98mmHg in male and female respectively<sup>23</sup>. According to the Yazd eye study, the mean IOP in Iranian population was 14.2mmHg<sup>25</sup>. We were unable to find any statistically significant correlation between IOP and CCT. These findings are supported by a similar study published in Nature in 2012 by Lester et al. They reported no significant correlation between the IOP and CCT<sup>26</sup>. The authors explained these results with possible inaccuracies in measurement of IOP with contact tonometry. We have also used the same instrument and there are chances of inappropriate handling of instrument when a large sample size is studied upon. The only limitation we encountered during our study is related with the use of a contact tonometer. We employed Goldmann applanation tonometer that is a widely used instrument for the measurement of IOP, but with the advent of non-contact tonometers more reliable and sensitive measurements can be made. We did not compare the CCT values with metabolic or systemic disorders, we recommend further studies on a larger sample size. We also recommend a multicenter study to obtain CCT values to have a better idea of CCT in Pakistani population from different ethnicities.



## CONCLUSION

In this study we used the anterior segment module of Retina Scan (RS-3000, Nidek, Japan) OCT machine. It yielded the CCT from 324 normal individuals as 533.01 $\mu$ m and IOP was 12.6mmHg. The central corneal thickness was not correlated with age or gender. There was no association between CCT and IOP. This is the first study in Pakistan that used AS-OCT to find CCT and its correlation with age and gender.

### Author's Contribution:

Concept & Design of Study: Inayatullah  
 Drafting: Nuzhat Hassan, Kevin Joseph Jerome Borges  
 Data Analysis: Syed Nudrat Nawaid Shah, Kashif Muhammad and Gulraiz Karim Rind  
 Revisiting Critically: Inayatullah, Nuzhat Hassan  
 Final Approval of version: Inayatullah

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

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# Dyslipidemia in Type 2 Diabetes Mellitus: A Case-Control Study

Dyslipidemia in  
Type 2 Diabetes  
MellitusTayyaba Batool<sup>1</sup>, Farooq Ahmad Malik<sup>3</sup>, Zia Ullah<sup>1</sup>, Saifullah<sup>3</sup> and Ashfaq Ahmad<sup>2</sup>

## ABSTRACT

**Objective:** To compare lipid parameters among cases having diabetes mellitus with healthy individuals.

**Study Design:** Case-control study

**Place and Duration of Study:** This study was conducted at the Department of Biochemistry, Quaid-e-Azam Medical College, Bahawalpur from August 2019 to January 2020.

**Materials and Methods:** A total of 40 confirmed cases of type-2 DM aged 18 to 60 years were enrolled for this study. An exact number of gender and age matched healthy controls were also included in this study. Body mass index, waist/hip ratio along with fasting plasma glucose and 2-hour postprandial glucose levels were calculated for all study participants. Serum cholesterol, serum triglyceride, serum very low density lipoprotein (VLDL), serum low density lipoprotein (LDL) and serum high density lipoprotein (HDL) levels were measured for all study participants.

**Results:** Significantly higher mean BMI ( $\text{kg/m}^2$ ) was recorded among cases in comparison to controls ( $25.47+1.62$  vs.  $23.17+1.92$ ,  $p<0.0001$ ). Mean fasting plasma glucose (mg/dl) was significantly higher among cases ( $138.12+14.54$  vs.  $88.61+4.84$ ,  $p<0.0001$ ). Mean 2-hour postprandial glucose (mg/dl) was also significantly higher among cases ( $171.14+24.6$  vs.  $124.50+11.8$ ,  $p<0.0001$ ). Among cases, mean serum cholesterol (mg/dl), mean serum triglyceride (mg/dl), mean serum VLDL (mg/dl) and mean serum LDL (mg/dl) were significantly raised while mean serum HDL (mg/dl) was significantly lower among cases when compared to controls ( $48.41+6.2$  vs.  $76.1+4.8$ ,  $p<0.0001$ ).

**Conclusion:** Significantly higher BMI were found among cases with diabetes mellitus type-2. Among patients with diabetes mellitus type-2, lipid parameters were significantly deranged.

**Key Words:** Diabetes mellitus, lipid parameters, BMI, plasma glucose

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## INTRODUCTION

In 2019, International Diabetes Federation (IDF) estimated around 463 million people to be living with diabetes mellitus (DM) worldwide.<sup>1</sup> IDF also projected this number to go up around 700 million by the year 2045. Pakistan is estimated to have more than 27 million adult cases of DM.<sup>2</sup>

DM is a chronic disease associated with high rates of mortality and increased risk for cardiovascular disease (CVD) because of different vascular etiologies.<sup>3</sup> Among patients with diabetes, CVD increases the risk of death as 2-4 folds when compared to those without DM.<sup>4,5</sup>

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Along with controlling blood glucose levels, keeping associated risk factors like blood-pressure, dyslipidemia, body weight and smoking in check is really important.<sup>6</sup> Comprehensive management of different cardiovascular risk factors among patients having DM have been found to decrease the risk of CVD up to 53% so it is vital to control these factors among patients with DM.<sup>7</sup>

Dyslipidemia has been known to be the most important risk factor for atherosclerosis and CVD irrespective of the presence of DM.<sup>8</sup> Insulin has substantial effects on vital steps regarding synthesis and metabolism of lipids and lipoproteins whereas lipids and lipoproteins are known to be deranged among individuals having DM which could be the reason why these individuals are at high risk of progressing into dyslipidemia.<sup>9</sup> Dyslipidemia is a crucial contributing entity to cardiovascular complications among patients of DM. Lipid abnormalities in DM might be depicted in the form of hypertriglyceridemia and decreased levels of high density lipoprotein cholesterol (HDL-C). This comparative study was planned to evaluate fasting plasma glucose and 2h-postprandial glucose along with lipid parameters among patients of DM.

## MATERIALS AND METHODS

This case-control study was conducted at Department of Biochemistry, Quaid e Azam Medical College, Bahawalpur, from August 2019 to January 2020. A total of 40 confirmed cases of type-2 DM aged 18 to 60 years were enrolled for this study. Any patients using insulin or cholesterol lowering drugs were excluded. An exact number of gender and age matched healthy controls were also included in this study. None of the controls had diabetes, atherosclerosis, thrombotic disorders or ischemic heart disease. Approval from institutional ethical committee was sought for this study. Informed consent was taken from all the study persons and assurance was made for the confidentiality of the data acquired for the purpose of this study.

Body mass index and waist/hip ratio was estimated for all study participants. Blood samples as 5ml were collected in the morning for biochemical assay following a fasting period of at least 12 hours. Two-hour postprandial blood sample was taken after 120 minutes post-meal. Serum cholesterol, serum triglyceride, serum very low density lipoprotein, low density lipoprotein and high density lipoprotein levels were measured for all study participants. Institutional laboratory was used for all laboratory investigations.

SPSS version 26.0 was used for data entry and analysis. Quantitative data like BMI, waist/hip ratio, fasting blood glucose, 2-hour postprandial blood glucose and lipid parameters were represented as mean and standard deviation. Independent sample student t-test was used to compare study variables between cases and controls. P value less or equal to 0.05 was considered statistically significant.

## RESULTS

Among a total of 80 study participants (40 cases and 40 controls), table I is showing comparison of BMI, waist/hip ratio and plasma glucose. Significantly higher mean BMI ( $\text{kg/m}^2$ ) was recorded among cases in comparison to controls (25.47+1.62 vs. 23.17+1.92,  $p<0.0001$ ). Mean fasting plasma glucose (mg/dl) was significantly higher among cases when compared to controls (138.12+14.54 vs. 88.61+4.84,  $p<0.0001$ ). Mean 2-hour postprandial glucose (mg/dl) was also significantly higher among cases when compared to controls (171.14+24.6 vs. 124.50+11.8,  $p<0.0001$ ).

Table 2 is showing comparison of lipid parameters between cases and controls. Among cases, mean serum cholesterol (mg/dl), mean serum triglyceride (mg/dl), mean serum VLDL (mg/dl) and mean serum LDL (mg/dl) were significantly raised when compared to controls ( $p<0.0001$ ). Mean serum HDL (mg/dl) was significantly lower among cases when compared to controls (48.41+6.2 vs. 76.1+4.8,  $p<0.0001$ ).

**Table No.1: Comparison of BMI, Waist/Hip Ratio and Plasma Glucose between Cases and Controls**

Characteristics	Cases (n=40)	Controls (n=40)	P-Value
Mean BMI ( $\text{kg/m}^2$ )	25.47±1.62	23.17±1.92	<0.0001
Mean Waist/Hip Ratio	0.85±0.71	0.73±0.24	0.3144
Fasting Plasma Glucose (mg/dl)	138.12±14.54	88.61±4.84	<0.0001
2-hour Postprandial Glucose (mg/dl)	171.14±24.6	124.50±11.8	<0.0001

**Table No.2: Comparison of Lipid Parameters between Cases and Controls**

Lipid Parameters	Cases (n=40)	Controls (n=40)	P-Value
Mean Serum Cholesterol (mg/dl)	238.3±48.1	162.5±32.8	<0.0001
Mean Serum Triglyceride (mg/dl)	185.64±14.7	144.61±32.1	<0.0001
Mean Serum VLDL (mg/dl)	35.74±15.6	26.36±4.4	<0.0001
Mean Serum LDL (mg/dl)	161.82±35.7	53.70±24.6	<0.0001
Mean Serum HDL (mg/dl)	48.41±6.2	76.1±4.8	<0.0001

## DISCUSSION

Increased BMI, central distribution of fat, decreased levels of physical activity and high amount of fat intake are known to be closely associated with DM.<sup>10</sup> Obesity has been considered an important factor linked with raised plasma free fatty acid levels causing peripheral and hepatic insulin resistance.<sup>11</sup> In the present study, we noticed DM cases to have significantly high BMI when compared to controls (25.47+1.62 vs. 23.17+1.92,  $p<0.0001$ ). Narasimhaswamy KN et al from India also found cases of DM to have significantly raised BMI levels when compared to healthy controls ( $P<0.01$ ).<sup>12</sup>

In the present study, among DM cases, mean serum cholesterol (mg/dl), mean serum triglyceride (mg/dl), mean serum VLDL (mg/dl) and mean serum LDL (mg/dl) were significantly raised while mean serum HDL (mg/dl) was significantly lower when compared to controls ( $p<0.0001$ ). Derangement and over-stimulation of HMG-COA reductase by glucagon is known to be rate limiting for cholesterol synthesis.<sup>13</sup> Conversion of cholesterol in bile acids may also lead to raised levels of cholesterol. Higher levels of VLDL in the plasma are known to be the cause of hypercholesterolemia as VLDL also carries around 20% of its total lipid contents as cholesterol.<sup>14</sup> Cholesterol absorption among type-2 DM patients is significantly low however cholesterol synthesis usually remains high. "Non-Esterified Fatty Acids (NEFA)" are known

to be cause of hepatic triglyceride synthesis while its discharge in the form of VLDL is assisted by insulin resistance. Higher production of VLDL is linked with clearance defects like lower fractional catabolic rates for VLDL and triglyceride.<sup>15</sup> LDL receptors are known to be up-regulated by insulin but these are doing less uptake of LDL among individuals having DM. With regards to significantly decreased levels of HDL among DM cases, this could be because of hyperactivity of “Lecithin cholesterol acyltransferase (LCAT)” which also causes hypertriglyceridemia. LDL rich cholesterol and phospholipids, LCAT hyperactivity encourages transferring activated fatty acids to cholesterol which results in the production of lysolecithin which goes on to cause triglyceride formation.<sup>16</sup> Our findings in terms of significant disturbances in lipid parameters among DM cases are quite similar to other regional findings noticed by Narasimhaswamy KN et al<sup>12</sup> as well as Bobby D et al.<sup>17</sup> Saydah SH et al also pointed out patients of DM with CVD to have significantly raised cholesterol levels.<sup>18</sup> Data from African-American DM patients also revealed that significantly high levels of triglycerides were noticed.<sup>19</sup> Keech et al comparing DM patients with pre-diabetic and normal individuals revealed that HDL levels were significantly lower among DM cases.<sup>20</sup>

There were few limitations of this study. Sample size of this study is quite small so out findings cannot be generalized. We could not assess influence of duration of diabetes on lipid parameters in the present study. We also did not record skin fold thickness or % fat in the body which could have further enlighten us about the differences found among DM cases and controls.

## CONCLUSION

Significantly higher BMI was found among DM cases. Among DM cases, lipid parameters were significantly deranged.

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# Identification of Various Factors for Suicidal Attempts in Patients Coming to a Tertiary Care Hospital of Southern Punjab

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Gardezi and Nasir Jamal Khan

## ABSTRACT

**Objective:** The objective of this study is to determine the factors predisposing to attempt a suicide using poisons in our community.

**Place and Duration of Study:** This study was conducted at the Medical units, Nishtar Medical University and Hospital, Multan, from August 2019 to February 2020.

**Materials and Methods:** A total of 150 patients of both genders, aged 14 to 70 years and with attempted suicide using poisons were enrolled. The socio-demographic information was obtained. Poisoning agent used and knowledge about effects of poisoning agents were obtained. Outcome was measured in the form of hospital stay and discharge or expired. The data was entered into SPSS version 26.0 and analyzed accordingly.

**Results:** Out of a total of 150 patients, there were 88 (58.7%) female. Mean age was noted to be  $23.87 \pm 7.6$  years while most of the patients, 70 (46.7%) were aged between 21 to 30 years. There were 71 (47.3%) cases who had marital status as married while out of these 71, 41 (56.3%) were unsatisfied with their marital life. Employment status of the 122 (81.3%) study participants was unemployed. Most of the study participants, 104 (69.3%) were literate. Social unrest was reported by 117 (78.0%). Paraphenylene Diamine (PPD) was the commonest form of poison used followed by pesticides in 59 (39.3%) and 33 (22.0%) respectively. Mean duration of hospital stay was recorded as  $4.27 \pm 3.5$  days. In terms of outcome, 132 (88.0%) patients were discharged after treatment while 18 (12.0%) expired.

**Conclusion:** Females form majority of cases attempting suicides. Younger age groups are more commonly involved attempting suicides. Paraphenylene Diamine was the commonest form of poison used followed by pesticides. Social, family and peer related issues are important factors behind suicide attempts.

**Key Words:** Suicide, paraphenylene diamine, pesticides

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## INTRODUCTION

Suicide is the act of intentionally causing one's own death.<sup>1</sup> Mental disorders, including depression, bipolar disorder, schizophrenia, personality disorders, and substance abuse including alcoholism and the use of benzodiazepines are some of the commonest risk factors for suicidal attempts.<sup>2,3</sup> Some suicides are impulsive acts due to stress, such as from financial difficulties, troubles with relationships, or bullying.<sup>4</sup>

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World Health Organization estimated around 800000 people to die annually as result of suicides which means every 40 seconds someone is committing suicide somewhere in the world.<sup>5</sup> Young people are more commonly involved in acts of attempting suicides.<sup>6</sup> Around 30% of global suicides are due to pesticide self-poisoning, most of which occur in rural agricultural areas in low- and middle-income countries consisting in about 80% world population; some of these pesticides are forbidden by United Nations (UN) conventions.<sup>7</sup> In high-income countries consisting of the remaining 20% world population, the most common methods are firearms, hanging and other self-poisoning. Europe is the most suicidal region in the entire world, while the Eastern Mediterranean the least.<sup>8,9</sup>

Pakistan's suicide rate is below the worldwide average. Pakistan's death rate, as given by the World Bank, is 7.28 per 1000 people in 2016 (the lowest rate in the 2006-2018 period). In 2015, the crude suicide rate in Pakistan was approximately 2.1 deaths per 100,000 inhabitants, one fifth the global average.<sup>10</sup> Suicides represent around 0.3% of all deaths.

There are several groups of people who make suicide attempts. One group includes those individuals with acute situational problems like acutely distressed by a break-up in relationship or another type of disappointment. Another group includes individuals with severe depression which may be due to conditions such as medical illnesses (eg; AIDS) or comorbid psychiatric disorder like Panic disorders.<sup>11,12</sup>

Muslim scholars and clerics consider suicide forbidden. A verse in the Quran instructs: "And do not kill yourselves, surely God is most Merciful to you."<sup>13</sup> The prohibition of suicide has also been recorded in statements of hadith (sayings of Muhammad); for example: Narrated Abu Huraira: The Prophet said, "He who commits suicide by throttling shall keep on throttling himself in the Hell Fire (forever) and he who commits suicide by stabbing himself shall keep on stabbing himself in the Hell-Fire."<sup>14</sup>

We planned this study to determine the factors which predispose a person to commit suicide using poisons despite knowing that it is forbidden in Islam and also to determine whether the act was impulsive or it was already planned.

## MATERIALS AND METHODS

This observational Cross sectional study was conducted in Medical units, Nishtar Medical University and Hospital, Multan, from August 2019 to February 2020. Approval from Institutional Ethical Board was taken for this study. Informed consent was taken from all study participants or from their guardians.

A total of 150 patients of both genders, aged 14 to 70 years and with attempted suicide using poisons were enrolled. Patients presented with accidental poisoning, or homicidal poisoning, non-Muslim patients, patients having history of suicidal attempts, having any psychiatric illnesses or those with history of addiction were excluded.

The demographic information (age, sex, marital status, residential area, occupation, socio-economic status, knowledge about suicide prohibition in Islam) were obtained from all the patients. Knowledge about effects of poisoning agents was obtained. Outcome was measured in the form of hospital stay and discharge or expired. All the information was collected through a specially designed proforma.

The data was entered into SPSS version 26.0 and analyzed accordingly. Quantitative data like age and hospital stay were presented as mean and standard deviation. Qualitative data like gender, socioeconomic status, occupation, effect and availability of poison were calculated as frequencies and percentages.

## RESULTS

Out of a total of 150 patients, there were 88 (58.7%) female. Mean age was noted to be  $23.87 \pm 7.6$  years while most of the patients, 70 (46.7%) were aged

between 21 to 30 years. There were 144 (96.0%) patients who had the knowledge that Islam prohibits suicide. Inter-personnel communications were the most frequent source of knowledge about the poison, noted in 118 (78.7%) patients. Table 1 shows demographic and basic characteristics of study participants.

**Table No.1: Demographic and Basic Characteristics of Study Participants**

Demographic and Basic Characteristics		Number (%)
Gender	Male	62 (41.3%)
	Female	88 (58.7%)
Age (years)	≤20	60 (40.0%)
	21-30	70 (46.7%)
	>30	20 (13.3%)
Knowledge about Islam's Prohibition about Suicide	Yes	144 (96.0%)
Family History of Suicide Attempts	Yes	55 (36.7%)
Knowledge about effects of Poison	Yes	25 (16.7%)
Source of Knowledge about the Poison	Electronic Media	9 (6.0%)
	Print Media	23 (15.3%)
	Inter-Personnel Communications	118 (78.7%)

Table 2 represents socio-economic characteristics of the study participants. Most of the patients had residential status as urban 81 (54.0%). There were 71 (47.3%) cases who had marital status as married while out of these 71, 41 (56.3%) were unsatisfied with their marital life. Employment status of the 122 (81.3%) study participants was unemployed. Most of the study participants, 104 (69.3%) were literate. Social unrest was reported by 117 (78.0%). Table 3 highlights peer related pressure among study participants.

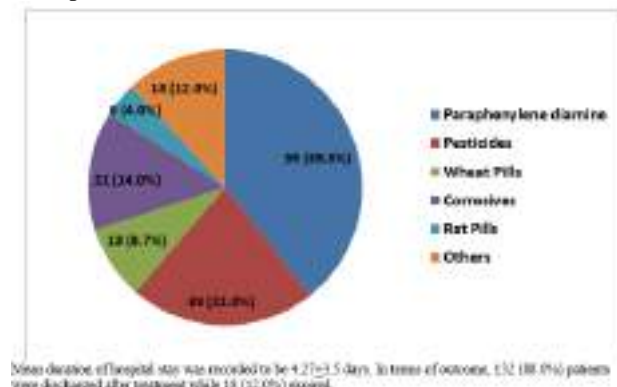
**Table No.2: Socio-Economic Characteristics of Study Participants**

Socio-Economic Characteristics		Number (%)
Residential Status	Urban	81 (54.0%)
	Rural	69 (46.0%)
Marital Status	Single	77 (51.3%)
	Married	71 (47.3%)
	Divorced/Widow	2 (1.3%)
Satisfied with Marital Life (n=71)	Yes	31 (43.7%)
	No	41 (56.3%)
Employment Status	Employed	28 (18.7%)
	Un-employed	122 (81.3%)
Educational Status	Literate	104 (69.3%)
	Illiterate	46 (30.7%)
Socio-economic Status	Lower	93 (62.0%)
	Middle	56 (37.3%)
	High	1 (0.7%)
Family Status	Nuclear	72 (48.0%)
	Joint	78 (52.0%)
Social Unrest		117 (78.0%)

**Table No.3: Peer Related Pressure Among Study Participants**

Peer Related Characteristics	Number (%)
Peer Pressure in Education	36 (24.0%)
Peer Pressure in Office/Job	23 (15.3%)
Peer Pressure in Income/Business	82 (54.7%)

Figure 1 is highlighting different agents used as poison for suicidal attempt by the patients. Paraphenylene Diamine (PPD) was the commonest form of poison used followed by pesticides in 59 (39.3%) and 33 (22.0%) respectively. There were 141 (94.0%) patients who used readily available poisons for suicidal attempts.

**Figure No.1: Agent used as Poison for Suicidal Attempt**

## DISCUSSION

In South Asia, suicide is considered to be a major issue as most of the deaths occur without labeling any cause or medical certification. Suicides are commonly reported by family members while many do not wish to share much about the suicide details fearing stigma or embarrassment. People from different parts of the world tend to choose specific methods for suicidal attempts like data from Hong Kong revealed that jumping from the buildings is quite frequent there.<sup>15</sup> In the recent decades, suicide rates have risen especially among developing nations while whatever data is on view about the rates and causes of suicides, it is not reliable. Identification of the suicide is not easy because of ineffective civil registration protocols. Regional data shows incidence of suicide to range between 10-12 per 100000.<sup>16</sup> Data from Sri Lanka showed high incidence of Suicides to be 30 per 100000 while China and Japan has suicide rates between 10 to 29 per 100000. Data from Middle Eastern countries like Egypt and Jordan has low incidence of suicide as less than 10 per 100000.<sup>17</sup>

In this study, 88 (58.7%) cases comprised of female. Our findings showing female predominance among cases with suicidal attempts are consistent with many other local and regional studies.<sup>18</sup> Overall, mean age was noted to be  $23.87 \pm 7.6$  years in this research while most of the patients, 70 (46.7%) were aged between 21

to 30 years. Imtiaz F et al from Karachi noted that cases with suicidal attempts were aged between 14-22 years.<sup>19</sup> Data from Thailand noted age between 15-24 as the most frequent among cases reported with suicide attempts.<sup>20</sup> Contrary to our findings, one study from India revealed that older age groups were more commonly found among cases doing suicide attempts.<sup>21</sup>

In the present work, PPD was the commonest form of poison used followed by pesticides in 59 (39.3%) and 33 (22.0%) respectively. Chemical poisoning is found to be the most common mode of suicide agents in our parts of the world.<sup>19,22</sup> Family unrest and unsatisfactory married life were some of the important reasons highlighted in the present study. Previous local data has revealed that women are more prone to attempt suicides as compared to men while family problems along with domestic violence are very important reasons.<sup>19</sup>

To minimize the burden and stigma of suicide, measures should be taken at national level to form strong social interaction. As suicide is prohibited in Islam, its religious and social repercussions needs to be addressed. Electronic and print media can be so helpful in resonating the effects of suicide in the families and communities. General public awareness programs should also be conducted at mass levels to address strong issues behind suicide attempts.

## CONCLUSION

Females form majority of cases attempting suicides. Younger age groups are more commonly involved attempting suicides. Paraphenylene Diamine was the commonest form of poison used followed by pesticides. Social, family and peer related issues are important factors behind suicide attempts.

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# Frequency of Vitamin B<sub>12</sub> Deficiency in Gestational Diabetes Mellitus Patients Reporting at a Tertiary Care Hospital

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## ABSTRACT

**Objective:** To determine the frequency of Vitamin B<sub>12</sub> deficiency in Gestational Diabetes mellitus (GDM) patients reporting at a tertiary care hospital.

**Study Design:** Observational Study

**Place and Duration of Study:** This study was conducted at the Department of Biochemistry, Gynecology & Obstetrics Liaquat University Hospital Jamshoro from Jan 2018 to December 2018.

**Materials and Methods:** A sample of 291 pregnant women grouped as; 216 diagnosed GDM cases and 75 controls was selected according to criteria. Fasting blood glucose  $\geq 100$  mg/dl was taken as GDM. Venous blood samples were centrifuged to separate sera used for the estimation of blood glucose (hexokinase method) and Vitamin B<sub>12</sub> (ECLIA assay method). Statistical SPSS software 22.0 (IBM, Inc USA) analyzed data using Student t-test and Chi-square test at 95% CI ( $P \leq 0.05$ ).

**Results:** Age (mean $\pm$ SD) of control and cases was 37.9 $\pm$ 9.51 and 36.3 $\pm$ 9.42 years respectively ( $P=0.81$ ). Vitamin B<sub>12</sub> of control and cases was 215.6 $\pm$ 43.7 and 155.1 $\pm$ 80.7 ng/mL ( $P=0.0001$ ). Vitamin B<sub>12</sub> deficiency was noted in 70.39% of GDM cases compared to 51.6% in controls ( $P=0.0001$ ). Vitamin B<sub>12</sub> shows negative correlation with FBG ( $r = -0.176$ ,  $P=0.031$ ) and RBG ( $r = -0.230$ ,  $P=0.0001$ ).

**Conclusion:** The present study reports 70.39% frequency of vitamin B<sub>12</sub> deficiency in gestational diabetes mellitus compared to 51.6% in controls.

**Key Words:** Vitamin B<sub>12</sub>, Gestational Diabetes mellitus, Blood glucose

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## INTRODUCTION

Gestational diabetes mellitus (GDM) is a disorder of glucose metabolism characterized by hyperglycemia and glycosuria first time observed during pregnancy. GDM is defined as hyperglycemia due to glucose intolerance during pregnancy.<sup>1</sup> Its true prevalence is lacking in developing countries because of lack of registries. However, prevalence of 1- 14% is suggested for the GDM. Frequency and prevalence of GDM varies across the World.

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Approximately 7% of women who conceive develop GDM and burden is estimated as >200,000 cases per year.<sup>2</sup> GDM women are prone to fetal malformation & macrosomia, pre-eclampsia, eclampsia. Cesarean section ratio is increased in GDM women.<sup>3,4</sup> One of the risk factor for GDM is the obesity and its prevalence is rising in the urban society.<sup>5</sup> Insulin resistance is present in obese women and role for GDM during pregnancy. Pregnancy is a state of insulin resistance due to altered hormones. Insulin resistance occurs at 24–28 weeks of gestation and progresses till last trimester.<sup>6</sup> GDM women show a change in blood glucose, lipids and insulin levels. This accounts as primary metabolic defect that manifests as GDM in its severe form.<sup>7</sup> Primary metabolic defect of GDM is worsened by malnutrition and vitamin deficiencies. B complex vitamins are necessary for glucose metabolism.<sup>8</sup> A previous study<sup>9</sup> reported high frequency of vitamin B<sub>12</sub> deficiency in pregnant women and was associated with insulin resistance, hyperglycemia, hyperlipidemia, adiposity and glycosuria compared to those with normal B<sub>12</sub> levels. Vitamin B<sub>12</sub> is essentially required for the nuclear maturation of cell through nucleic acid biosynthesis by methylation. Methylation is required for the DNA synthesis, protein and phospholipids synthesis and neurotransmitters. Myelination of brain

needs methylation reaction. Blood cells show megaloblastic changes and anemia. Defective myelination, polyhydramnios, birth defects, defective brain development, respiratory distress syndrome and still births are common in pregnant women with vitamin B<sub>12</sub> deficiency.<sup>8,9</sup> However, the research on the epigenetic effect correlating with hypo vitamin B<sub>12</sub> during pregnancy is scarce.<sup>8-10</sup> Search of national literature for Pakistan shows lack of sufficient data on the topic of frequency and prevalence of vitamin B<sub>12</sub> deficiency in the women suffering from gestational diabetes mellitus. Therefore; the present study was conducted in gestational diabetes mellitus women presenting at our tertiary care hospital to evaluate the frequency of vitamin B<sub>12</sub> deficiency.

## MATERIALS AND METHODS

The present case control observation study was conducted at the Department of Biochemistry, Gynecology & Obstetrics Liaquat University Hospital Jamshoro. A sample of 291 (n= 291) diagnosed cases of pregnant women was selected through non-probability purposive technique. The study covered duration of Jan 2018 to December 2018. Pregnant women fulfilling the criteria of GDM were segregated as cases (n=216). Normal healthy pregnant with normoglycemia were termed as controls (n=75). Inclusion criteria followed were; voluntary pregnant women, diagnosed Gestational Diabetes mellitus, age 20 – 40 years, pregnancy of 2<sup>nd</sup> and 3<sup>rd</sup> trimester, singleton fetus and healthy women were selected as cases. Known cases of DM, polycystic ovarian syndrome (PCOS), post-partum female, and those suffering from major systemic disease were excluded. Patients were interviewed for the purpose of study, protocol, harms and benefits. Only volunteers were entered in the study protocol. Volunteer pregnant women – both cases and control were asked to sign the consent form. Biodata, physical examination findings and laboratory findings were saved in a proforma. Data was confidential locked in lockers. Institutional ethical approval was taken in prior from the ethical review committee of institute. Research ethical standards were in accordance to the “Helsinki’s Declaration” for patient handling. Volunteers were asked to comply the study protocol. Venous blood samples were taken from peripheral vein. Fasting and random blood samples were collected for glucose and vitamin B<sub>12</sub> estimation. Five ml blood was collected in vacutainer and NaF tubes. Samples were centrifuged for 15 minutes (at x3000 rpm) to separate sera. Samples were stored and preserved in refrigerators. Blood Glucose was estimated by hexokinase method. Vitamin B<sub>12</sub> was analyzed by ELISA commercial kit (Abcam, USA) (competitive immuno- assay, Neoplate) as per instructions of the manufacturer. Quantity was measured at 450nm absorbance. Biochemical estimation of variables was performed on Cobas

chemistry analyzer. Vitamin B<sub>12</sub> deficiency and normal levels were taken as cited previously.<sup>11</sup> Study variable data was calculated on SPSS 21.0 version (for Windows release). Continuous data age, FBG, RBG and vitamin B<sub>12</sub> were calculated by Student’s t-test and data was presented as mean+/- SD. 95% confidence interval was considered of statistical significance (P≤0.05). Vitamin B<sub>12</sub> categories of insufficiency and deficiency were calculated by Chi- square test. Correlation co-efficient (r-value) and P-value were analyzed by Pearson’s analysis. Statistical significance of results was taken at 95% CI (P≤0.05).

## RESULTS

Age (mean±SD) of control and cases was 37.9± 9.51 and 36.3±9.42 years respectively (P=0.81). Fasting and random blood glucose reveals significant difference (P<0.05).

**Table No.1: Age and Biochemical findings in control and cases (n=291)**

	Control	Cases	t- value	P- value
Age	37.9±9.51	36.3±9.52	1.33	0.81
FBG (mg/dl)	80.5±10.5	148.1±55.6	10.3	0.0001
RBG (mg/dl)	141.0±21.33	241.1±70.5	12.05	0.0001
Vitamin B <sub>12</sub> (ng/mL)	215.6±43.7	155.1±80.7	1.136	0.0001

**Table No.2: Vitamin B<sub>12</sub> (ng/mL) in control and cases (n=291)**

	Control		Cases		X <sup>2</sup> - value	P- value
	No.	%	No.	%		
Normal levels	37	49.3	64	29.6	87.00	0.0001
Borderline deficiency	27	36.0	36	16.6		
Deficiency	09	12.0	30	13.8		
Severe deficiency	02	2.6	86	39.81		
Total	75	100	216	100		

**Table No.3: Vitamin B<sub>12</sub> level (ng/mL) in cases (n=216)**

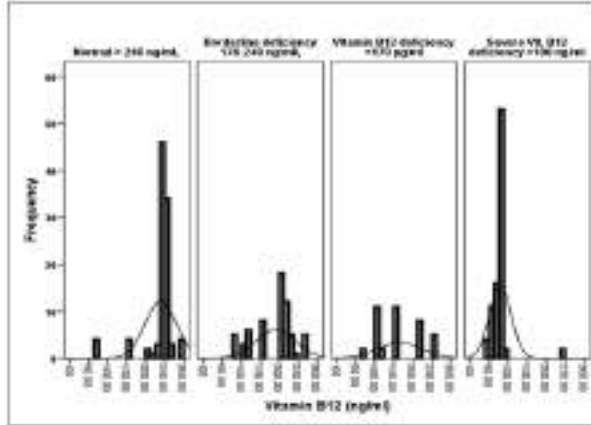
	Mean	SD	95% CI for Mean		Min.	Max.
			L. Bound	U. Bound		
Normal levels	239.56	41.36	231.39	247.73	70.00	298.00
Borderline deficiency	190.74	52.424	177.54	203.94	87.00	270.00
Deficiency	165.43	57.813	146.69	184.17	67.00	261.00
Severe deficiency	78.71	28.416	72.69	84.73	40.00	245.00
Total	170.41	78.536	161.35	179.48	40.00	298.00



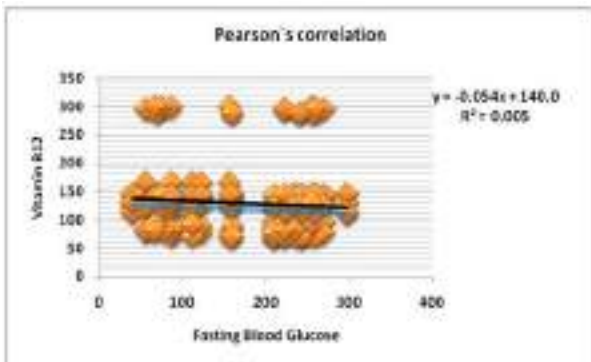
**Table No.4: Pearson`s analysis of Vitamin B<sub>12</sub>** †

Fasting blood glucose	r-value*	- 0.176
	P-value**	0.031
Random blood glucose	r-value*	- 0.230
	P-value**	0.0001

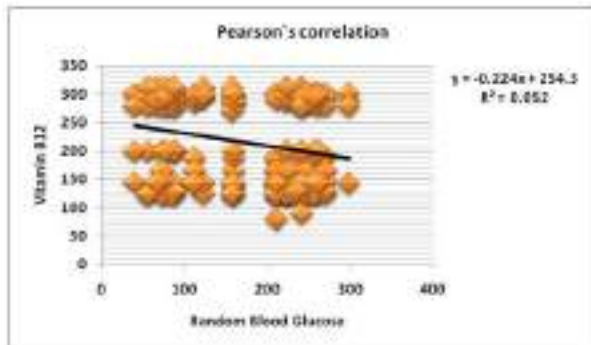
†. Correlation calculated at 0.05 level  
 \*. r-value - Correlation co-efficient  
 \*\*. P-value - Statistical significance



**Graph No.1:** Bar graph showing vitamin B12 distribution in cases



**Graph No.2:** Scatter plot shows negative correlation of vitamin B<sub>12</sub> and Fasting Blood Glucose (r= - 0.176, P=0.0001) in cases



**Graph No.3:** Scatter plot shows negative correlation of vitamin B<sub>12</sub> and Fasting Blood Glucose (r= - 0.230, P=0.0001) in cases

Vitamin B<sub>12</sub> of control and cases was 215.6±43.7 and 155.1±80.7 ng/mL (P=0.0001) (table 1). Table 2 shows the frequency of vitamin B12 levels of normal,

borderline deficiency, deficiency and severe deficiency. Normal vitamin B<sub>12</sub> level was noted in 49.3% and 29.6% of control and cases. Vitamin B12 deficiency was noted in 70.39% of GDM cases compared to 51.6% in controls (P=0.0001) (table 2). Table 3 shows the vitamin B<sub>12</sub> (mean±SD) in normal, borderline deficiency, deficiency and severe deficiency in control and cases (Graph 1). Pearson`s correlation analysis of vitamin B12 and blood glucose is shown in table 4. Vitamin B12 shows negative correlation with FBG (r= - 0.176, P=0.031) and RBG (r= - 0.230, P=0.0001). Negative correlation proved statistically significant (P<0.05) (Graph 2 and 3).

**DISCUSSION**

The present study is first observational research probing into the vitamin B12 status of pregnant women suffering from GDM. The present study shows 70.39% vitamin B12 deficiency in GDM cases compared to 51.6% in controls (P=0.0001). This shows the gravity of Vitamin B12 deficiency in pregnant women suffering from gestation diabetes mellitus. Our observation is in agreement with previous studies cited as.<sup>12,13</sup> Vitamin B12 deficiency in normal pregnant women has been reported by a previous study.<sup>14</sup> While vitamin B12 deficiency in pregnant women with GDM is in agreement with another previous study.<sup>15</sup> Increased insulin resistance and adiposity in pregnant women with vitamin B12 deficiency was reported.<sup>15</sup> Above study, further added that the risk of GDM is twice more frequent pregnant women with cobalamin deficiency compared to cobalamin non-deficient pregnant women. The finding is in keeping with present and previous study.<sup>14</sup> A previous study<sup>16</sup> found frequency of 67% vitamin B12 deficiency in pregnancy compared to 39% in controls. Our findings of 70.39% vitamin B12 deficiency in GDM cases and 51.6% in controls are relatively higher compared to above study. Inconsistent frequency may be due to different social class, dietary habits, sample size, etc. However, vitamin B12 deficiency is a consistent finding. Vitamin B12 deficiency is prevalent in developing countries<sup>17,18</sup> due to dietary deficiency, this is the most probable reason of high frequency noted in the present study. Vitamin B12 deficiency has also been reported in the British pregnant women<sup>19</sup> who are taking balanced diet without nutritional deficiency. Other important observation of present study is the negative association/correlation of vitamin B12 with blood glucose levels. Vitamin B12 shows negative association with the fasting (r= - 0.176, P=0.031) and random (r= - 0.230, P=0.0001) blood glucose levels. Negative correlation proved statistically significant (P<0.05) (Graph 2 and 3). The observation of negative association of vitamin B12 with fasting blood glucose (r= -0.09; p=0.006) is in line with a previous study.<sup>19</sup> Another previous study<sup>20</sup> from UK reported the low vitamin B12 levels in pregnant women

suffering from GDM, and further added 2.59 higher odds ratio of developing GDM in vitamin B12 deficient women with pregnancy. The findings are consistent with observation of vitamin B12 deficiency in present study. A previous study<sup>16</sup> reported negative correlation of vitamin B12 levels with gestational age ( $\beta=-0.57$ ) ( $p=0.0021$ ), gravidity ( $\beta=-0.28$ ) ( $p=0.01$ ) and fasting blood glucose ( $r=-0.29$ ) ( $p=0.004$ ). Negative association of vitamin B12 and fasting blood glucose is consistent with present study. Some of previous studies<sup>21-23</sup> reported vitamin B12 deficiency is exaggerated by metformin therapy that was exclusion in the present study. From the evidence based findings of high frequency of vitamin B12 deficiency in light of published literature, it is advised for strict monitoring of vitamin B12 for betterment of pregnancy outcome. Limitations of present study are; small sample size, nutritional status and dietary habits are not clear. Cause effect association of vitamin B12 and GDM are questionable because of cross sectional study design. However, the prospective study and potential confounding factor – smoking exclusion add to the strength of the study results.

## CONCLUSION

The present study reports 70.39% frequency of vitamin B12 deficiency in gestational diabetes mellitus compared to 51.6% in controls. Vitamin B<sub>12</sub> shows negative correlation with fasting and random blood glucose. Vitamin B<sub>12</sub> deficiency may cause serious maternal and fetal outcome that should be screened and managed properly for better fetal and maternal outcome.

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

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# Evaluation of Electrolytes and Renal Function in Patients with Hyperthyroidism in Mirpur AJK

Electrolytes and Renal Function with Hyperthyroidism

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## ABSTRACT

**Objective:** The objective of this study to evaluate electrolytes and renal function in patients with Hyperthyroidism in Mirpur AJK.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the Department Physiology and Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK from January 2018 to July 2019.

**Materials and Methods:** We take for study 200 hyperthyroid patients' and 100 health Control. Samples were centrifuged at 3000RPM for 10 min. T3, T4 and TSH were measured by Special Chemistry Analyze. Serum creatinine (Cr), blood urea nitrogen (BUN), uric acid (UA) was analyzed by Micro lab 300 and used Merk Kits. Sodium (Na), Potassium (K), and Chloride were analyzed by Electrolyte Analyzer and used Merk Kits. Statistically analysis by SPSS version 20 software for ANOVA.

**Results:** Result showed that in hyperthyroid patients' Uric acid ( $4.8 \pm 1.3$ ) and Creatinine ( $0.5 \pm 0.4$ ) mean concentration were lower as compared to control. The concentration of urea were normal in hyperthyroid patients and control both while the concentration of eGFR ( $203.2 \pm 103.8$ ) was higher in hyperthyroid patient as compare to control. The concentration of Sodium ( $139.7 \pm 2.2$ ) was higher in hyperthyroid patient as compare to control.

**Conclusion:** The present study demonstrated the hyperthyroidism are linked with alteration and changes of renal functions and also alter the electrolyte balance. Hormonal balance should be corrected properly

**Key Words:** electrolytes, renal function, Hyperthyroidism

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## INTRODUCTION

There is correlation exist between kidney and thyroid. The renal physiology of the person affects with thyroid dysfunction and also develops other abnormality and also caused renal failure.<sup>1</sup> Most common disorders Hyper- and hypothyroidism are exist in the entire world. 5% of the general population is with Hypothyroidism and primary hypothyroidism 99% affected patients. Depending on the concentration of T3 and T4 in the blood which is correlate with abnormalities of the synthesis of these hormone because in the abnormality of these hormones caused renal dysfunction and imbalance of electrolyte of the person.<sup>2-5</sup>

Deficiency of thyroid hormone caused hypothyroidism and it is affects the metabolic process which is clinically and biochemical disorder.<sup>6</sup> Hypothyroidism is also associated with other biochemical abnormalities uric acid and serum creatinine increased.<sup>7</sup>

It is also observed that some other physiological changes are occurred such as renal blood flow are reduced and sodium, chloride and water and glomerular filtration rate are affected.<sup>8</sup> Chronic kidney disease (CKD) is caused by hyperthyroidism by many mechanism and overall system is enhanced of kidney increased filtration rate and renal injury caused proteinuria and hyperthyroidism also enhanced the energy metabolism and also increased free radicals generation.<sup>9</sup> In the present study we evaluate electrolyte and renal function in patients with thyroid dysfunction in Mirpur AJK.

## MATERIALS AND METHODS

We take for study 200 hyperthyroid patients' and 100 health Control. The study was conducted in the department of Physiology and Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK.

Samples were centrifuged at 3000RPM for 10 min. T3, T4 and TSH were measured by Special Chemistry Analyze. Serum creatinine (Cr), blood urea nitrogen

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(BUN), uric acid (UA) was analyzed by Micro lab300 and used Merk Kits. Sodium (Na), Potassium (K), and Chloride were analyzed by Electrolyte Analyzer and used Merk Kits. Statistically analysis by SPSS version 20 software for ANOVA.

## RESULTS

In this study, we were selected 200 hyperthyroid patients' and 100 normal health control for research work.

Result showed that in hyperthyroid patients' Uric acid ( $4.8 \pm 1.3$ ) and Creatinine ( $0.5 \pm 0.4$ ) mean concentration were lower as compared to control. The concentration of urea were normal in hyperthyroid patients and control both while the concentration of eGFR ( $203.2 \pm 103.8$ ) was higher in hyperthyroid patient as compare to control.

The concentration of Sodium ( $139.7 \pm 2.2$ ) was higher in hyperthyroid patient as compare to control.

**Table No.1: Participant Characteristics**

	Hyperthyroid patients' (n=200)	Control (n=100)
Age (years)	$40.54 \pm 10.48$	$40.55 \pm 10.38$
Education		
Basic	B-50%,	B-50 %
Secondary	S-25%	S- 31%
University	U-25%	U-19%
Body weight (Kg)	$69.1 \pm 11.4$	$70.4 \pm 11.5$
BMI (kg/m <sup>2</sup> )	$25.3 \pm 2.6$	$25.4 \pm 2.7$

B: Basic, S: Secondary, U: University

**Table No.2: Renal Function of Hyperthyroid patients' and Control health participants**

Hyperthyroid patients' (n=200)	Control (n=100)
<b>Urea (mg/dl)</b>	
$24.3 \pm 14.8$	$21.8 \pm 10.5$
<b>Creatinine(mg/dl)</b>	
$0.5 \pm 0.4$	$0.8 \pm 0.5$
<b>Uric Acid (mg/dl)</b>	
$4.8 \pm 1.3$	$5.6 \pm 1.9$
<b>eGFRml/min</b>	
$203.2 \pm 103.8$	$116.8 \pm 41.6$

**Table No.3: Electrolyte balance of hyperthyroid patients' and Control health participants**

Hyperthyroid patients' (n=200)	Control (n=100)
<b>Sodium mmol/L</b>	
$139.7 \pm 2.2$	$136.4 \pm 3.3$
<b>Chloride mmol/L</b>	
$106.5 \pm 5.0$	$104.6 \pm 2.7$
<b>Calcium mmol/L</b>	
$9.4 \pm 0.5$	$9.4 \pm 0.5$
<b>Potassium mmol/L</b>	
$4.3 \pm 0.5$	$4.4 \pm 0.9$

## DISCUSSION

In different studies showed that there is association exist between abnormal renal function tests and thyroid dysfunction. Creatinine, and uric acid are observed decreased in hyperthyroid patients in the present study and enhanced eGFR value significantly. Our study showed similarity with some other study in which eGFR, Urea and Creatinine changes observed.<sup>11</sup> There is correlation exist between kidney and thyroid. The renal physiology of the person affects with thyroid dysfunction and also develops other abnormality and also caused renal failure. Most common disorders Hyper- and hypothyroidism are exist in the entire world. 5% of the general population is with Hypothyroidism and primary hypothyroidism 99% affected patients. Depending on the concentration of T3 and T4 in the blood which is correlate with abnormalities of the synthesis of these hormone because in the abnormality of these hormones caused renal dysfunction and imbalance of electrolyte of the person. Deficiency of thyroid hormone caused hypothyroidism and it is affects the metabolic process which is clinically and biochemical disorder. Hypothyroidism is also associated with other biochemical abnormalities uric acid and serum creatinine increased. It is also observed that some other physiological changes are occurred such as renal blood flow are reduced and sodium, chloride and water and glomerular filtration rate are affected. Chronic kidney disease (CKD) is caused by hyperthyroidism by many mechanism and overall system is enhanced of kidney increased filtration rate and renal injury caused proteinuria and hyperthyroidism also enhanced the energy metabolism and also increased free radicals generation. GFR increases in hyperthyroid patients with positive effects of chronotropic and intro tropic of cardiac output.<sup>12,13</sup> In hyperthyroid cases, eGFR is increased, growth factor type-I like Insulin.<sup>14, 15</sup> We take for study 200 hyperthyroid patients' and 100 health Control. The study was conducted in the department of Physiology and Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK Samples were centrifuged at 3000RPM for 10 min. T3, T4 and TSH were measured by Special Chemistry Analyze. Serum creatinine (Cr), blood urea nitrogen (BUN), uric acid (UA) was analyzed by Micro lab 300 and used Merk Kits. Sodium (Na), Potassium (K), and Chloride were analyzed by Electrolyte Analyzer and used Merk Kits. Increased secretion of uric acid link to enhanced concentration of thyroid hormones, which cause increase rate purine metabolites and increased the production of uric acid and renal work is enhanced to excrete uric acid.<sup>16</sup> In the present study serum creatinine is decreased which is against to other previous studies in which increased serum creatinine value were found due to a decrease in eGFR.<sup>17,18</sup> Result showed that in hyperthyroid patients' Uric acid ( $4.8 \pm 1.3$ ) and Creatinine ( $0.5 \pm 0.4$ ) mean concentration were lower as compared to control. The concentration

of urea were normal in hyperthyroid patients and control both while the concentration of eGFR ( $203.2 \pm 103.8$ ) was higher in hyperthyroid patient as compare to control. The concentration of Sodium ( $139.7 \pm 2.2$ ) was higher in hyperthyroid patient as compare to control. In hyperthyroidism, increased thyroid hormones, increased sodium ions significantly and all segments of nephron proximal tubules, activity of Na-Pico-transporter and Na-H exchanger increased<sup>19-21</sup>. In the case of hypothyroidism, electrolyte balance decreased in hypothyroidism but statistically not significant.<sup>22</sup> The present study demonstrated the hyperthyroidism are linked with alteration and changes of renal functions and also alter the electrolyte balance. Hormonal balance should be corrected properly.

## CONCLUSION

The present study demonstrated the hyperthyroidism are linked with alteration and changes of renal functions and also alter the electrolyte balance. Hormonal balance should be corrected properly.

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

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# Evaluation of External Ear Dermatological Conditions with the Use of Cotton Buds

External Ear  
Dermatological  
Conditions with  
Cotton Buds

Faisal Bashir<sup>1</sup>, Ejaz Ahmed<sup>1</sup>, Syeda Midhat Fatima<sup>3</sup> and Asnad<sup>2</sup>

## ABSTRACT

**Objective:** The objective of this study to external ear dermatological conditions with the Use of Cotton Buds in Mirpur AJK.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the department ENT Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK and Department of Dermatology Mohi-ud-Din Medical College, Mirpur, AJK from March 2018 to July 2019.

**Materials and Methods:** In this study we selected all those patients which use cotton buds for the cleaning buds and also having dermatological diseases of external ear were including. Those person having not external dermatological diseases of ear are excluded. Those patients having nasal diseases are excluded from the study and also having middle ear diseases is excluded.

**Results:** 209 person using cotton buds for cleaning of ear to remove ear wax and mass in which 174 patients with Dermatological diseases of external disease of external ear (cases) and 35 Non- Dermatological diseases of external disease of external ear (89.22 %) were not aware of injurious effects of use of cotton bud to clean ear. Only 10.53% persons have awareness. Different parentage of external ear infection and dermatological diseases found Neurodermatitis (35.16%) ,Otitis externa (28.57%), Contact dermatitis(25.27%), Wax impaction (7.69%)and Tympanic membrane perforation (3.29%).

**Conclusion:** There is close association of external ear cleaning with demagogical disease when using cotton buds. It is bad and dangerous habit so avoid this.

**Key Words:** External Ear, Dermatological conditions, Cotton buds

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## INTRODUCTION

Cleaning of the ear a major habit of the people with cotton buds and it is self-practice of the people. Otherwise ENT specialist have practice to remove the wax of the people ear easily without the dermatological injury. Cotton tip swabs injure many people ears.<sup>1</sup> Cotton-tipped swab is developed by Leo Gerstenzang that he considered it safer for the people.<sup>2</sup> In the case of itching in the ear cotton buds are used to remove wax and clean the ears.

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We observed in the ENT practice that most of the people in removing of the wax from ear and cleaning they used cotton bud which caused to injure the ear and most of cases damage the ear drum and other injuries.<sup>3,4</sup> The tympanic membrane perforation was first time observed in 1972 and some other medical reports were concern cerumen impaction and otitis externa and other type of dermal issues.<sup>2</sup> Contact dermatitis and neurodermatitis are the major concern in in the population for using the cotton buds for cleaning the external ear so it means that cleaning of the ear with a cotton buds a dangerous habit of the people and having strong association. We also observed some clinical issues with concern of cleaning of the ear with cotton buds such as perichondritis, rupture of tympanic membrane and otitis externa acute.<sup>5-8</sup>

The objective of study to determine external ear dermatological condition with using cotton bud for cleaning of ear for removing wax.

## MATERIALS AND METHODS

This study was conducted in the department ENT and Biochemistry Department of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK and Dermatology Department of Mohd-ud-din Medical

College, Mirpur, AJK from March 2018 to July 2019. In this study we selected all those patients which use cotton buds for the cleaning buds and also having dermatological diseases of external ear were including. Those person having not external dermatological diseases of ear are excluded. Those patients having nasal diseases are excluded from the study and also having middle ear diseases is excluded.

**RESULTS**

Total number of subjects in this study was 300 with the mean age  $40.4 \pm 10.2$  years (Out of them 150 were male and 150 were female. 200 patients were cases and 100 were the controls. 209 person using cotton buds for cleaning of ear to remove ear wax and mass in which 174 patients with Dermatological diseases of external disease of external ear (cases) and 35 Non-Dermatological diseases of external disease of external ear 89.22 %)were not aware of injurious effects of use of cotton bud to clean ear.

**Table No.1: Participant characteristics**

	Dermatological diseases of external disease of external ear (cases) (n=200)	No Dermatological diseases of external disease of external ear
Age (years)	$40.4 \pm 10.2$	$40.7 \pm 10.3$
Male /Female (%)	100/100	50/50
Body weight (Kg)	$69.9 \pm 10.8$	$68.3 \pm 11.2$
BMI (kg/m <sup>2</sup> )	$24.8 \pm 2.6$	$24.2 \pm 2.5$

**Table No.2: Risk of use of cotton buds of external ear**

Dermatological diseases of external disease of external ear (cases) (n=200)	No Dermatological diseases of external disease of external ear Control (n=100)
<b>Cotton bud users(Exposed)</b>	
174	35
<b>Cotton buds non-users(Non-exposed)</b>	
26	65
<b>Total</b>	
200	100

**Table No.3: Association between awareness about the effects of cotton bud and habit of cotton bud using (n=209)**

Awareness about cotton bud use	Using in both ears	Using in one ear
Without awareness	141 (67.46%)	46 (22.00%)
With awareness	10 (4.78%)	12 (5.75%)
Total	151 (72.25%)	58 (27.75%)

**Table No.4: Types of diseases of external ear of the cases (n=91)**

Diseases	Number	%age
Neurodermatitis	32	35.16
Otitis externa	26	28.57
Contact dermatitis	23	25.27
Wax impaction	7	7.69
Tympanic membrane perforation	3	3.29

Only 10.53% persons have awareness. Different parentage of external ear infection and dermatological diseases found Neurodermatitis (35.16%), Otitis externa (28.57%), Contact dermatitis (25.27%), Wax impaction (7.69%) and Tympanic membrane perforation (3.29%).

**DISCUSSION**

External auditory meatus (EAM) skin inflammation is Otitis externa. It is including(Visible ear ,eardrum without extending to the middle).<sup>9</sup>Most common of the ear infection is acute bacterial infection and also other infection and factors are involved (dermatological disease, trauma and allergy).<sup>10</sup> Common symptoms and signs of ear infection are (ear canal edema, hearing loss, tenderness of the tragus and pinna, erythema, otalgia, otorrhea, aural fullness and itching).<sup>11</sup> In this study we selected all those patients which use cotton buds for the cleaning buds and also having dermatological diseases of external ear were including. Those person having not external dermatological diseases of ear are excluded. Those patients having nasal diseases are excluded from the study and also having middle ear diseases is excluded. Cleaning of the ear a major habit of the people with cotton buds and it is self-practice of the people. Otherwise ENT specialist have practice to remove the wax of the people ear easily without the dermatological injury. Cotton tip swabs injure many people ears . Cotton-tipped swab is developed by Leo Gerstenzang that he considered it safer for the people. In the case of itching in the ear cotton buds are used to remove wax and clean the ears. We observed in the ENT practice that most of the people in removing of the wax from ear and cleaning they used cotton bud which caused to injure the ear and most of cases damage the ear drum and other injuries. The tympanic membrane perforation was first time observed in 1972 and some other medical reports were concern cerumen impaction and otitis externa and other type of dermal issues .Contact dermatitis and neurodermatitis are the major concern in in the population for using the cotton buds for cleaning the external ear so it means that cleaning of the ear with a cotton buds a dangerous habit of the people and having strong association. Total number of subjects in this study was 300 with the mean age  $40.4 + 10.2$  years (Out of them 150 were male and 150 were female. 200 patients were cases and 100 were the controls. 209 person using cotton buds for cleaning of ear to remove ear wax and mass in which 174 patients with Dermatological diseases of external disease of external ear (cases) and 35 Non- Dermatological diseases of external disease of external ear 89.22 %)

were not aware of injurious effects of use of cotton bud to clean ear. Only 10.53% persons have awareness. Different parentage of external ear infection and dermatological diseases found Neurodermatitis (35.16%), Otitis externa (28.5%7), Contact dermatitis (25.27%), Wax impaction (7.69%) and Tympanic membrane perforation (3.29%). We also observed some clinical issues with concern of cleaning of the ear with cotton buds such as perichondritis ,rupture of tympanic membrane and otitis externa acute Some other studies showed that cleaning of the ear with cotton bud a danger habit and it caused some other infection of the ear and other clinically issues of the ear such as (tympanic membrane rupture, neurodermatitis, wax impaction, perichondritis and contact dermatitis).<sup>12, 13</sup> The risk of injury of the ear with using of cotton buds to clean the ear from wax more in dermatological diseases of external ear and 12 times more are observed in the people. In the study of Afolabiet *al.*, he observed that when a person cleaning the ear with cotton buds to remove the wax, many of the people caused injure the ear hediscouraged to use the cotton buds to clean the ear. There is close association of cleaning of ear with cotton bud and ear diseases and more risk are present in case of ear diseases and it is a bad habit.<sup>15,16</sup> There is also more risk available for those patients that have dermatological issue and diseases of the ear and they are more susceptible and it dangerous for ear in dermal diseases, we should educate the people regarding cleaning the ear with cotton bud to remove the wax that it is bad and dangerous habit for them so ovoid this type mechanism.

## CONCLUSION

There is close association of external ear cleaning with demagogical disease when using cotton buds. It is bad and dangerous habit so avoid this.

### Author's Contribution:

Concept & Design of Study: Faisal Bashir  
 Drafting: Ejaz Ahmed, Syeda Midhat Fatima  
 Data Analysis: Asnad  
 Revisiting Critically: Faisal Bashir, Ejaz Ahmed  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Evaluation of Serum Lipid Profile in Male Hypertensive Population

Lipid Profile in  
Male  
Hypertensive

Rana Tauqir Ullah Khan<sup>1</sup>, Fouzia Qadir<sup>2</sup> and Muhammad Irfan Shereen<sup>3</sup>

## ABSTRACT

**Objective:** The objective of this study to evaluate serum lipid profile in Male hypertensive population as compare to control.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the community of medicine of Muhammad College of Medicine, Peshawar and Department of Biochemistry, Northwest school of medicine, Peshawar from January 2018 to September 2019.

**Materials and Methods:** Total 200 Male patients were selected male and 100 control health people are selected for the study. Lipid profile (Total cholesterol, HDL, VLDL and triglycerides) was estimated in both groups in male patient and control healthy people. Blood samples were collected from both groups' male hypertensive patient and health people. Samples were analyzed by Micro lab 300 for lipid profile for both groups male hypertensive patient and control. Merck kits were used for analysis of lipid profile in both groups.

**Results:** In male hypertensive patients the serum lipid profile is higher as compare to control health male except cHDL which is decreased in hypertensive patients and high in male control which have vasoprotective effect. The mean of total cholesterol ( $256.5 \pm 12.9$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total LDL (mg/dl) ( $130.8 \pm 21.5$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total Triglycerides (mg/dl) ( $190.2 \pm 32.6$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total HDL (mg/dl) ( $30.6 \pm 8.7$ ) is lower in male hypertensive patients as compare to healthy control.

**Conclusion:** Male hypertensive patient found high level of serum lipid profile, so at high risk of cardiovascular diseases. It is may be their life style or metabolic system.

**Key Words:** Serum Lipid profile, male hypertensive population

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## INTRODUCTION

Hypertension major risk factors for cardiovascular disease (CVD) are dyslipidemia and Hypertension. Rate of death is high in low- and middle income countries at least 80%.<sup>1, 2</sup> In the developing countries, prevalence of hypertension is increasing globally it in developed countries the rate of death from hypertension is higher as compare to developed countries.<sup>2</sup> High blood levels of low-density lipoprotein (LDL), total cholesterol (TC), and triglycerides (TG) are attached with hypertension and CVD.

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In contrast, a risk factor for mortality from CVD is low level of high density lipoprotein (HDL).<sup>3</sup> (Hypertension and coronary artery disease) has established association as Epidemiological studies.<sup>4</sup> 34% is prevalence of hypertension among adult worldwide.<sup>5,6</sup> Major risk factors for CVD are decreased HDL and increased TC, TG, LDL. <sup>7</sup>Reasons of Coronary heart disease in man population is Hyperlipidemia.<sup>8</sup> On the surface of the heart there is four primary coronary arteries. <sup>9,10</sup> CHD is high ratio in man as compare women CHD is high in male population.<sup>11,12</sup> Reasons of cardiovascular disease are total cholesterol, triglyceride, HDL, LDL.<sup>13</sup> Vasoprotective effects is increased by HDL, with high levels of cholesterol in blood circulation is associated with progression of heart disease.<sup>14,15</sup> Risk factors of CHD are modifiable.<sup>16</sup> High level of lipid is mostly occurring factor of Hypertension.<sup>17</sup> The objective of this study to evaluate serum lipid profile in Male hypertensive population as compare to control.

## MATERIALS AND METHODS

This study is conducted in the department of community medicine of Muhammad College of Medicine, Peshawar and Department of Biochemistry, Northwest school of medicine, Peshawar. It was cross

section-control study. Total 200 Male patients were selected male and 100 control health people are selected for the study. Lipid profile (Total cholesterol, HDL, VLDL and triglycerides) was estimated in both groups in male patient and control healthy people. Blood samples were collected from both groups' male hypertensive patient and health people. Samples were analyzed by Micro lab 300 for lipid profile for both groups male hypertensive patient and control. Merck kits were used for analysis of lipid profile in both groups.

**Statistical Analysis:** SPSS for Windows version 20 (SPSS, Inc., Chicago, IL, USA) was employed for all statistical analyses.

## RESULTS

In male hypertensive patients the serum lipid profile is higher as compare to control health male except HDL which is decreased in hypertensive patients and high in male control which have vasoprotective effect. The mean of total cholesterol ( $256.5 \pm 12.9$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total LDL (mg/dl) ( $130.8 \pm 21.5$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total Triglycerides (mg/dl) ( $190.2 \pm 32.6$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total HDL (mg/dl) ( $30.6 \pm 8.7$ ) is lower in male hypertensive patients as compare to healthy control.

**Table No.1: Participant Characteristics**

	Male Hypertensive Patients (n=200)	Control (n=100)
Age (years)	$51.4 \pm 10.2$	$49.7 \pm 10.3$
Male	100	100
Body weight (Kg)	$68.9 \pm 10.8$	$69.3 \pm 11.2$
BMI (kg/m <sup>2</sup> )	$24.7 \pm 2.6$	$24.5 \pm 2.5$

**Table No.2: Serum lipid profile in Male hypertensive male patients Control**

Male hypertensive Patients (n=200)	Control (n=100)
<b>Fasting Blood Glucose(mg/dl)</b>	
$96.8 \pm 4.2$	$98.4 \pm 4.9$
<b>Total Cholesterol (mg/dl)</b>	
$256.5 \pm 12.9$	$192.6 \pm 31.5$
<b>LDL (mg/dl)</b>	
$130.8 \pm 21.5$	$117.5 \pm 18.6$
<b>HDL (mg/dl)</b>	
$30.6 \pm 8.7$	$41.5 \pm 9.1$
<b>Triglycerides (mg/dl)</b>	
$190.2 \pm 32.6$	$142.3 \pm 31.7$

## DISCUSSION

In male population Coronary heart disease is caused by high cholesterol.<sup>18</sup> another study showed that high prevalence CHD in male population with hypertension and high serum lipid profile there is association of high cholesterol with Coronary heart

disease.<sup>19,20</sup> Hypertension major risk factors for cardiovascular disease (CVD) are dyslipidemia and Hypertension. Rate of death is high in low- and middle income countries at least 80%. In the developing countries, prevalence of hypertension is increasing globally it in developed countries the rate of death from hypertension is higher as compare to developed countries. High blood levels of low-density lipoprotein (LDL), total cholesterol (TC), and triglycerides (TG) are attached with hypertension and CVD. In contrast, a risk factor for mortality from CVD is low level of high density lipoprotein (HDL). (Hypertension and coronary artery disease) has established association as Epidemiological studies. 34% is prevalence of hypertension among adult worldwide. Major risk factors for CVD are decreased HDL and increased TC, TG, LDL.<sup>7</sup> Reasons of Coronary heart disease in man population is Hyperlipidemia. On the surface of the heart there is four primary coronary arteries. CHD is high ratio in man as compare women CHD is high in male population. Reasons of cardiovascular disease are Total cholesterol, triglyceride, HDL, LDL.

This study is conducted in the department of community medicine of Muhammad College of Medicine, Peshawar and Department of Biochemistry, Northwest school of medicine, Peshawar. It was cross section-control study. Total 200 Male patients were selected male and 100 control health people are selected for the study. Lipid profile (Total cholesterol, HDL, VLDL and triglycerides) was estimated in both groups in male patient and control healthy people. Blood samples were collected from both groups' male hypertensive patient and health people. Samples were analyzed by Micro lab 300 for lipid profile for both groups male hypertensive patient and control. Merck kits were used for analysis of lipid profile in both groups. With high levels of cholesterol in blood circulation is associated with progression of heart disease. Risk factors of CHD are modifiable, high level of lipid is mostly occurring factor of Hypertension. By restriction of saturated fat and cholesterol, high blood cholesterol levels is decreased, with diet.<sup>14</sup> HDL increase vasoprotective effects<sup>21,22</sup>. In the present study, in male hypertensive patients we found high level of cholesterol as compare to control.<sup>23, 24</sup> In male hypertensive patients the serum lipid profile is higher as compare to control health male except HDL which is decreased in hypertensive patients and high in male control which have vasoprotective effect. The mean of total cholesterol ( $256.5 \pm 12.9$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total LDL (mg/dl) ( $130.8 \pm 21.5$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total Triglycerides (mg/dl) ( $190.2 \pm 32.6$ ) is higher in male hypertensive patients as compare to healthy control. The mean of total HDL (mg/dl) ( $30.6 \pm 8.7$ ) is lower in male hypertensive

patients as compare to healthy control. Moderate LDL-C reduction is best method to reduce hypertension.<sup>25</sup> The ratio of LDL-C/HDL-C help us to CVD risk determine in male population.<sup>26</sup>

## CONCLUSION

Male hypertensive patient found high level of serum lipid profile, so at high risk of cardiovascular diseases. It may be their life style or metabolic system.

### Author's Contribution:

Concept & Design of Study: Rana Tauqir Ullah Khan  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Percutaneous Nephrolithotomy (PCNL) in Adult Patients: Our Initial

## Experience at Teaching Hospital Dera Ghazi Khan

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### ABSTRACT

**Objective:** To evaluate our initial experience of PCNL for the management of renal stones in terms of stone clearance and complications.

**Study Design:** Prospective Observational Study

**Place and Duration of Study:** This study was conducted at the Urology department of Tertiary Care Teaching Hospital Dera Ghazi Khan between July 2018 to July 2020.

**Materials and Methods:** We included 72 adults patients with renal stones 15-50 mm. PCNL was performed in prone position under general anesthesia. Patients with anomalous kidney, stage horn stones, and simultaneous PUP narrowing, bleeding diathesis cardiopulmonary diseases, obese and pediatric age were excluded.

**Results:** The mean age of patients was 33 years with 12±sd and mean stone size was 24mm with 8.4± sd. Mostly were male 68% (n=49). Highest percentage of stones found in renal Pelvis (71%). Single stone was in 71% patients. Upper pole was the most common site of puncture (73.6%), while single puncture was done in 80% patients. Regarding the stone clearance 90.3% have complete stone clearance while 6 patients (8.3%) has residual stones ranging from 6mm- 15 mm. Procedure was abandoned in one patient due to failure tract access. Patients with residual stones (n=6) 8.3% underwent ancillary procedure later on. Three patients (4.2%) developed urinoma managed by URS and DJ stent insertion. One patient got urosepsis and one developed paralytic ileus. Only 2(2.8%) patients needed blood transfusion.

**Conclusion:** PCNL was new treatment modality at our set up yet this technique encourages us to say good bye to open surgery in future. PCNL being standard and safe procedure, is to be adapted at least at every district level hospital

**Key Words:** Renal stone, Percutaneous nephrolithotomy, Pneumatic lithoclast and D.J stent.

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### INTRODUCTION

Urinary stone disease is a major urological concern. Endourologic techniques have influenced the clinical approach and outcomes. Open surgery holds a historic importance in the management of most of the conditions.<sup>1</sup> Before the endourology era, the main approach has relied on conservative surveillance or open stone removal.

Since the advancement of technology, refinements of surgical instruments and endourologic options, the management of renal stones had a paradigm shift from

open surgery to the minimally invasive endourological surgery. One of them is percutaneous nephrolithotomy (PCNL) which is now considered as a standard and first line treatment according to various international guidelines specially for stone  $\geq 20$  mm in size. Whereas for stones of size 10 to 20mm can be treated with extra corporeal shock wave lithotripsy (ESWL), retrograde intra renal surgery (RIRS) in addition to PCNL.<sup>2,3</sup> In 1976, a new horizon opened up before us when Fernstrom and Johansson first performed removal of renal stone through a nephrostomy tract<sup>4</sup> leading to PCNL the most commonly performed procedure for the management of renal stones. Besides minimum incision to skin and muscles the PCNL directly approaches the collecting system/stone with less trauma to the kidney and adjacent organs as compared to the pyelolithotomy and hence a great deal of surgical expertise is required for percutaneous access to the kidney and stone removal<sup>5</sup>. Being minimally invasive surgery PCNL has lower morbidity, higher postoperative patient comfort, shorter convalescence, and lesser cost than open techniques, besides up to 85 % clearance rate of stones<sup>6,7</sup>. But Complication rates can be as high as 15%, including severe bleeding,

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infection, urinary extravasation, and injury to adjacent organs, most notably the colon.<sup>8</sup> The learning curve of PCNL is slow as this technique involves multiple steps yet if learned with efforts, it proves to be safe and effective treatment. We conducted this study to evaluate our initial experience of PCNL regarding stone clearance and complication encountered.

## MATERIALS AND METHODS

This prospective observational study was carried out at urology department of tertiary care teaching hospital Dear Ghazi Khan between July 2018 to July 2020. After ethical approval we recruited 72 patients irrespective of gender, all were  $\geq 17$  years old with normal renal function. Patients demographic data, puncture site, no. of punctures, no. of stones, size of stones, residual stones, complications, nephrostomy/DJ placement and post-operative blood transfusion were recorded on questionnaire. We included renal stone size range from 15 mm -50 mm, patient with both primary & recurrent renal stones. All the patients were evaluated with history, physical examination, laboratory investigation including urine culture & sensitivity, ultrasonography and radiological contrast studies for stone disease. Complete pre-operative evaluation done. All the patients were operated under general anesthesia. Pre-operative broad spectrum antibiotics were injected to all patients. Initially lithotomy position was made and ureteric catheter of 06 Fr was placed on the side to be operated for contrast study. Then patient was turned to the prone position. The puncture was done with nephrostomy needle of 16 gauge under fluoroscopic guidance. Guide wire of 0.032 inches was placed then track was dilated with Alken dilators up to 27 FR and Amplants sheath of 28 gauge was placed. The nephroscope was introduced in the collecting system of kidney and stone was fragmented by pneumatic lithoclast. Larger pieces of stone were removed with the help of stone grasper. At the end of procedure D.J (Double J) ureteric stent was placed in most of the cases alone and in some cases D.J stent along with nephrostomy tube was placed. In a few cases only nephrostomy was placed. These patients observed post operatively to check any hemodynamic instability due to excessive blood loss. Blood was transfused after proper blood grouping and cross matching in the patients where required. Residual stone were confirmed post operatively by X-ray KUB and Ultrasound KUB. Patients with anomalous kidney, stage horn stones, simultaneous P.U.J narrowing, bleeding diathesis, cardiopulmonary diseases, obese and pediatric age were excluded.

**Statistical Analysis:** Data was entered in SPSS version 24.0 and analyzed. Frequency with percentage was calculated for qualitative parameters and mean + standard deviation calculated for quantitative parameters. Chi-square was applied to assess the

significant relation among gender, age groups and outcome categories on the base of nephrolithotomy parameters.

## RESULTS

The mean age of patients was 33 years with  $\pm 12$  standard deviation and mean stone size was 24mm with  $8.4 \pm$  standard deviation. Male gender was predominant with 68% (n=49) while females were 32% (n= 23). Highest percentage of stones found in renal Pelvis (71%). Single stone found in 71% patients. Upper pole was the most common site of puncture (73.6%), while single puncture was done in 80% patients. Both DJ stent and nephrostomy were placed in 23 patients (32%) placed in cases of residual stones. Table-1.

**Table No.1: Stone Demographics**

		Frequency	(%)age
Stone location	Renal pelvis	51	71
	Upper Pole	1	1.4
	Lower pole	3	4.2
	Combined upper +lower +middle pole	17	23.6
Stone number	Single Stone	51	70.8
	Multiple stones	21	29
Site of puncture	Upper Pole	53	73.6
	Lower Pole	6	8.3
	Multiple location	13	18
Number of puncture	One puncture	58	80.6
	2 puncture	11	15.3
	3 puncture	3	4.2
Stone primary /recurrent	Primary	63	87.5
	Recurrent Post ESWL	2	2.8
	Recurrent Post Pyelolithotomy	7	9.7
DJ stent only		14	20
Nephrostomy only		31	43
Both DJ +Nephrostomy		23	32
None		4	5.5

Regarding the stone clearance 90.3% have complete stone clearance with no residual stone while 6 patients (8.3%) has residual stones ranging from 6mm- 15 mm. Procedure was abandoned in one patient due to failure to access the collecting system in spite of multiple punctures and simultaneously per operative bleeding. This patient referred to a center where PCNL was a routine practice for many years.

Patients with residual stones (n=6) 8.3% underwent ancillary procedure later on. ESWL was performed in 3 patients, URS and stone extraction performed in 2 patients while one patient lost follow up. Regarding post-operative complications Three patient (4.2%) developed urinoma that was managed by URS and DJ stent insertion. One patient got urosepsis and one developed paralytic ileus both were managed conservatively. Only 2 patients needed blood transfusion. Table-2.

**Table No.2: Outcomes and Complication**

		Frequency	(%)age
Outcomes	Complete clearance	65	90.3
	Abandon	1	1.4
	Residual 6mm-15mm	6	8.3
Complications	No Complications	67	93.1
	Paralytic Ileus	1	1.4
	Urinoma	3	4.2
	Urosepsis	1	1.4
Blood transfusion	No	70	97.2
	Yes	2	2.8

## DISCUSSION

In the last 2 decades the evolution of renal stone treatment from open surgery (with significant post-operative morbidity) to minimally invasive techniques like PCNL and retrograde intra renal surgery (with less morbidity and good outcomes) is significant. PCNL is now considered the standard treatment for nephrolithiasis. The important factors in PCNL which affect the outcomes of kidney stone treatment in terms of stone clearance are stone size, its location and expertise of surgeon. In this study we shared our initial experience of PCNL in adult patients. Similar study was published by Malik MA, et al about their initial experience. Complete stone clearance rate was 85.7% while three (8.6%) patients had residual stones while two (5.8%) patients had PCNL failure due to failed tract access.<sup>7</sup> While in our study complete clearance (no residual stone) was achieved in 90% patients and 9% had partial clearance (residual stone 6mm-15 mm), In one patient procedure was abandoned due to failed tract access. In a study by Atta Ullah in his study mentioned stone clearance in 78.8% patients with single session of PCNL.<sup>9</sup>

In another study stone free rate (SFR) in PCNL was compared to SFR of ESWL, which was 80% in PCNL and 27.5% in ESWL, stone size was in the range of 15-25 mm.<sup>10</sup> The overall stone-free rate of 91.7% is also reported in literature which was in accordance with our study.<sup>11</sup>

We did standard PCNL with standard endourology gadgets and when standard PCNL was compared to mini PCNL the difference in stone free rate was insignificant among the two. Although Mini-PCNL has advantages of significantly less bleeding and hospital stay.<sup>12</sup> Similarly the current and evolving techniques i.e. tubeless PCNL and total tubeless PCNL are in current practice and under discussion. The advantages of both techniques is decreased transfusion rate and length of hospital stay and no leakage of urine from the wound which are favorable as compare the standard PCNL with nephrostomy tube. But regarding Stone-free rate, both techniques have equal results of 91%-97%, almost same like standard PCNL result of our

study.<sup>13</sup> but we being infantile, introduced nephrostomy in majority of patients and even both DJ and nephrostomy tube, where we felt difficulty or lack of surety of stones clearance per operatively.

Though in different studies the commonest complication encountered was bleeding in 4/52 (7.7%) patients necessitating blood transfusion.<sup>9</sup> and even high percentage 18.3% in a study.<sup>14</sup> the reasons of low blood transfusion (2.8%) in our study, are single stone, single puncture site and strict inclusion criteria. The study conducted by Malik MA, et al coincides with our study as their (2.9%) patients required a pint of blood transfusion due to excessive bleeding.<sup>7</sup>

We also performed PCNL in previously operated kidney (pyelolithotomy) and found no difference in stone clearance and complications in these and virgin cases. Although number of previously operated patient were quite low (n=7) in our study as compared (n= 66) patients in study by Siddiq A.A et al yet safety and efficacy of PCNL in both studies are comparable.<sup>15</sup>

The complication of urinoma was found in 3 patients (4.2%) in our study, in literature the incidence of renal collecting system injury during PCNL resulting in extravasation and absorption of irrigation fluid, occurs in up to 8% of patients.<sup>16</sup>

The rate of sepsis is much lower, ranging from 0% to 3% in patients treated with appropriate perioperative antibiotics.<sup>17</sup> also in our study it was similar i.e. in a one patient (1.4%).

## CONCLUSION

PCNL was new treatment modality for us yet this technique encourages us to say good bye to open surgery in future at our set up. PCNL being standard and safe procedure, is to be adapted at least to every district level hospital.

### 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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# Severe Umbilical Arterial Blood Metabolic Acidosis; A Predictor of Neonatal Encephalopathy

Umbilical Arterial Blood and Neonatal Encephalopathy

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## ABSTRACT

**Objective:** To determine the relationship of Severe Umbilical Arterial Blood Metabolic Acidosis to Neonatal Encephalopathy.

**Study Design:** Descriptive cross sectional study

**Place and Duration of Study:** This study was conducted at the Department of Pediatrics, Fauji Foundation Hospital, Rawalpindi, over a period of 6 months from April, 2019 to Oct, 2019.

**Materials and Methods:** Umbilical arterial blood (UAB), samples were collected from all full term, singleton babies of both sexes, delivered by all delivery types, soon after birth. Non-probability consecutive sampling technique was used. Arterial blood gas analysis of these samples was done within half an hour, and babies with severe acidosis in UAB i.e. pH less than 7.0, were separated and included in this study. These neonates were observed for the development of signs of neonatal encephalopathy (NE). A comparison of acid base parameters, including pH, HCO<sub>3</sub>, and base deficit of these samples was made in neonates who developed NE versus those who did not. A relationship between these parameters and development of NE was established.

**Results:** It was found that 28.9% (24/83) of neonates with severe metabolic acidosis developed signs of NE within two days of birth. The mean pH and HCO<sub>3</sub> were significantly low and BE was significantly high in these neonates; p=0.000.

**Conclusion:** Severe metabolic acidosis detected in umbilical arterial blood in a new born is an indicator of impending neonatal encephalopathy.

**Key Words:** Neonatal encephalopathy, umbilical arterial blood, metabolic acidosis.

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## INTRODUCTION

Increased or decreased body tone and seizures in a new born are indicators of neonatal encephalopathy (NE). NE is a clinical manifestation of neonatal brain dysfunction (NBD), and it can occur due to different etiologies. It occurs due to structural malformations of the brain, infections, metabolic derangements and hypoxia. Hypoxia can lead to serious NBD and NE. Hypoxic ischemic encephalopathy (HIE) resulting from perinatal fetal ischemia (PFI) is the most common cause of NBD and NE<sup>1-2</sup>.

The incidence of NE in different studies is 2.0 to 6.0 per 1000 live births<sup>3-6</sup>, and that of HIE is also 2.0 to 6.0 per 1000 live births.<sup>7-15</sup>

NE is a fairly common occurrence in neonates and results in adverse neurological outcomes later in life<sup>3</sup>. In one international study 167 term neonates with HIE were followed for a period of 3-5 years, 23.3% of these neonates got neurologically affected. Ones with moderate HIE developed cerebral palsy and those with severe HIE developed profoundly handicap<sup>11</sup>.

Management planning to minimize adverse neurological outcomes later in life of children suffering from hypoxia in perinatal period, demands an early detection of PFI. In significant PFI the umbilical arterial blood (UAB) has severe metabolic acidosis (MA) with a pH of <7.0, and leads to HIE in 31% patients<sup>12</sup>. Umbilical arterial blood MA can be detected by performing blood gas analysis (BGA) of a fresh UAB sample. The objective of this study was to identify neonates at risk of developing NE by doing arterial blood gas analysis.

## MATERIALS AND METHODS

This study was carried out in the Department of Pediatric Medicine, Fauji Foundation Hospital

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Rawalpindi, from 22<sup>nd</sup> April to 23<sup>rd</sup> Oct 2019, after taking approval from the hospital ethical committee. Non probability consecutive sampling technique was used to collect umbilical arterial blood samples from full term babies delivered by all delivery types. Within half an hour of sampling the samples were sent to hospital laboratory for blood gas analysis and the results were recorded separately for each patient. After taking informed consent from parents, eighty three babies with severe metabolic acidosis i.e. pH less than 7.0, were included in the study.

The selected babies were observed for development of hypotonia, hypertonia and/or seizures. Babies with respiratory acidosis, neonatal sepsis, cardiac or renal disease, and family history of inborn errors of metabolism were excluded from the study. The relationship of umbilical arterial blood parameters including pH, HCO<sub>3</sub>, and base deficit, was studied against the development of neurological signs. These neonates were kept under observation and discharged once clinically stable and tolerating oral feeds.

The data was analyzed on SPSS version 16.0. Descriptive statistics were used to measure qualitative and quantitative data. Qualitative data were measured by percentages and frequencies and quantitative data was measured as mean  $\pm$  standard deviation (SD) and if the data were normally distributed, by median and range otherwise.

## RESULTS

Mean, median, mode and standard deviation of pH, bicarbonate (HCO<sub>3</sub>) & base excess (BE) of the umbilical arterial blood samples of the neonates included in the study were calculated. (table-1).

**Table No.1: Descriptive statistics for umbilical artery acid base parameters**

	pH	HCO <sub>3</sub>	BE
Mean	6.86	7.7241	-22.62
Median	6.89	8.10	-22.20
Mode	6.79	8.20	-20.90
Std. Deviation	0.13	1.53	2.37
Minimum	6.00	3.40	-28.20
Maximum	6.99	10.60	-18.60

The umbilical arterial blood, acid base parameters were compared in neonates who developed NE versus those who did not (table-2). It was found that out of the eighty three babies with severe umbilical arterial blood metabolic acidosis, 24 (28.9%) developed neonatal encephalopathy within two days of birth. The acid base parameters of these neonates showed pH  $6.75 \pm 0.20$ , HCO<sub>3</sub>  $5.98 \pm 1.22$  and BE  $-24.71 \pm 1.96$ . The mean pH and HCO<sub>3</sub> of these neonates were significantly lower and mean BE was significantly higher;  $p = 0.000$ .

**Table No.2: Umbilical arterial acid base parameters in neonates with Hypoxic ischemic encephalopathy versus neonates with no neurological sign**

Umbilical arterial blood acid base parameters	Hypoxic ischemic Encephalopathy	No neurological sign	P value
pH	$6.75 \pm 0.20$	$6.90 \pm 0.06$	0.00
HCO <sub>3</sub>	$5.98 \pm 1.22$	$8.43 \pm 0.99$	0.00
BE	$-24.71 \pm 1.96$	$-21.77 \pm 1.97$	0.00

## DISCUSSION

Adverse neurological outcomes associated with NE include cerebral palsy, epilepsy, cognitive, developmental and behavioral problems, and even death<sup>3</sup>. Ethical, social, legal, and financial costs involved in such outcomes are enormous<sup>13,14</sup>. This necessitates testing and early detection of NE, especially due to perinatal fetal ischemia (PFI), in order to improve perinatal care and to take timely decisions of intervention<sup>16</sup>.

For the early detection of perinatal fetal ischemia, different investigations are done including umbilical arterial blood gases for metabolic acidosis, Apgar score, serum lactate, placental histology, heart rate decelerations, electrocardiographic & cardiotocographic monitoring, MRI and electroencephalogram of newborns<sup>16-22</sup>. These parameters are used in different combinations depending upon availability of resources in a particular setup and this significantly increases the possibility to diagnose NE.

Among these investigations UAB metabolic acidosis has been consistently included by majority of criteria for diagnosis of perinatal ischemia and is considered the single most sensitive indicator of intrapartum fetal ischemia by the British and American Colleges of Obstetrics and Gynecology<sup>23</sup>.

In a study done by Wayenberg, moderate or severe NE occurred in 26% of patients with UAB base deficit higher than 10mmol/L and in 79% of those with base deficit higher than 18mmol/L. In our study 28.9% neonates developed clinical signs of NE and they had base deficit 18.60 to 28.20 mmol/L with SD 2.37. The similarity in two studies is higher percentage of neonates developing NE with a rising base deficit. A difference in base deficit values of the two studies can be noted and it is explainable by the fact that base deficit values are calculated entities and not measured ones and are therefore are subject to variation<sup>16</sup>.

V Modarressnejad at Kerman University of Medical and Health Sciences, Iran, conducted a prospective cross-sectional study. Four hundred singleton term babies delivered by all delivery types were included in the study. Mean (SD) umbilical cord blood pH was  $7.25 \pm 0.14$ . Eighty-one of these patients showed pH  $< 7.1$ . This low pH was found related to development of poor

neurological outcomes. Our inclusion criteria was babies with severe metabolic acidosis, UAB pH <7.0, thus umbilical cord blood pH mean (SD) in our study was 6.86 +/- 0.13 and range 6.00 to 6.99, SD 0.13. In our study neonates, who developed signs of NE, had pH 6.75±.20. The pH values of the two studies for the affected children are in keeping with each other.<sup>24</sup>

Victory R, using database of St. Joseph's Health Care, London, studied term neonates for a relationship of umbilical cord arterial & venous blood pH and base deficit along with Apgar score <7 at 5 minutes, to the chances of intensive care unit admissions & need for mechanical ventilation. A progressively higher risk with increasing metabolic acidosis was found. This relationship was independent of whether the blood was taken from the umbilical artery or vein. Our study with all its simplicity reached the same conclusion of increased risk with increasing metabolic acidosis. We monitored only clinical signs of NE and yet the results were similar, and this was indeed an advantage for our local setups<sup>25</sup>.

Our study was exquisitely simple, conducted in available hospital resources and needed no additional funding from any agency. This excluded possible bias related to cost and benefit gains. Moreover, it is applicable in most hospital settings of Pakistan and provides opportunity to improve management & outcome. The short coming of our study was that the affected neonates were followed only for a short period of time, i.e. till stability and discharge, and late complications and outcomes were not monitored. Though it was beyond the scope of our study, it would be worth doing in a future.

## CONCLUSION

Severe metabolic acidosis in umbilical arterial blood of a neonate, detected soon after birth, is a reasonably reliable indicator of ischemia and predictor of impending neonatal encephalopathy. It can be used to treat these newborns and improve outcome.

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

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# Ethambutol-Induced Optic Neuropathy in Patients of Tuberculosis

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## ABSTRACT

**Objective:** To find out characteristics of patients having ethambutol-induced optic neuropathy (EON) at a tertiary care hospital of South Punjab, Pakistan.

**Study Design:** Observational Study

**Place and Duration of Study:** This study was conducted at the Outpatient Department of Ophthalmology, Bahawal Victoria Hospital, Bahawalpur from January 2018 to December 2019.

**Materials and Methods:** During the study period, a total of 35 patients were enrolled with visual impairment following initiation of ethambutol usage and diagnosed as EON. All patients had decreased visual acuity, impairment of color vision by "Ishihara color plate", or had abnormal results of visual field and/or flash and pattern visual evoked potential examination. Basic ophthalmologic evaluations like visual acuity, color vision as well as optic disc evaluation were done. Gender, age, medical history, date of diagnosis, treatment, visual acuity, color vision and slit lamp bio microscopy were recorded for all patients.

**Results:** Out of a total of 35 patients, 23 (65.7%) were male and 12 (34.3%) female. Most of the patients, 24 (68.6%) belonged to rural areas of residence while 11 (32.4%) from urban areas. In terms of types of tuberculosis, 34 (97.1%) were having pulmonary tuberculosis. Majority of the patients, 28 (80.0%) were over 60 years of age while mean age was noted to be 66.34 years with standard deviation of 10.81 years. Visual acuity loss was observed at 6.42±3.94 months following initiation of ethambutol treatment. Among 19 (54.3%) patients, visual acuity decline was bilaterally symmetric.

**Conclusion:** Ethambutol-induced optic neuropathy is a major concern during anti-tubercular treatment. Timely detection and withdrawal of ethambutol along with prompt treatment and monitoring by ophthalmologists should be done.

**Key Words:** Ethambutol, optic neuropathy, tuberculosis, visual impairment

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## INTRODUCTION

Tuberculosis (TB) is considered a major systemic infection globally.<sup>1</sup> Treatment of TB consists of combination of anti-TB drugs. Ethambutol has been in use for the treatment of TB since 1960s and ethambutol linked visual impairment was identified soon following its introduction.<sup>2</sup> Ethambutol is among the 1<sup>st</sup> line anti-TB drugs utilized. In the past, each anti-TB drug was given individually according to weight of the TB patient but now days, fixed-dose combination (FDC) are available and have made it much more convenient

for the patients to take these drugs in a single pill usually.<sup>3</sup>

Ethambutol can cause toxicity while most commonly observed adverse effects of ethambutol include diminished visual acuity, rash and fever.<sup>4,5</sup> Ethambutol-induced optic neuropathy (EON) is a well-known ocular complication and could progress in to permanent visual loss. Some studies have estimated the incidence of EON which is found to be between 1-1.5%.<sup>6-8</sup> EON has been found to correlate with the ethambutol dosage.<sup>9</sup> The exact mechanism behind EON is not fully known but it could be attributed to ethambutol and its metabolite which have zinc chelating effects that cause dysregulation of the retinal hemostasis.<sup>6</sup> Ethambutol is thought to interfere with iron containing complex-I and copper containing complex-IV so might disrupt the oxidative phosphorylation and produce reactive oxygen species that might lead to retinal ganglion cell damage.<sup>5,10</sup> No study has been done in Pakistan to find out the characteristics of the patients having of EON. Most of the studies conducted globally consist of case reports and small case series. So, the current study aimed to find out characteristics of patients having EON at a tertiary care hospital of South Punjab, Pakistan.

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## MATERIALS AND METHODS

This observational study was done at the Outpatient Department of Ophthalmology, Bahawal Victoria Hospital, Bahawalpur from January 2018 to December 2019. During the study period, a total of 35 patients were enrolled with visual impairment following initiation of ethambutol usage and diagnosed as EON. All patients had decreased visual acuity, impairment of color vision by "Ishihara color plate", or had abnormal results of visual field and/or flash and pattern visual evoked potential examination. All patients having other eye related disorders/diseases like cataract, retinal diseases, glaucoma, or any other reason of optic neuropathy were not enrolled. Informed consent was taken from all study participants. Approval from "Institutional Ethical Committee" was also acquired.

Basic ophthalmologic evaluations like visual acuity, color vision as well as optic disc evaluation were done. A special proforma was designed to record all the study information. Gender, age, medical history, date of diagnosis, treatment, visual acuity, color vision and slit lamp bio microscopy were recorded for all patients. Quantitative data was expressed as mean and standard deviation while qualitative data was represented as frequency and percentages. SPSS version 26.0 was used for all data handling and analysis.

## RESULTS

Out of a total of 35 patients, 23 (65.7%) were male and 12 (34.3%) female. Most of the patients, 24 (68.6%) belonged to rural areas of residence while 11 (32.4%) from urban areas. In terms of types of tuberculosis, 34 (97.1%) were having pulmonary tuberculosis. Majority of the patients, 28 (80.0%) were over 60 years of age while mean age was noted to be 66.34 years with standard deviation of 10.81 years. Table 1 is showing characteristics of patients having EON in the present study. Visual acuity loss was observed at 6.42±3.94 months following initiation of ethambutol treatment. Among 19 (54.3%) patients, visual acuity decline was bilaterally symmetric.

**Table No.1: Characteristics of Patients having Ethambutol-induced Optic Neuropathy**

Characteristics	Mean±SD
Age (years)	66.34±10.81
Weight (kg)	56.17±9.48
Duration of Ethambutol Treatment (months)	6.42±3.94
Ethambutol cumulative Dosage (mg/kg)	2727.24±2047.84
Initial VA logMAR	0.84±0.67
Initial color (Ishihara color test)	7.18±8.44

## DISCUSSION

The incidence of EON is estimated to be between 1-1.5% in various studies conducted globally.<sup>6-8</sup> Ezer N

et al in their meta-analysis evaluating studies involving TB patients treated with ethambutol from 1965-2011 noted incidence of visual impairment as 22.5 per 1,000 cases while permanent visual impairment was noted in 2.3 per 1,000 cases who had received ethambutol treatment in standard dosage for up to 9 months.<sup>11</sup> The actual burden of EON could be much higher if we consider that not all patients are reporting or referred to ophthalmology clinics so EON might get overlooked among TB patients getting ethambutol treatment.

In the present study, mean duration of ethambutol treatment (months) at the time of visit to ophthalmology clinic by the patients was noted to be 6.42±3.94 months whereas mean ethambutol cumulative Dosage (mg/kg) was noted to be 2727.24±2047.84 mg/kg. Chen S et al from Taiwan<sup>12</sup> evaluating 62 cases EON noted mean duration of ethambutol treatment at the time of EON diagnosis to be 5.94±4.1 months which is close to what we noted in the present study. Lee EJ et al<sup>8</sup> evaluating patients of EON noted visual loss at a mean duration of 7.31±9.45 months after initiation of ethambutol. As present research was an observational study and we did not have any plans of recording follow up data of the patients, various authors have reported that visual functional recover after discontinuation of the ethambutol treatment in many of the cases. Chen S et al from Taiwan<sup>12</sup> noted 50% of their patients having EON and visual impairment to recover after discontinuing ethambutol treatment. Kumar A et al<sup>13</sup> analyzing 7 consecutive patients with EON and severe visual impairments noted that 42.3% of them had visual recovery after a mean follow up 8.3±2.1 months. Lim SA<sup>6</sup> analyzing 3 EON cases noted that 1 case had recovery from visual impairment after discontinuation of ethambutol treatment while remaining 2 had mild visual improvements after stopping ethambutol treatment. Some researchers have found incidence of EON to have relation with daily dose and duration of treatment of ethambutol.<sup>14,15</sup> It has also been seen that cases who developed EON have significantly higher daily ethambutol when compared to those cases who did not develop EON.<sup>8</sup> Ethambutol is known to get rapid absorption while most part of ethambutol is excreted out through urine, it is vital to adjust the dosage of ethambutol as per creatinine clearance.<sup>16</sup> Some clinicians have also proposed that patients having renal impairment should not be treated with ethambutol as ethambutol might be causing toxicity in these cases. We were unable to record renal functions in our cases but studies have found out significantly decreased glomerular filtration rate (GFR) in cases that developed EON.<sup>8</sup> Patients having decreased renal functions should be monitored carefully by the clinicians when they are under treatment with ethambutol.

Ethambutol toxicity is thought to affect the small-caliber papillomacular bundle axons while it is also observed that optic disc pallor does not exist up until



months following loss of fibers.<sup>17-19</sup> Clinical signs of EON might absent in many of the patients during fundus examination whereas around half of EON cases might have already develop optic disc pallor at the actual time of EON diagnosis. Methods like electrophysiological testing for the screening of EON could be helpful. Multi-focal electroretinogram is also a useful tool for the diagnosis and monitoring of EON.<sup>20</sup>

Our study had few limitations as well. As this was a single center study, the findings of this study cannot be generalized. Further studies involving large sample size, multiple population sets and centers will further add to what is known about the spectrum of EON. We were unable to record the incidence of EON so further studies could be planned to enroll TB patients under treatment with ethambutol.

## CONCLUSION

Ethambutol induced optic neuropathy is a major concern during anti-tubercular treatment. Ethambutol induced optic neuropathy can lead to visual impairments and permanent vision loss. Timely detection and withdrawal of ethambutol along with prompt treatment and monitoring by ophthalmologists should be done. Patients planned to receive anti-tubercular treatment can be referred to ophthalmologists for pretreatment evaluation.

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### Author's Contribution:

Concept & Design of Study: Zulfiqar Ali  
 Drafting: Nadia Nazir, Soufia Farrukh  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Post Cataract Surgery Incidence of Dry Eye Disease: An Experience from a Tertiary Care Hospital of South Punjab

Nadia Nazir, Zulfiqar Ali and Soufia Farrukh

## ABSTRACT

**Objective:** To find out the incidence of dry eye among patients who underwent cataract surgery.

**Study Design:** Prospective observational study.

**Place and Duration of Study:** This study was conducted at the Department of Ophthalmology, Bahawal Victoria Hospital, Bahawalpur for a period of six months from January 2020 to June 2020.

**Materials and Methods:** A total of 136 patients, having visually significant cataract and listed for cataract surgery, aged 40-80 years, were enrolled for this study. Ocular examination including "slit lamp examination" was done among all enrolled patients for ruling out any possible ocular surface disorders. Dry eye was labeled with "Schirmer's strip" test after 5 minutes the filter paper is removed and the amount of wetting from the fold measured. Less than 10 mm of wetting after 5 minutes without anesthesia and less than 6 mm with anesthesia is considered abnormal. Gender, age, area of residence, and type of surgery was noted for all patients. All patients data was analyzed at 1-month and 3-months follow-up.

**Results:** Out of a total of 136 patients, 74 (54.5%) were male and 62 (45.6%) were female. Majority of the patients, 118 (86.8%) aged above 50 years. There were 85 (62.5%) patients who belonged to rural areas. Phacoemulsification was the commonest type of surgery performed in 124 (91.2%) patients. There were 24 (17.6%) patients who reported dry eyes at 1-month follow up while at the end of 3-months period, 26 (19.1%) were having dry eye disease. No significant difference was noted in characteristics of patients with regards to presence of dry eye disease ( $P>0.05$ ).

**Conclusion:** Incidence of dry eye following cataract surgery was high. Characteristics of the patients or the types of cataract surgery did not seem to influence occurrence of dry eye. Further studies adopting prospective designs with long follow ups involving patients undergoing cataract surgery are needed to further enlighten us regarding different aspects of commonly occurring complications like dry eye.

**Key Words:** Cataract, dry eye, schirmer test, phacoemulsification, SICS (small incision cataract surgery).

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## INTRODUCTION

Cataract surgery generally results in good visual outcomes.<sup>1</sup> Some researchers have noted occurrence of dry eye among patients who underwent cataract surgery.<sup>2,3</sup> Dry eye is considered to be a multifactorial disorders related to tear-film and the ocular surface usually resulting as discomfort, visual disturbances and tear film instability, and might go on to harm ocular surface.<sup>4</sup>

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Possible reason for the occurrence of dry eye after cataract surgery could be because of alterations in the ocular surface due to surgical trauma and post-surgery inflammation. As we know, cataract surgery is quite common but not many studies exist evaluating occurrence of dry eye following cataract surgery in our part of the world. Let alone documentation of the incidence of dry eye following cataract surgery, most commonly occurring symptoms of dry eye are not usually recorded. Many cases following cataract surgery have complaints of foreign body sensations, irritation, redness and blurring of vision which are undesired effects of the cataract surgery.<sup>5</sup> These symptoms are more pronounced among elderly patients while some patients may have persistence of these symptoms which could go on to result in dry eye disorder which require treatment. Due to these reasons, even if a patient had very good cataract surgery with "Snellen's Visual Acuity", might remain unsatisfied.<sup>6</sup> Dry eye disorder after cataract surgery can hamper functional recovery so it is vital to find out the incidence of dry eye following cataract surgery along with possible factors responsible for dry eye in these

patients. Kasetsuwan N et al<sup>7</sup> found incidence of dry eye following cataract surgery to be 9.8% while Venugopal KC et al<sup>8</sup> noted that to be 66.2%. So huge variation exist regarding incidence of dry eye disease following cataract surgery. In Pakistan, no study has been done to find out existence of dry eye following cataract surgery so this study was aimed at providing us assistance estimating the incidence along with possible factors responsible for dry eye following cataract surgery. The objective of this study was to find out the incidence of dry eye among patients who underwent cataract surgery.

**MATERIALS AND METHODS**

This prospective study was done at Department of Ophthalmology, Bahawal Victoria Hospital, Bahawalpur from January 2020 to June 2020. Approval from institutional ethical board was sought and written consent was taken from all study participants.

A sample size of 136 patients was calculated through formula:  $n = z^2 * p * (1 - p) / e^2$ , where  $z = 1.96$  for a confidence level ( $\alpha$ ) of 95%,  $p = 9.8\%$  and  $e = 0.05$ . A total of 136 patients visiting outpatient department of Ophthalmology, Bahawal Victoria Hospital, Bahawalpur, having visually significant cataract and listed for cataract surgery, aged 40-80 years, were enrolled for this study. Patients having dry eyes characterized by Schirmer’s test value <10mm, Sjogren’s syndrome or presence of any ocular disorder like glaucoma, uveitis, lid disease and nasolacrimal pathway, ocular allergies, pterygium or history of ocular surgery were not enrolled. Patients losing follow up were also excluded. Ocular examination including “slit lamp examination” was done among all enrolled patients for ruling out any possible ocular surface disorders.

Dry eye was labeled when there was “Schirmer’s strip” wetting at the end of 5 minutes (basal and reflex). “Schirmer’s test” was conducted before surgery, 1-month and 3 months post-surgery in the operated eye. “Schirmer’s test” value < 10mm was termed as dry eye. Dry eye was further labeled as mild (Schirmer’s test value=7-9mm), moderate (Schirmer’s test value=5-7mm) or severe (Schirmer’s test value less than 5mm).<sup>9</sup> All study data was entered in a pre-designed proforma specifically designed for this study and analyzed using SPSS Version 26.0. Gender, age, pre-surgery and post-surgery vision and type of surgery was noted for all patients. All patients data was analyzed at 1-month and 3-months follow-up. Chi-square test was used to test statistical significance considering p value < 0.05 as statistically significant.

**RESULTS**

Out of a total of 136 patients, 74 (54.5%) were male. Majority of the patients, 118 (86.8%) aged above 50 years. There were 85 (62.5%) patients who belonged to

rural areas. Phacoemulsification was the commonest type of surgery performed in 124 (91.2%) patients. Table 1 is showing characteristics of the patients.

**Table No.1: Characteristics of the Patients (n=136)**

Characteristics		Number (%)
Gender	Male	74 (54.4%)
	Female	62 (45.6%)
Age	<50 Years	18 (13.2%)
	>50 Years	118 (86.8%)
Area of Residence	Urban	51 (37.5%)
	Rural	85 (62.5%)
Type of Surgery	Phacoemulsification	124 (91.2%)
	Small Incisional Cataract Surgery	8 (5.9%)
	Extracapsular Cataract Surgery	4 (2.9%)

Table 2 is showing incidence and types of severity among patients of dry eyes post cataract surgery at 1-month and 3-months period. There were 24 (17.6%) patients who reported dry eyes at 1-month follow up while at the end of 3-months period, 26 (19.1%) were having dry eye disease. At 1-month post-ataract surgery follow up, most of the patients with dry eyes were having mild dry eye disease (n=19/24, 79.2%) while at 3-months follow up, moderate dry eye disease was the commonest among patients having post-ataract surgery dry eye disease (n=18/26, 69.2%).

**Table No.2: Post Cataract Surgery Incidence and Severity of Dry Eyes**

Dry Eyes		At 1-Month (n=24)	At-3 Months (n=26)
Severity	Mild	19 (79.2%)	6 (23.1%)
	Moderate	2 (8.3%)	18 (69.2%)
	Severe	3 (12.5%)	2 (7.7%)

Table 3 is showing comparison of patients having dry eyes or no dry eyes. No significant difference was noted in characteristics of patients with regards to presence of dry eye disease (P>0.05).

**Table No.3: Distribution of Dry Eye with Regards to Characteristics of the Patients at 3-Months Follow up**

Characteristics		Dry Eye (n=26)	No Dry Eye (n=110)	P-Value
Gender	Male	15 (57.7%)	59 (53.6%)	0.708
	Female	11 (42.3%)	51 (46.4%)	
Age	<50 Years	2 (7.7%)	16 (14.5%)	0.353
	>50 Years	24 (92.3%)	94 (85.5%)	
Area of Residence	Urban	8(30.8%)	43(39.1%)	0.430
	Rural	18 (69.2%)	67 (60.9%)	
Type of Surgery	Phacoemulsification	23 (88.5%)	101 (91.8%)	0.863
	Small Incisional Cataract Surgery	2 (7.7%)	6 (5.5%)	
	Extracapsular Cataract Surgery	1 (3.8%)	3(2.7%)	

## DISCUSSION

Cataract surgery is considered to be one of the most commonly performed procedures. Like many other procedures, cataract surgery is not free from post-surgery complications like inflammatory reaction, rise in intraocular pressure, cystoid macular oedema and post-operative astigmatism.<sup>10</sup> Dry eye symptoms are also commonly observed among patients following cataract surgery but not documented generally.

In the present study, we found post-cataract surgery incidence of dry eye as 17.6% at 1-month follow up and 19.1% at 3-months follow up. Post-cataract surgery incidence of dry eye is found to have huge variation (9.8-96.6%).<sup>7,10,11</sup> This high variability could be attributed to factors like type of surgery (SICS or phacoemulsification), types of ophthalmic solutions utilized, intra-operative and post-operative drugs, coexistence of systemic diseases, operating microscope exposure duration, cumulative dissipated energy (CDE) during phacoemulsification the time following surgery. We found that characteristics of patients did not influence the existence of dry eye but some researchers have pointed out that type of cataract surgery seem to influence incidence of dry eye disease. In the present study, 91.2% patients underwent phacoemulsification. Kasetsuwan N et al<sup>7</sup> noted incidence of dry eye as 9.8% among patients undergoing phacoemulsification while Venugopal KC and colleagues<sup>8</sup> revealed the incidence of dry eye as 66.2% among patients undergoing manual small incision cataract surgery. Variation in the incidence of dry eye following cataract surgeries can also be attributed to variation in various criteria adopted aiming diagnosis of dry eyes. Khadke A et al<sup>9</sup> from India adopting Schirmer's test for the diagnosis of dry eyes found incidence of dry eyes as 14.87% at post-cataract surgery 3-months follow up period which is quite close to what was found in the present research. Dodia K et al<sup>12</sup> noted post phacoemulsification cataract surgery to be significantly linked with age (more than 65 years) but we did not find any significant association of age and post-cataract surgery dry eye in our set of patients. Significant association between age and post-cataract surgery dry eye, noted by some researchers, could be incidental as both cataract and dry eye disorders are age related.<sup>12</sup> Although, we did not note any significant association between dry eye disease and gender in the present study but some researchers have found significant linkage between female gender and presence of dry eye.<sup>13,14</sup> Association between dry eye disorder and post-menopausal women is well established in the past.<sup>15,16</sup>

The present study had some limitations as well. We were unable to correlate visual acuity with the presence of dry eyes. We did not record microscope exposure time and its association with the presence of dry eye.

Sample size of this study was comparatively short so our findings cannot be generalized.

## CONCLUSION

Incidence of dry eye following cataract surgery was high. Characteristics of the patients or the types of cataract surgery did not seem to influence occurrence of dry eye. Further studies adopting prospective designs with long follow ups involving patients undergoing cataract surgery are needed to further enlighten us regarding different aspects of commonly occurring complications like dry eye.

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

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# Clinical Outcome after Arthroscopic Anterior Cruciate Ligament Reconstruction in Knee Injuries

Arthroscopic  
Anterior  
Cruciate  
Ligament in  
Knee Injuries

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## ABSTRACT

**Objective:** To determine the clinical outcomes on basis of lyshlom knee score (LKS) system after arthroscopic anterior cruciate ligament (ACL) reconstruction.

**Study Design:** Prospective trial study.

**Place and Duration of Study:** This study was conducted at the Department of Orthopaedics, Ghurki Trust Teaching Hospital, Lahore, from January 2017 to December 2019.

**Materials and Methods:** In this prospective trial, patients undergoing arthroscopic ACL reconstruction at Department of Orthopaedics, Ghurki Trust Teaching Hospital, Lahore, were included. A total of 120 patients, undergoing arthroscopic ACL reconstruction were aged 18 to 45 years and had at least 1 year follow up. Gender, age, duration of follow up and LKS scores were noted in all enrolled patients.

**Results:** Out of a total of 110 patients, there were 110 (91.7%) male and 10 (8.3%) female. Mean age of the patients was noted to be 30.77 years with standard deviation of 4.6 years. Overall, mean duration of follow up was noted to be 21.18 months with standard deviation of 6.0 months. Overall, mean total LKS score was noted to be 90.95 with standard deviation of 12.93. We noted 65 (54.2%) cases to have excellent LKS scores whereas poor LKS scores were recorded among 5 (4.2%) cases.

**Conclusion:** Most of the patients undergoing arthroscopic ACL reconstruction were male. Clinical outcomes in terms of LKS scores in patients undergoing arthroscopic ACL reconstruction were good.

**Key Words:** Anterior cruciate ligament (ACL), arthroscopic technique, lyshlom knee score (LKS).

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## INTRODUCTION

The Anterior Cruciate Ligament (ACL) has a major role in normal working of knee.<sup>1</sup> Rupture of ACL is one of the most common diagnosis in young patients either due to road traffic accident (RTA) or sports trauma. Reconstruction of the ACL allows the patient to resume sporting activities and prevents damage in meniscus and articular cartilage in turn reducing chances of arthritis.<sup>2-4</sup>

Numerous studies support the efficacy of anatomic ACL reconstruction in restoring normal kinematics and postoperative function of the knee. The goal of anatomic reconstruction is to place the ACL graft at a more anatomic location on both, tibia and femur.<sup>3,4</sup>

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Usually, there are two techniques for reconstruction of ACL, open technique and arthroscopic assisted technique. Arthroscopic assisted technique has many advantages over open procedure but it needs more expertise and cost comparatively. Currently, ACL reconstruction is most often performed using an arthroscopic assisted technique.<sup>5</sup>

Literature is deficient of ACL reconstruction data in developing countries. In developing countries like Pakistan, cost is the major issue. Arthroscopic assisted ACL reconstruction is more expensive than open procedure. There is no large data available for such population showing the clinical outcome after arthroscopic ACL reconstruction. The objective of this study is to determine the clinical outcomes on basis of lyshlom knee score (LKS) system after arthroscopic anterior cruciate ligament (ACL) reconstruction.

## MATERIALS AND METHODS

In this prospective trial, a total of 120 patients undergoing arthroscopic ACL reconstruction from January 2017 to December 2019, at The Department of Orthopaedics, Ghurki Trust Teaching Hospital, Lahore, were included. All included patients were aged between 18 to 45 years and had at least 1 year follow up.

Lysholm scoring questionnaire shown in Figure-1<sup>6,7</sup> was adopted and enquired from all the patients. Face to

face interviews were done with all the study participants. If the patient stated that he/she did not understand the question properly, more explanation regarding that particular question was given until the patient understood what he/she was asked. All the study participants were invited to hospital. All those cases that had any new related injury after arthroscopic ACL reconstruction were also excluded from the study. Patients who had evidence of clinical and radiological degenerative change in the knee were also excluded. A standard script was followed for all the interviews to maintain a level of consistency. All the ethical standards written in "The Declaration of Helsinki 1964"<sup>8</sup> and its later amendments were fully followed in this study. Approval from institutional ethical committee was taken for this study. Written consent was also acquired from all patients.

Means along with standard deviation were calculated for the Lysholm scoring between patients undergoing arthroscopic ACL reconstruction. Data about gender, age, duration of follow up and LKS was noted.

## RESULTS

Out of a total of 120 patients, there were 110 (91.7%) male and 10 (8.3%) female. Mean age of the patients was noted to be 30.77 years with standard deviation of 4.6 years. Overall, mean duration of follow up was noted to be 21.18 months with standard deviation of 6.0 months. Table 1 shows the characteristics of patients.

**Table No.1: Characteristics of the Patients undergoing Arthroscopic ACL Repair (n=120)**

Characteristics		Number (%) or Mean±SD
Gender	Male	110 (91.7)
	Female	10 (8.3%)
Age (years)		30.77±4.6
Duration of Follow up (months)		21.18±6.0

Overall, mean total LKS score was noted to be 90.95 with standard deviation of 12.93. We noted 65 (54.2%) cases to have excellent LKS scores whereas poor LKS scores were recorded among 5 (4.2%) cases. Table 2 shows LKS Scores among study cases.

**Table No.2: Lysholm Knee Score in Patients Undergoing Arthroscopic ACL Repair (n=120)**

LKS Scoring	Number (%)
Excellent (95-100)	65 (54.2%)
Good (84-94)	38 (31.7%)
Fair (65-83)	12 (10.0%)
Poor (<65)	5 (4.2%)

## DISCUSSION

For ACL reconstruction, both open and arthroscopic reconstructions are frequently done whereas lots of literature is available about different approaches adopted for ACL reconstruction. The debate still goes on that which approach is the best regarding ACL reconstruction.<sup>9</sup> In this prospective cohort study, we

aimed to determine LKS scores following ACL reconstruction using arthroscopic reconstruction.

Overall, 91.7% of the study patients were male. It has been a well-established fact that male population is more exposed to road accidents and outdoor activities,<sup>10,11</sup> this could be the major reason why significantly more male are reported involving reconstruction procedures.

Quite a few systems have been developed in the recent years evaluating pre as well as post-operative condition of knee area. Different protocols are available but most are based on functional as well clinical evaluations. O'Donoghue is known to be the 1<sup>st</sup> to apply scale system aiming to evaluate post-operative results.<sup>12</sup> Our objective was to compare the post-operative outcome following arthroscopic ACL reconstruction in knee injuries based on follow up (at least 1 year). Various methods were considered aiming to evaluate knee region. We got attracted to LKS score which is based on the modified Lysholm protocol and has been used extensively all around the world. LKS has also been noted to have high reliability, validity as well as responsiveness all over the world.<sup>13-17</sup> This was the very reason that we adopted this scale and we are confident that translating results using such scale will further benefit larger proportions.

In the present study, overall mean LKS was noted to be 90.95 with standard deviation of 12.93. In a recent study conducted by de Villiers L<sup>18</sup> to find out the prevalence of osteoarthritis in the knee in the long term follow ups after ACL reconstruction, 43 patients were evaluated as per LKS. Mean LKS score was noted to be 84.35 in those patients. These results are very similar to our findings where we noted mean LKS score to be 82.78 in our patients. A study done by Kose O et al<sup>11</sup> noted the mean LKS score to be 93.56 which is close to what we found in the present study. Overall mean follow up in that study was recorded to be 33.4 months which is quite high in comparison to what we had in our findings. Kose O et al in another study from Turkey compared telephonic interview versus face to face completion of the LKS score in patients who had arthroscopic ACL reconstruction.<sup>19</sup> The researchers noted mean LKS to be 93.01±9.12 using telephonic interviews while face to face interviews has mean LKS score as 93.56±7.93. It was concluded that arthroscopic ACL reconstruction was noted to have acceptable LKS scores while both methods of scoring yielded nearly equivalent scores where the difference between 2 different ways of scoring was insignificant (p=0.130). Shah PD et al from India found arthroscopic ACL reconstruction in knee injuries to have good post-operative knee stability and satisfactory motion.<sup>20</sup> We noted 65 (54.2%) cases to have excellent LKS scores (95-100) whereas poor LKS scores (<65) were recorded among 5 (4.2%) cases. A study done by Halinen J et al from Finland found mean LKS scores to be 92±10.3



among patients undergoing ACL reconstruction while 65% of the patients had excellent LKS scores.<sup>22</sup> In terms of limitations of this study, we did not compare arthroscopic ACL technique with other techniques so were unable to compare and conclude about the best possible technique to be used in this study. We had mean duration of Follow up as 21.18±6.0 months while some researchers have used lot larger duration of follow ups in their studies.<sup>21</sup> Further studies involving large follow up data should be done to evaluate the long term functional outcomes of arthroscopic ACL reconstruction. Another limitation of this study was that we somewhat translated the LKS scoring questionnaire when interacting with the patients but that could have some on the spot difficulties and confusion. It is recommended that LKS should be translated into our local language (Urdu) so that a standard format and style could be used to analyze the exact scoring outcomes.

## CONCLUSION

Most of the patients undergoing arthroscopic ACL reconstruction were male. Clinical outcomes in terms of LKS scores in patients undergoing arthroscopic ACL reconstruction were good.

**Acknowledgement:** The authors are thankful to Muhammad Aamir (Research Consultant, Bahawalpur) for his volunteer assistance in statistical analysis of this research.

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# Improvement in Pain with Platelets Rich Plasma for Management of De Quervain's Tenosynovitis

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## ABSTRACT

**Objective:** To assess the percentage improvement in pain with platelets rich plasma (PRP) for management of de Quervain's tenosynovitis.

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

**Place and Duration of the Study:** This study was conducted at the Department of Orthopedics, Sughra Shafi Medical Complex, Narowal from March 2019 to September 2019.

**Material and Methods:** A total of 96 patients who fulfilled the selection criteria were included. Demographic profile was obtained. Then, patients were given Intra-lesional PRP injection. Patients were followed-up in OPD for 30 days. After 15 days of first injection, 2<sup>nd</sup> injection was given and patients further followed-up till 30 days from inclusion. After 30 days, patients were evaluated for decrease in pain and improvement. Percentage improvement was noted.

**Results:** The mean age was 48.62±10.86 years. There were 54 (56.25%) males while 42 (43.75%) females. Left side was involved in 57 (59.38%) patients while in 39 (40.63%) patients, right side was involved. The mean duration of De Quervain tenosynovitis was 3.51±1.75 months. At baseline, the mean pain score was 7.89±1.65. After treatment, the mean pain score was 3.77±2.09. There was significant decrease in pain score with PRP injections.

**Conclusion:** There is >50% decrease in pain with PRP injection in patients having moderate to severe pain of De Quervain tenosynovitis.

**Key Words:** De Quervain's tenosynovitis, platelets rich plasma, percentage improvement, pain score.

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## INTRODUCTION

De Quervain's tenosynovitis is known to be a disease which is related to tendons of the 1<sup>st</sup> dorsal compartment of the wrist and is known to cause pain and functioning disability that could be refractory to conservative treatment options.<sup>1</sup> De Quervain's tenosynovitis was named after Swiss physician "de Quervain" who 1<sup>st</sup> detailed case series of 5 patients in 1895. Prevalence of de Quervain's tenosynovitis is calculated to be around 0.5% in males and 1.3% in females.<sup>2</sup>

Clinicians are having an experience of above 100 years with this disorder whereas available treatment options are largely accepted without many disagreements. Not much difference in the diagnostic and treatment approaches are expected for this less prevalent but irritating disorder.<sup>3</sup>

Given the inherent nature of the tendon, new treatment like platelets rich plasma (PRP), autologous blood, and prolotherapy are thought to induce inflammation rather than suppressing it.<sup>4</sup> PRP treatment has been found to be effective for joint pain.<sup>5</sup> PRP injections are effective to treat chronic or acute joint pain. However, more trials are required to get confirmation of the evidence we have so far.<sup>6</sup> Another study reported that RP injection should be offered to all those with de Quervain's disease who failed with other conservative treatment options. Another study reported that in PRP-treated patients, an improvement of 55.1% was observed.<sup>8</sup>

It has been observed through literature that PRP injections are effective in reducing pain and thickening of tendons and avert the severity of disease.<sup>6-8</sup> But not much work has been done in this regard. Moreover, there is no local study found in literature in this regard. So to get the local evidence, we wanted to conduct this study to get authentic and reliable results so that we

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may be able to implement the more successful method for management of de Quervain's tenosynovitis. The aim of this study was to assess the percentage improvement in pain with platelets rich plasma for management of de Quervain's tenosynovitis.

## MATERIALS AND METHODS

This Descriptive Case series was conducted at The Department of Orthopedics, Sughra Shafi Medical Complex, Narowal, from March 2019 to September 2019. Sample size of 96 cases was calculated with 95% confidence level, 10% margin of error and taking expected percentage of percentage improvement i.e. 55.1%<sup>8</sup> with PRP for management of de Quervain's tenosynovitis.

A total of 96 patients of age 30-70 years of either gender presenting with de Quervain's tenosynovitis were included. Patients with trauma (on x-ray), hemodynamically unstable (PT>15sec, aPTT>20sec), anemic (Hb<10mg/dl) or patient with recurrent de Quervain's tenosynovitis of same joint (medical record) were excluded from this study.

De Quervain's tenosynovitis was defined as presence of pain>4 (on VAS) within the first dorsal compartment at the wrist it causes pain during thumb motion on clinical examination.

All patients in this study were enrolled from OPD of Department of Orthopedic Surgery, Services Hospital, Lahore. An informed consent was obtained. Approval from ethical review board of the institution was taken for this study. Demographic profile (name, age, gender, BMI and duration of symptoms) was obtained from all patients. Then, patients were given Intra-lesional PRP injection. After 15 days of first injection, 2<sup>nd</sup> injection was given and patients further followed-up till 30 days from inclusion. After 30 days, patients were evaluated for decrease in pain and improvement. Percentage improvement was noted. All the information was collected through a specially designed proforma. Percentage improvement was measured as after treatment pain (measured at 30 days after the first injections) subtracted from baseline pain. Then divide the outcome on baseline pains score and multiply by 100 as follows:

$$\frac{\text{Baseline pain} - \text{after treatment pain}}{\text{Baseline pain}} \times 100$$

All the data was entered and analyzed through SPSS version 26.0. The quantitative variables like age and pain (at baseline and final visit) were presented as mean & SD. The qualitative variable like gender was presented as frequency and percentage. Mean percentage improvement was calculated. Data was stratified for age, gender, duration of symptoms, anatomical side and BMI. Post-stratification chi-square was applied. P-value ≤0.05 will be taken as significant.

## RESULTS

In this study, we included 96 patients with the mean age of 48.62±10.86 years (ranging from 30 to 68 years). There were 53 (55.21%) patients of age 30-50years while 43 (44.79%) patients had age 51-70years. There were 54 (56.25%) males while 42 (43.75%) females (Table 1). The male-to-female ratio was 1.3:1. The mean height of patients was 1.67±0.12m (ranging from 1.46 to 1.90 m), mean weight was 69.71±6.87kg (ranging from 55 to 80 kg) and mean BMI was 24.60±3.30kg/m<sup>2</sup> (ranging from 20.05 to 32.70 kg/m<sup>2</sup>). Left side was involved in 57 (59.38%) patients while in 39 (40.63%) patients, right side was involved (Table 1).

**Table No.1: Characteristics of the Study Participants (n=96)**

Characteristics	No (%)	
Gender	Male	54 (56.2%)
	Female	42 (43.8%)
Age Groups (Years)	30-50	53 (55.2%)
	51-70	43 (44.8%)
Anatomical Side Involved	Left	57 (59.4%)
	Right	39 (40.6%)
BMI	Normal	56 (58.3%)
	Overweight or Obese	40 (41.7%)
Duration of Pain (months)	≤3	47 (49.0%)
	>3	49 (51.0%)
Baseline Pain Score (VAS)	5-7	34 (35.4%)
	8-10	62 (64.6%)

The mean duration of De Quervain tenosynovitis was 3.51±1.75 months (ranging from 1 to 6 months). At baseline, the mean pain score was 7.89±1.65 (ranging from 5 to 10). After treatment, the mean pain score was 3.77±2.09 (ranging from 0 to 8). There was significant decrease in pain score with PRP injections (p<0.05). The mean decrease in pain score was 0.55±0.22. There was 54.62±21.80% improvement in condition of patient (percentage decrease in pain score) after treatment with PRP injection (Table 2).

**Table No.2: Comparison of Baseline and After Treatment Pain Scores (VAS)**

	Baseline	After treatment	P-Value
Pain	n	96	<0.001
	Mean	7.89	
	SD	1.65	
	Minimum	5	
	Maximum	10	

Data was stratified for age of patients. In patients of age 30-50years, the mean percentage improvement was observed as 54.84±22.88% while in patients of age 51-70 years, the mean percentage improvement was observed as 54.34±20.65%. The difference was insignificant between both age strata (p>0.05), showing equal efficacy of PRP injection in all age groups.

Data was stratified for gender of patients. In male patients, the mean percentage improvement was observed as 60.96±23.84% while in female patients, the mean percentage improvement was observed as 46.46±15.66%. The difference was significant between both genders ( $p<0.05$ ), showing more efficacy of PRP injection in male patients as compared to females.

There were 56 (58.33%) patients had normal BMI while 40 (41.67%) patient were overweight and obese. Data was stratified for BMI of patients. In patients with normal BMI, the mean percentage improvement was observed as 56.33±22.85% while in patients with overweight and obese, the mean percentage improvement was observed as 52.21±20.28%. The difference was insignificant between both side ( $p>0.05$ ), showing no difference in PRP injection efficacy.

Data was stratified for anatomical side involved. In patients with left side involvement, the mean percentage improvement was observed as 49.35±19.49% while in patients with right side involvement, the mean percentage improvement was observed as 62.31±22.94%. The difference was significant between both side ( $p<0.05$ ), showing more efficacy of PRP injection in right side as compared to left side.

**Table No.3: Comparison of percentage improvement after treatment with respect to study variables**

Percentage Improvement	Age (years)		P-Value
	30-50 (n=53)	51-70 (n=43)	
Mean±SD	54.84±22.88	54.34±20.65	0.912
Percentage Improvement	Gender		P-Value
	Male (n=54)	Female (n=42)	
Mean±SD	60.96±23.84	46.46±15.66	0.001
Percentage Improvement	BMI		P-Value
	Normal (n=56)	Overweight or Obese (n=40)	
Mean±SD	56.33±22.85	52.21±20.28	0.346
Percentage Improvement	Anatomical Side Involved		P-Value
	Left (n=57)	Right (n=39)	
Mean±SD	49.35±19.49	62.31±22.94	0.004
Percentage Improvement	Duration of Pain (months)		P-Value
	≤3 (n=47)	>3 (n=49)	
Mean±SD	51.51±19.26	57.59±23.80	0.1730
Percentage Improvement	Baseline Pain Score (VAS)		P-Value
	5-7 (n=34)	8-10 (n=62)	
Mean±SD	68.11±23.27	47.22±17.03	<0.001

There were 47 (48.96%) patients who had duration of pain ≤3months while 49 (51.04%) patients had duration of pain >3months. Data was stratified for duration of pain. In patients who had duration of pain ≤3months, the mean percentage improvement was observed as 51.51±19.26% while in patients who had duration of pain >3months, the mean percentage improvement was

observed as 57.59±23.80%. The insignificant difference was observed ( $p>0.05$ ), showing no difference whether pain is chronic or acute.

At baseline, 34 (35.42%) patients had moderate pain score (5-7) while 62 (64.58%) patients had severe pain score (8-10). Data was stratified for baseline pain score. In patients with moderate pain score, the mean percentage improvement was observed as 68.11±23.27% while in patients with severe pain score, the mean percentage improvement was observed as 47.22±17.03%. The significant difference was observed ( $p<0.05$ ), showing more efficacy of PRP in patients with moderate pain score (Table 3).

## DISCUSSION

We noted male to female ratio to be 1.3:1. However, literature states that prevalence of de Quervain's tenosynovitis is calculated to be around 0.5% in males and 1.3% in females.<sup>2,9</sup> In our study, the mean pain score was 7.89±1.65, which was reduced to 3.77±2.09 after one month of treatment. Significant decline in pain score was noted after treatment with PRP injections. The mean decrease in pain score was 0.55±0.22. There was 54.62±21.80% improvement in condition of patient (percentage decrease in pain score) after treatment with PRP injection. Mishra et al noted PRP-treatment to result in an improvement of 55.1%.<sup>8</sup> The fact remains that very few trials having randomized protocols exist regarding effectiveness of PRP treatment and still there is no consensus.<sup>10,11</sup> One case presentation was published by Evan Peck where they adopted "ultrasound guided percutaneous needle tenotomy" and PRP injection for the treatment of de Quervain's Tenosynovitis.<sup>3</sup> In another study, the effectiveness of autologous whole blood injection for pain relief in lateral epicondylitis was evaluated subjectively via Nirschl and VAS scale. It was revealed that pain scores were reduced but there were no controls in that study to compare the outcome.<sup>12,13</sup>

Mirsha et al analyzed role of PRP in patients having chronic severe elbow tendinosis. Following 8 weeks of treatment, cases showed 60% improvement on VAS regarding pain in comparison to 16% among controls.<sup>14</sup> Regarding pain reduction, PRP treatment has been observed to be more effective and superior to autologous blood in the short term at 6 weeks.<sup>15</sup> Some researcher have also found more patients converting to surgery (20%) in autologous blood group in comparison to PRP group (10%) due to pain and disability issues.<sup>16</sup> The effectiveness of PRP compared with corticosteroid injections in patients with chronic lateral epicondylitis was determined in a study by Peerbooms et al. They found that regarding pain reduction and functional improvement, corticosteroids were better initially and then declined, whereas the PRP group progressively improved; however, this study also lacked a control group.<sup>17</sup> In a systematic review published in 2008,

Rabago et al, evaluated the results of five prospective case series and four controlled trials (three prolotherapy, two polidocanol, three autologous whole blood, and one PRP) for the treatment of refractory tennis elbow. The researchers compared a single treatment session of PRP with control injections, PRP subjects improved by a mean of 81% by 27 weeks. At 25.6 months, PRP patients further improved to 93% pain reduction compared with baseline.<sup>18</sup>

Based on the reported success of PRP injections for the treatment of certain tendinopathies, it may potentially be successful for the treatment of other tendinopathies, including de Quervain's tenosynovitis. For patients with de Quervain's tenosynovitis to conservative care, results of this study advocate that Intralesional injection of PRP may be a reasonable option to consider before surgery.

## CONCLUSION

It was observed that PRP injections were effective in reducing pain and thickening of tendons and avert the severity of disease. The >50% pain was decreased with PRP injection in patients having moderate to severe pain of De Quervain tenosynovitis.

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# Periodontal Disease Risk Assessment in Relation to Frequency of Tooth Brushing

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Fizza Sahar Anwar<sup>4</sup>

## ABSTRACT

**Objective:** This study aims to analyze the co-relation between frequencies of tooth brushing as a periodontal risk assessment tool in a population.

**Study Design:** Randomized controlled trial (RCT)

**Place and Duration of Study:** This study was conducted at the Fauji foundation hospital among dental students and patients from February to September 2019.

**Materials and Methods:** This study involves 310 participants over a span of three months duration. Data was collected by administering the study questionnaire including 14 items assessing risk factors for periodontal disease as well as their oral hygiene habits. Descriptive statistics were used for data summarization and presentation.

**Results:** Results showed that approximately 42.3% of study participants claimed to brush twice daily and 52.6% once daily. Mean age of the participants was 22.1 years with majority of them females constituting 77.7%. Of the 310 subjects, 48.23% had a history of bleeding gums while 18.1% had swollen gums. Furthermore, 61% of the subjects reported brushing for less than 2 minutes duration. 77% participants of population were of upper middle socioeconomic status.

**Conclusion:** This study indicated a clear correlation found between risk of developing periodontal disease and frequency of tooth brushing. It is suggested that some form of preventive oral hygiene programs be embarked on where emphasis is placed on regular and higher frequency of tooth brushing.

**Key Words:** Periodontal disease, Oral hygiene, Risk factors, Tooth brushing.

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## INTRODUCTION

Periodontal disease is a chronic inflammatory disease of periodontium associated with the loss of tooth supporting structures. Besides certain known risk factors involved, oral hygiene practices particularly tooth brushing has shown to be the most neglected risk factor in the severity and progression of this disease.

Prevalence of the periodontal disease varies differently in different regions of the world<sup>1,2</sup>. There have been few researches for assessing prevalence of periodontal diseases in Pakistan<sup>3,4</sup>.

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This study was planned to assess the prevalence of disease in a small population of Twin cities of Pakistan. Poor oral hygiene habits have a relationship with the prevalence of inflammatory periodontal diseases. Prevention of the development and progression of periodontal disease is greatly related to the maintenance of healthy gingiva, through proper oral hygiene habits and regular professional dental care. Therefore, irregular or inadequate tooth brushing program, results in plaque accumulation, which have been associated with gingival inflammation that may progress to periodontitis which is one of the major sources of tooth loss.

Periodontitis is the commonest of oral disease, showing global prevalence of 11.2%<sup>5</sup>. Being a multifactorial disease, it has numerous risk factors including Diabetes Mellitus, Stress, Smoking, Genetics and most significantly poor oral hygiene<sup>6,7</sup>. Maintaining proper oral hygiene is of prime importance in prevention of periodontal diseases. Various studies have been conducted to establish a relationship between frequency of tooth brushing and the prevalence of inflammatory periodontal disease<sup>8-11</sup>. However, no worldwide consensus has yet been established. Therefore, this study aims to determine if the frequency of tooth brushing, at a rate of once, twice or thrice daily, shows

any relationship with the prevalence of periodontal disease, by conducting a cross-sectional survey. The knowledge of oral hygiene is considered essential for wellness-related behavior. The oral health is now recognized as equally important in association to general health. Maintaining proper oral hygiene is of primary importance in the prevention of dental caries and periodontal diseases. Toothbrushes and toothpastes are the most widely used oral hygiene aids. Although using a tooth brush significantly improves the level of oral hygiene, there are many other contributing factors such as dental flossing and mouth rinsing.

**MATERIALS AND METHODS**

A descriptive cross-sectional questionnaire survey was done among the patients visiting dental department of Foundation University Medical College Islamabad. A sample size of 310 individuals having the background knowledge of periodontal diseases was selected. Data collection was done with the help of Questionnaire with 14 questions. The first part of the questionnaire was about demographic data of the participants including name, age, gender, education and socio economic status. The second part was about oral hygiene measures like frequency of brushing, duration of brushing, any other oral hygiene measures and presence of any oral pathology. The third part was based on the questions specifically related to the periodontal risk assessment. After approval from the “Ethical review committee, Foundation University Medical College Islamabad”, informed verbal consent was obtained from the participants who wished to participate in the study voluntarily and those who did not want to participate were excluded from the study. Selection of sample size was done with purposive sampling. Data was firstly entered into MS Excel and statistically analyzed by using SPSS (21.0).

**RESULTS**

Results showed that approximately 42.3% of study participants claimed to brush twice daily and 52.6% once daily. Mean age of the participants was 22.1 years with majority of them females constituting 77.7%.

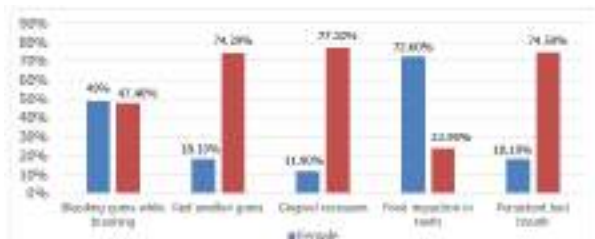


Figure No.1: Signs of gingival diseases noticed among participants

Of the 310 subjects, 48.23% had a history of bleeding gums while 18.1% had swollen gums. Furthermore, 61% of the subjects reported brushing for less than 2 minutes duration. 77% participants of population were of upper middle socioeconomic status.

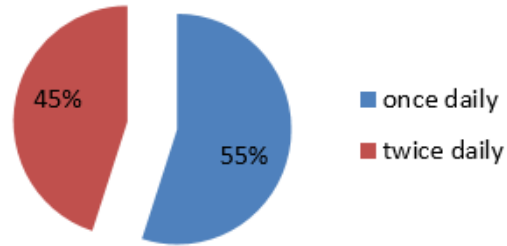


Figure No.2: Frequency of tooth brushing per day

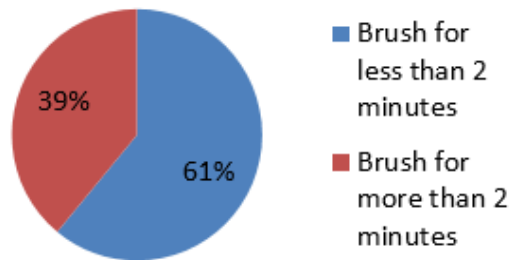


Figure No.3: Duration of brushing

**DISCUSSION**

The current study was conducted in order to assess the risk of periodontal diseases in relation to frequency of brushing among some population of twin cities of Pakistan. The study clearly indicated that poor oral hygiene results in increased risk of development and progression of periodontal diseases when compared to other studies<sup>6,7,12</sup>. The collected data would help in assessing the concern of general public towards oral hygiene maintenance and periodontal diseases. Mechanical plaque removal with a manual tooth brush is the primary method for oral hygiene maintenance<sup>13</sup>. In our study the estimated percentage of brushing frequency was 4 times more in females than males and was in accordance with a study carried out by Farsi et al<sup>14</sup>. The percentage of patients with bleeding gums was almost equal in both the genders with a mere difference of 0.2% in contrast to a study carried out among undergraduate students from King Saud University, College of Dentistry where gingival bleeding was more in females as compared to the males<sup>15</sup> [Fig.1]. Bad breath is a common feature of poor oral hygiene<sup>16</sup> and that was clearly evident in this study with a higher ration in male than female as reported in another study<sup>17</sup>. According to the results of our study gingival recession was encountered in 77% male and 12 % female, a higher number of males might be accredited to poor oral Hygiene maintenance and incorporating the habit of smoking as there is a positive relationship between gingival recession and smoking<sup>18</sup>. The

significant relationship between gingival recession and smoking in our study is in consistent with study done by Muller et al<sup>19</sup>

This study has indicated that the frequency of tooth brushing in a day has a relationship with the prevalence of inflammatory periodontal diseases. The group of subjects (45%) that brushes twice daily had a higher proportion of prevention of periodontal diseases than the group (55%) that brushes once daily [Fig.2] and is in accordance with the study carried out by Akhionbare et al<sup>9</sup>. Daily tooth brushing is the primary way for individuals to remove plaque and control plaque-related diseases such as gingivitis and cavities. In our study 61% of the participants reported that they spend less than 2 minutes on brushing whereas 31 % of the participants spent more than 2 minutes [Fig.3]. Oral health experts generally recommend at least two minutes of brushing with the right technique, but the average brushing time in the general population is close to 45 seconds<sup>20</sup>.

In view of the results of our study, it is suggested that some form of preventive oral hygiene programs be embarked on, where emphasis is placed on regular and higher frequency of tooth brushing specially in population with low socioeconomic status and low education levels, to decrease the prevalence of periodontal diseases in our population. This will greatly increase general population oral health status.

The study being a cross sectional study, has its limitations because it gathers information about exposure and outcome at a specific period of time. Therefore there is a difficulty in establishing a temporal relation between them. Further studies should be conducted for understanding certain other risk factors associated with periodontal diseases. Foreseeing the bad effects of periodontal diseases on oral and general health, the prevention of diseases should be included in National health Programs.

## CONCLUSION

Poor oral hygiene increase the risk of development and progression of periodontal diseases. Decreased frequency of brushing leads to increase risk of development of periodontal diseases.

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# Exploring the Perception of Undergraduate Medical Students about Utilization of Time in Self-Study Hours in Islamic International Medical College (IIMC)

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## ABSTRACT

**Objective:** To explore the perception of students about utilization of self-study time. To explore the factors influencing the student's attitude towards utilization of self-study hours.

**Study Design:** An observational / descriptive / cross-sectional study

**Place and Duration of Study:** This study was conducted at the Islamic International Medical College (IIMC) from June 2019 to December 2019.

**Materials and Methods:** 20 statement Structured questionnaire containing 12 questions related to perception of students about utilization self-study and 4 questions on factors like self-study resources, time and place given to it. Data was analyzed by SPSS 21 version.

**Results:** Two hundred and seventy students participated in the survey (Response Rate = 76%). Mean value for perception of students about utilization of self-study hour was 3.10 (SD=1.32) and the mean of factors affecting this perception was 2.66 (SD=1.30). 58% of students said that self-study enhanced their learning abilities and it should be placed before small group discussions (72%). Factors affecting the utilization of self-study hours are resources, venues, placement of self-study hours in time table, total time given per module and guidance are the important factors.

**Conclusion:** Students perceive self-study as useful component for learning but most of them are not utilizing it in study purposes due to lack of resources. Analysis of results find that the effect of self-study on academic success depends on providing calm and resourceful venues with better distribution of hours in schedule with some motivation and supervision.

**Key Words:** Self-study, utilization, undergraduate medical students

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## INTRODUCTION

Technology and globalization are rapidly expanding the economic field of play. It is transforming the way we live and the way we work. Students must know how to learn on daily basis, to adapt to a rapidly shifting era, and to take independent initiative when opportunities are no longer there<sup>1</sup>.

Proper utilization of self-study time prepares students for this new world in which the active learner survives best<sup>2</sup>.

Medical students need to improve their competencies and stay updated with developments in their field. The pedagogic shift from the traditional teacher centred approach to a student centred approach emphasizes on student's independency in their learning<sup>3</sup>. Medical colleges are making conscious efforts to produce learner centered educational activities in the undergraduate medical curriculum, aimed at improving knowledge and various dimensions of life-long learning<sup>4</sup>. Long term learning is possible when students can manage their learning by actively taking control of learning activities especially in self-study time<sup>5</sup>. So the learners are able to actively take initiative and responsible for their learning by understanding their needs, formulating goals, determining appropriate resources, strategies of learning, and evaluate learning outcome.<sup>6</sup> Self-study is to plan and organize learning activities, set goals, monitor their progress, reflect

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upon, and then evaluate learning process<sup>6</sup>. It shows high level of efforts, to reach the goals that has been set<sup>7</sup>. Self-study is a useful tool to enhance the learning experience. It leads to opportunities required to innovate learning experience both academically and professionally<sup>8</sup>. Students take an active role in setting goals, deciding how to achieve them and planning self-study<sup>9</sup>. Both self-study and the traditional classroom learning methodology complement each other and help students to learn and retain the information better. Students who are wisely using self-study hours are active learners and have strong capacity to engage in independent learning<sup>10,11</sup>.

The institution of the present study has adopted integrated curriculum with 20% time allotted to self-study in time table. Problem based learning, lectures, small group discussions, case based learning and clinical skill labs are teaching methodologies used for undergraduate medical students. The objective of the present study was to explore opinions of medical students about the utilization of these self-study hours and factors that affect its usefulness.

## MATERIALS AND METHODS

Descriptive cross-sectional study design was used to know the opinion of pre-clinical and clinical undergraduate medical students. Study was conducted at Islamic International Medical College (IIMC) which applied the integrated system-based curriculum seven years ago and self-study was included in each module that is 20% of total hours. Convenient sampling technique was used with a sample size of 270 students from first year to final year MBBS. Data was collected from August to October 2018.

Self-structured Questionnaire was used to collect the data after reviewing the literature of self-directed learning. The participants reflected their opinions of 20 questionnaire items, on a 5-point Likert scale (where 5 strongly agree, 4 agree, 3 uncertain, 2 disagree, and 1 strongly disagree). The questionnaire consisted of three parts (1) Information on students' gender, age, class, and academic achievement (GPA) (2) questions on utilization of self-study including three negative and rest positive (3) open ended questions about the commonest activity students do during self-study hours, factors stopping them from self-study and their opinion for improvement of self-study utilization.

Ethical approval for this study was received from the ethical committee of Riphah International University. Students were informed about the study and had the choice to participate following the rules of informed consent.

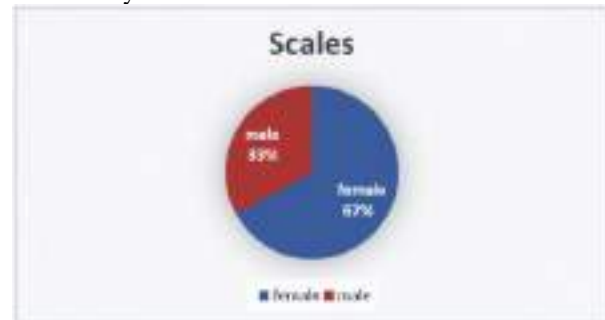
The pilot study of the questionnaire was applied to 20 medical students and favorable results were obtained and the reliability coefficient was calculated (Cronbach alpha: 0.8). The questionnaire was distributed from first to final year students and collected 15 minutes later.

The purpose of the study was briefly explained to the students and written informed consents were obtained. Ethical approval of the study was obtained from the Ethical review committee of Riphah International University.

SPSS 21.0 for Windows was used to analyze the collected data. Frequency analysis of the responses was performed, and agreement to each item was done by adding the frequencies of strongly agree and agree responses. Disagreement to each item was calculated by adding the frequencies of strongly disagree and disagree responses.

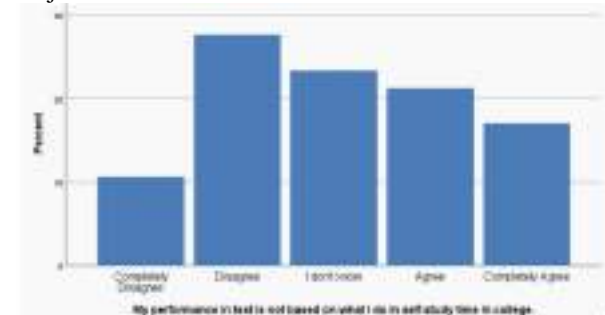
## RESULTS

Total number of students participated in survey was 270 giving the response rate of 76%. Majority of the respondents were between 20-24 years of age with 21.4% from first and second year each, 23.2% from third year, 16% from fourth year and 17% from final year. Cronbach's alpha coefficient of opinion of students was above 0.7 indicating good internal consistency.



**Figure No.1: Gender distribution of respondents**

Mean value about utilization of self-study hours is 3.10 (SD=1.32). 63% of the students agreed that self-study is useful tool to enhance learning with 23% saying that there is no need of it during college time because of non-availability of proper place and resources. 63% students spend this time in relaxing and 25% are actually utilizing this time in studies of their relevant subjects.



**Figure No.2: Students response**

Regarding the influence of subject in first- and second-year students 44% need more self-study hours for anatomy and 37% for pharmacology, third year need more hours for orthopedics (37%), forensic medicine

(15%) and pathology (25%) while 70% of fourth and final year students need self-study for medicine.

**Table No.1: Factors affecting the utilization of self-study**

Factors	Mean and standard deviation
Resources for self-study like computer, Wi-Fi. Books, past papers, scientific articles etc. are easily available in my college.	2.51±1.43
One hour for self-study is enough during college hours	2.70±1.36
Slot of self-study should be placed thoughtfully in time table.	3.75±1.26
We have enough venues for self-study in college	1.69±1.16
Total	2.66±1.30

## DISCUSSION

The purpose of this study was to explore the opinion of undergraduate medical students on utilization of self-study hours. Comparing with other studies our findings are similar with few differences. Self-study hours were found beneficial for some students but not for all. Literature on this area of utilization of reserved slots for self-study during college time are not available; may be the reason for this could be that it is considered to be used in a different way at ones' own timing<sup>10</sup>. Reserving the specific slots in timetable was a strategy by the college. Specifically, we wanted to know that how our undergraduate students are using this time. Both male and female students agreed the time allocated for self-study is sufficient. Students spend this time in non-academic activities due to lack of proper resources. This raised the concern for administration and department of medical education to look into this matter.

Factors affecting the utilization of self-study hours are identified by the students. Resources, venues, placement of self-study hours in time table, total time given per module and guidance are the important ones. Literature identified that effectiveness can be accomplished if the students are encouraged and motivated<sup>12</sup>. The identified factors must be considered and students are to be guided in such a way that they are always ready to explore their resources and utilize this time to learn. Setting a learning goal for specific slot would make it easier for students and the faculties identify the learning need<sup>6</sup>.

Self-study can be a good method to make students learn but it needs to be opted in time table in such a way that it gives time to students before small group discussion. This will help the students to study about the upcoming topics. Student's performance in the test is also influenced by the self-study slot in time table. Most of

the students preferred to relax during the allotted time of self-study. But there are those who utilize this time in studying the topic of upcoming class. Study environments that nurture and develop cognitive skills are important in the developm<sup>13</sup>. Teachers should make sure that students are aware of skills required to utilize this time<sup>14</sup>.

Our study identified from the student's opinion that subject selection for self-study hours is related to the difficulty level of subject. They need more time for subjects in accordance with the year of study. First- and second-year students need more self-study hours for anatomy and for pharmacology, third year need more hours for orthopedics (37%), forensic medicine (15%) and pathology (25%) while 70% of fourth and final year students need self-study for medicine. There self-study slots should be altered in such a way that they can accomplish their goals in respective subjects. The undergraduate medical students should be oriented on the relevance of active learning strategies in their future studies<sup>12</sup>.

The present study is not without limitations. Follow up studies in similar setting from other colleges will add up to clear this picture. A qualitative study should be conducted to find the opinion of faculty about the inappropriate use of time allocated to self-study during college hours.

## CONCLUSION

Students perceive self-study hours are useful for learning but most of them are not utilizing it in study purposes due to lack of resources. Self-study hours help students to learn if resources are provided. Analysis of results find that the effect of self-study on academic success depends on providing calm and resourceful venues with better distribution of hours in schedule with some motivation and supervision.

**Recommendations:** It was observed that student accepted the importance of self-study in their medical studies. But not properly avail the time due to lack of motivation and proper guidance. Which is overcome by:

- to give complete orientation in the beginning of first year that is foundation module
- to give layout of self-study total time period and its distribution in the start of every module
- to provide proper setting place and other Wi-Fi devices
- to place the self-study before SGD and FORMATIVE assessment

### Author's Contribution:

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

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# Prevalence of Hepatic Dysfunction and its Clinical and Biochemical Spectrum in Children Presenting with Dengue Fever

Hepatic Dysfunction in Children with Dengue Fever

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## ABSTRACT

**Objective:** To determine the prevalence of hepatic dysfunction and its clinical and biochemical spectrum in children presenting with dengue fever.

**Study Design:** A prospective cross-sectional study

**Place and Duration of Study:** This study was conducted at the Khairpur, Medical College and Teaching Hospital, from June 2017 to June 2020.

**Materials and Methods:** Liver function of the patients was assessed clinically as well as biochemically.

**Results:** Hepatic dysfunction was observed 27.5% of patients. 58% were males and 42% were females. 69.5%, 25.2% and 07% had DF (Dengue fever), DHF (Dengue hemorrhagic fever) and DSS (Dengue shock syndrome) with increasing severity of hepatic involvement.

**Conclusion:** Dengue fever can manifest with hepatic involvement. Children presenting with jaundice, hepatomegaly and elevated transaminases should raise the possibility of dengue infection and its severity.

**Key Words:** Hepatic dysfunction, Dengue fever, dengue hemorrhagic fever and dengue shock syndrome

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## INTRODUCTION

Dengue is a mosquito-borne acute febrile disease (*Aedes aegypti*) with an expanded geographic distribution occurring predominantly in tropical and subtropical areas of the world.<sup>1-2</sup> It has four serotypes called DEN-1, DEN-2, DEN-3 and DEN-4 and belongs to RNA Flavi virus family.<sup>3</sup> It has increased epidemic activity in our country with myriad of clinical and severity presentations.<sup>4</sup>

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The incubation period after the person has been bitten by the mosquito ranges from 3 to 14 days, after which the patient exhibits febrile phase in which dengue viruses may circulate in the peripheral blood.<sup>5</sup> It is followed by a short afebrile and finally a long convalescence phase.<sup>6</sup>

The febrile stage is characterized by constitutional symptoms like fever, malaise, retro-orbital headache, nausea, vomiting, body pains and macular or maculopapular rash.<sup>7-8</sup> Later, the patient may develop bleeding, thrombocytopenia, ascites, pleural effusion, hematocrit which signify progression to more severe life-threatening dengue haemorrhagic fever (DHF), and dengue shock syndrome (DSS).<sup>9-10</sup> Timely identification of classic dengue fever symptoms and severity is of paramount importance to prevent morbidity and mortality.<sup>11-12</sup>

Dengue fever may present with rare signs and symptoms affecting liver and CNS which indicates bad outcome.<sup>13</sup> The intensity of liver nonfunctioning fluctuates from slight to severe damage. Hepatotoxicity appears to be the result from virus itself, host immune response, metabolic acidosis and/or hypoxia.<sup>14</sup> They may present with mild elevation of transaminases or clinically with jaundice and hepatic failure.<sup>15</sup> The outcome worsens with severity of dengue infection. Recent literature has shown prevalence of hepatic dysfunction to be 14.3%.<sup>16</sup> The study aims to determine the prevalence of hepatic dysfunction in our population as there is paucity of local data. Moreover, data from our study would improve knowledge base of the

clinicians. Therefore, timely diagnosis and quick beginning of suitable sympathetic management would help in preventing adverse outcomes.

## MATERIALS AND METHODS

Permission from the ethical review committee of the institute was taken prior to initiation of the study. Informed consent was taken from the parents of each participant of the study in local language for assigning them to sample and using their data in research. Brief history about demographic information was taken.

This was a prospective study which was carried out in the Pediatric Department, Khairpur Medical College and Teaching Hospital. The study duration was between June 2017 and June 2020. A total of 131 reported patients admitted between 2 years and 15 years old were tested in compliance with WHO recommendations and only dengue IgM catch ELISA was serologically confirmed and included in the study. The dengue fever (DF), DHF and DSS were categorized according to the 1997 WHO Classification. Hepatic disorder was labelled as more than 200 U/L patients with Serum Alanin Transaminase (ALT) or Aspartate Transaminase (AST) levels.

Patients having malaria, enteric fever, hepatitis B/C, HIV and malnutrition were excluded by history, examination and investigations. Statistical analysis was done with the help of SPSS version 22. The numerical data was presented as mean and standard deviation and frequency and percentages were calculated for qualitative. The chi-square test was applied to compare the proportions among the groups. P-value  $\leq 0.05$  was considered as significant level.

## RESULTS

During the study period, 131 patients were found to have positive serology to dengue virus by ELISA. Among these 76 (58%) were males while the rest were females 55 (42%). Their ages ranged from 2 years to 12 years with a mean age of  $6.66 \pm 2.01$  years. The age distribution showed that the majority of the children were over 6 years of age (55.7%) with 44.3% under 6 years of age.

In our results, DF (Denge Fiever), DHF (Denge hemorrhagic Fiver) and DSS (Dengue Shock syndrome) were observed at 69.5%, 25.2% and 07%. There was 27.5% frequency of hepatic dysfunction (Table 1). All cases presented with fever (100%) and a majority also had an accompanying viral syndrome with body aches and vomiting in patients with dengue fever, dengue hemorrhagic fever and dengue shock syndrome. Hepatomegaly was observed in 63.6% and 100% of children with DHF and DSS compared to 46.1% in DF. Majority of the children with DSS were icteric. Table 2 shows clinical profile liver function test and ultrasound graphic results in different dengue infection groups.

**Table No.1: Hepatic Dysfunction with respect to General Characteristics of the Patients (n=234)**

Variables	Total n (%)	Hepatic Dysfunction		P-Value
		Yes N=36 N (%)	No N=95 N (%)	
Age (Years)	6.66 $\pm$ 2.01	6.25 $\pm$ 0.79	6.12 $\pm$ 1.14	
$\leq 6$	58 (44.3)	15 (25.9)	43 (74.1)	0.43
$>6$	73 (55.7)	21 (28.8)	52 (71.2)	
Gender				
Male	76 (58)	21 (27.6)	55 (72.4)	0.56
Female	55 (42)	15 (27.3)	40 (72.7)	

Chi-Square Test Applied, P-Value  $<0.05$  Taken As Significant

**Table No.2: Clinical and Biochemical Parameters of Dengue Fever (n=234)**

Clinical And Biochemical Parameters	Dengue Fever (n=91)	Dengue Hemorrhagic Fever (n=33)	Dengue Shock Syndrome (n=07)
Symptoms			
Fever	91(100%)	33 (100%)	07 (100%)
Body Aches	91(100%)	33 (100%)	07 (100%)
Vomiting	91(100%)	33 (100%)	07 (100%)
Facial Puffiness	33(36.2%)	16 (48.4%)	04 (57.1%)
Maculopapular Rash	51 (56%)	18 (54.5%)	05 (71.4%)
Petechial Spots	49(53.8%)	17 (51.5%)	07 (100%)
Signs			
Jaundice	51 (56%)	19 (57.5%)	06 (85.7%)
Hepatomegaly	42(46.1%)	21 (63.6%)	07 (100%)
Hepatic Tenderness	33(36.2%)	24 (72.7%)	07 (100%)
Hepatic Dysfunction			
Elevated Alt	48(52.7%)	24 (72.7%)	06 (85.7%)
Elevated Ast	39(42.8%)	21 (63.6%)	05 (71.4%)
Elevated Bilirubin	42(46.1%)	19 (57.5%)	05 (71.4%)
Ascites	02(2.19%)	08 (24.2%)	03 (42.8%)
Gall Bladder Wall Thickening $>5$ mm	03(3.29%)	04 (12.1%)	05 (71.4%)

## DISCUSSION

Dengue is an important arboviral disease with higher viral load resulting in multiple organ system involvement.<sup>16</sup> It can be attributed to direct viral toxicity or immunogenic response towards the virus.<sup>17</sup> Both hepatocytes and Kupffer cells appear to the prime target of DENV infection manifesting with elevation of liver enzymes and ALF.<sup>18</sup> Hepatic dysfunction in our study was found to be 27.5%. Findings of this study are comparable with other International and local study. It ranges from 36.4-96%.<sup>19-20</sup> In one study by Iqbal et al, he found the overall prevalence to be 12.69%.<sup>21</sup> Jagadish Kumar et al reported hepatic dysfunction to be

17.27%.<sup>22</sup> However, another study indicted the prevalence to be 14.3%.<sup>16</sup> Hepatic dysfunction with respect to age and gender showed that many cases who had it remained in > 6 age group and male gender group, which could be attributed to cultural norms of our society encouraging males to outdoor activities thereby exposing them to being bitten with mosquitoes more than females.

Clinically enlarged liver is the main characteristic feature of dengue contagion. Among 131 cases in this study, 46.1%, 63.6% and 100% had hepatomegaly in children who had DF, DHF and DSS.

The similar finding of hepatomegaly in dengue infection has been seen in children from 43-96%.<sup>23</sup> Mohan, Kulkarni, Jagadish Kumar and Roy et al reported it to be 87%, 90%, 79% and 94%.<sup>22-26</sup> Our study found elevated ALT (52.7%, 72.7% and 85.7%) and AST (42.8%, 63.6% and 71.4%). Similar pattern was seen in a study done by Iqbal et al showing raised ALT (82.7%, 81.2% and 52.6%) and elevated AST (64.2%, 75% and 89.6%) in an aforementioned manner.<sup>16</sup> In comparison, ALT was elevated by 69.4% of DF, 84.6% of DHF and 92% of DSS, and by AST, 88% of DF, 80% of DHF and 96% of DSS, by Jagadish Kumar et al.<sup>22</sup>

Dengue has a wide spectrum of clinical manifestations which requires timely identification and monitoring. Children presenting with classic dengue symptomatology should also be evaluated for hepatic biochemical and clinical parameters as they could aid in diagnosis and management of patients. Especially in the pediatric population as liver involvement is more common and severe when compared with adult population. Finally, drugs with the potential to cause or exacerbate liver damage should be avoided.

## CONCLUSION

Dengue's liver relationship ranges from jaundice to acute liver failure. Clinical findings of hepatomegaly and jaundice are important. Monitoring biochemical liver profile is important at the time of diagnosis and management as they raise the possibility of dengue infection severity.

### Author's Contribution:

Concept & Design of Study:	Kamran Ali Shahani
Drafting:	Faiza Shahani, Shazia Begum Shahani
Data Analysis:	Nasrullah Aamer, Muhammad Azhar Mughal and Muhammad Yaqoob Shahani
Revisiting Critically:	Kamran Ali Shahani, Faiza Shahani
Final Approval of version:	Kamran Ali Shahani

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# Comparative Efficacy of Hyoscine-N-Butylbromide versus Drotaverine Hydrochloride in the Augmentation of Labor

Efficacy of  
Hyoscine-N-  
Butylbromide  
versus  
Drotaverine

Azra Shuaib<sup>1</sup>, Bushra<sup>2</sup>, Ambreen Ghori<sup>2</sup>, Asad Ali Zardari<sup>4</sup>, Rozina Mujeeb Sahito<sup>5</sup> and Rekha<sup>3</sup>

## ABSTRACT

**Objective:** To compare the efficacy of Hyoscine-N-butylbromide versus drotaverine hydrochloride in the augmentation of labor.

**Study Design:** Double-blind, randomized controlled trial study

**Place and Duration of Study:** This study was conducted at the Gynecology Unit-I, Lique University Hospital Hyderabad for the period of one year from February 2018 to January 2019.

**Materials and Methods:** This study was conducted on 270 women to compare the efficacy of Hyoscine-N-butyl bromide versus drotaverine hydrochloride in the augmentation of labor Gynecology Unit-I Lique University Hospital Hyderabad. Women of reproductive age group between 18-35 years and gestational age between 37-40 weeks were included. All the data was analyzed in SPSS version 22.0.

**Results:** The average age of the patients was 21.45±5.42 years. Efficacy was significantly high in the drotaverine hydrochloride group than the Hyoscine-N-butylbromide group (73% vs. 41.8% p=0.0005).

**Conclusion:** Drotaverine hydrochloride appears to be effective in accelerating the first stage of labor.

**Key Words:** Active management of labor, Drotaverine hydrochloride, the first stage of labor, Hyoscine-N-butylbromide

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## INTRODUCTION

Dublin introduced the principle of active management of labor to reduce delivery time while achieving or maintaining a low rate of cesarean section.<sup>1</sup>

Type in anything that you want. Then click Quill It on the right to paraphrase your input.<sup>1</sup> The achievement of effective labor leadership is well documented and the amount of caesareans delivered to organizations using protocols has been reduced.

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More than 3000 females have been tested in potential, randomized, clinical studies to demonstrate their safety.

In countless surveys of females dealt with the effective leadership protocol, the smaller working time from entry to shipment has been continuously recorded.<sup>1</sup>

Hyoscine N-butyl bromide (HBB) inhibits cholinergic transmission into the pelvic abdominal parasympathetic ganglia to alleviate spasm in soft gastrointestinal, bile, urinary and women's issues, in particular in the cervical uterine plexus, and aid for cervical extension hyoscine.<sup>2</sup>

Active labor leadership decreases the number of cesarean shipments, long working hours and length of work, without negative impacts on mom or fetus.<sup>3</sup>

Spasmolytics, such as hyoscine-N-butyl bromide (HBB), are commonly used during this process.<sup>4</sup>

Several trials, involving both primigravida and multigravate females, have demonstrated that HBB (20-40 mg) intravenously improves cervical dilation during the active stage of the work.<sup>2</sup>

HBB effectively slows down the progression of the work by reducing intrauterine stress.<sup>5</sup> when provided in the latent phase, during which contractures remain unchanged.<sup>6</sup>

LA Samuels et al.<sup>1</sup> in their study compared the efficacy of hyoscine-N-butylbromide versus placebo in the augmentation of labour and reported that the decrease of 31.7% in the meantime for the first stage in the drug group as compared to control group.

In a study reported that there was a medium reduction of 15% in drotaverine for the duration of the first stage of labor in the group of drotaverines. So, that we could know which method is more effective shortening the duration of labour especially the first stage, in turn, we will be able to decrease the rate of cesarean section and other related morbidities of prolonged labour.

## MATERIALS AND METHODS

This Double-blind, randomized controlled trial study was conducted on 270 women for the period of one year from February 2018 to January 2019 to compare the efficacy of Hyoscine-N-butylbromide versus drotaverine hydrochloride in the augmentation of labor Gynecology Unit-I Lique University Hospital Hyderabad. A total of 270 women were enrolled in the Hyoscine-N-butylbromide group and drotaverine hydrochloride group by the double-blind randomized method. Women of reproductive age group (between 18-35 years) and gestational age between 37-40 weeks (gestational age determined by 1<sup>st</sup>-trimester scan), Primi gravida, Single live fetus in vertex presentation, booked cases, on regular follow up in antenatal clinic, and admitted in labour room, cervical dilatation of 3 – 5 cms and cervical effacement of  $\geq$  or 50% were included in this study. Multiple pregnancies, women with comorbidities i.e. hypertension, diabetes mellitus, Preterm labour, Abnormal presentation, and Cephalopelvic disproportion were excluded. Informed written consent regarding study protocol was taken from all the women. An approval from the hospital ethical review committee was obtained. Study subjects were divided into two groups of women: one group of women received the Hyoscine-N-butylbromide drug, while the other group received the drotaverine hydrochloride.

Sterile syringes were then numbered sequentially and ready with the random digits to determine their hyoscine or drotaverine chloride content. Participants were provided intravenously in a single dose of syringe content with 4–5 cm cervical dilation, which was verified and recorded by an Obstetrics and Gynecology patient. All the data was entered in the pre-designed proforma by the researcher herself.

**Data Analysis:** The collected data was entered on SPSS version 16. The frequencies and percentages were calculated for a mode of delivery and efficacy. Mean and the standard deviation was calculated for maternal age, gestational age, duration of the first stage of labor and rate of cervical dilatation. Stratification was done with regards to maternal age and gestational age to see the effect of these on outcomes by the chi-square test.  $p \leq 0.05$  was considered significant.

## RESULTS

A total of 270 women were enrolled in this study, 170 women in the hyoscine-N-butylbromide group and 100

women were in the drotaverine hydrochloride group. The average age of the patients was  $21.45 \pm 5.42$  years. The age distribution of women is presented in figure 4. Gestational age of 88% and 59% cases were between 37 to 38 weeks in the Hyoscine-N-butylbromide group and 82% and 41% were between 39 to 40 weeks in drotaverine hydrochloride group as presented in figure 5. Distribution of the first stage of labor and rate of cervical dilatation with respect to groups is presented in Figures 6 and 7 respectively.

The rate of vaginal delivery was 81% in the drotaverine hydrochloride group and 55.9% in the hyoscine-N-butylbromide group while the cesarean section was 19% in drotaverine hydrochloride group and 44.1% hyoscine-N-butylbromide group as shown in table 2.

Efficacy was significantly high in the drotaverine hydrochloride group than the hyoscine-N-butylbromide group (73% vs. 41.8%  $p=0.0005$ ) as presented in table 3. With respect to age groups, efficacy was significantly high in the drotaverine hydrochloride group than the hyoscine-N-butylbromide group in 18-20 years of age ( $p=0.0005$ ) and 21-25 years of age patients ( $p=0.005$ ) as shown in table 4. Similarly, Efficacy was significantly high in the drotaverine hydrochloride group than the hyoscine-N-butylbromide group in those cases whose gestational age was 37 to 38 weeks (93.2% vs. 51.1%  $p=0.0005$ ).

**Table No.1: Comparison of baseline characteristics and other parameters between groups (n=270)**

	Hyoscine-N-butylbromide Group (n=170)	Drotaverine hydrochloride Group (n=100)	P value
Age groups(years)			
18-20 years	57(33.5%)	35(35.0%)	0.0005
21-25 years	46(27.0%)	25(25.0%)	0.005
26-30 years	36(21.17%)	20(20.0%)	0.221
31-35 years	31(18.2%)	20(20.0%)	0.107
Gestational age (weeks)			
37-38	88(51.7%)	59(59.0%)	0.0005
39-40	82(48.2%)	41(41.0%)	0.589
Duration Of the First Stage Of Labour With			
>8h	95(55.8%)	20(20.0%)	0.003
6h to 8h	75(44.1%)	80(80.0%)	0.001
Rate Of Cervical Dialatation			
0.5 to 1cm/h	64(37.6%)	45(45.0%)	0.932
1.1 to 1.5cm/h	48(28.2%)	25(25.0%)	0.541
>1.5cm/h	58(34.1%)	30(30.0%)	0.051
Mode of delivery			
Vaginal delivery	95(55.9%)	81(81%)	
Caesarean section	75(44.1%)	19(19%)	0.0005
Efficacy:			
Yes	71(41.8%)	73(73%)	0.0005
No	99(58.2%)	27(27%)	0.0006



**Table No.2: Comparison of Efficacy between Groups with Respect to Age Groups (n=270)**

	Hyoscine-N-butylbromide group (n=170)			Drotaverine hydrochloride group (n=100)			P-Values
	n=170	Efficacy Yes (n=71)	Efficacy No (n=99)	n=100	Efficacy Yes (n=73)	Efficacy No (n=23)	
Age Groups							
18-20 Years	57	25(44%)	32(56%)	35	29(82.9%)	6(17.1%)	0.0005
21-25 Years	46	28(60.9%)	18(39.1%)	25	23(92%)	2(8%)	0.005
26-30 Years	36	12(33.3%)	24(66.7%)	20	10(50%)	10(50%)	0.221
31-35 Years	31	6(19.4%)	25(80.6%)	20	8(40%)	12(60%)	0.107
Gestational Age (Weeks)							
37 to 38	88	45(51.1%)	43(48.9%)	59	55(93.2%)	4(6.8%)	0.0005
39 to 40	82	26(29.5%)	56(68.3%)	41	15(36.6%)	26(63.4%)	0.589

## DISCUSSION

The work protocol programming is focused on labor analgesia inclusion, active employment leadership and work event monitoring using partogram. Various drugs have been implemented as well as non-pharmacological techniques to shorten the length of work to decrease maternal and newborn diseases. In addition, different pharmacological agents were discovered to promote cervical dilation,<sup>7</sup> in relation to mechanical variables such as membranes,<sup>8</sup> cervical deformations and amniotomy. The function of oxytocin in employment increase was created world-wide, and hyaluronidase was also successfully applied cervically.<sup>9</sup> Phloroglucinol results in an average 34 percent decrease in the first phase of labor and a median 23 percent decrease in the second phase, compared with placebo organizations.<sup>10</sup>

Valethamide has neurotropic and musculotropic activities and contributes to the relaxation of cervical muscles, resulting in a rapid cervical dilution and reduced workload.<sup>11</sup> Hydrochloride drotaverine is a spasmolytic drug that inhibits phosphodiesterase IV selectively and accompanies a gentle calcium channel blocking action that facilitates cervix dilation.<sup>12</sup>

It has a non-renal path excreted and lasts between 7 and 12 hours in a half-life. It has benign maternal adverse events such as hypotension, vertigo, vomiting, and palpitation but is unrelated to fetal adverse effects.<sup>13</sup>

In the present study, it was observed that the gestational age of 88% and 59% cases were between 37 to 38 weeks in the Hyoscine-N-butylbromide group and 82% and 41% were between 39 to 40 weeks in drotaverine hydrochloride group. We observed 80 (6-8 hour) patients shortening the first stage in women who received the drotaverine hydrochloride group.

Hydrochlorid Drotaverine is an isoquinoline derivative that affects the membrane potential and permeability of smooth muscle cells by means of a strong spasmolytic effect.<sup>14</sup>

Different trials have demonstrated that work takes 54 and 218 minutes to shorten. A study showed an average 15% and 19 percent decrease respectively in the first and second phases of work.<sup>15</sup>

The muscarin antagonist is a cervical spasmolytic substance. No impact on either the length of the active work-phase or cervical dilation was observed in this study Hyoscine-N-butylbromide.

Al Dohami and al Matari,<sup>16</sup> did not report any distinction of cervical dilations, contrasting with those cited by Baracho and Kamat,<sup>17</sup> which indicated that complete working times were considerably decreased by 2 h and 1 h 37 min in Primigravida and Multigravida females.

Each of them. Bhattacharya and Joshi,<sup>18</sup> who indicated a substantial decrease in the length of work for Buscopan, also observed similar findings. The impact of the Buscopan suppositories on effective labour leadership was assessed and the length of work between the control and research organizations was significantly affected (368.05 ±133.0 min, compared to 123.86±68.87, respectively). During the second and third stages of work, there was no distinction.<sup>12</sup>

In the present study rate of vaginal delivery were 81% in the drotaverine hydrochloride group and 55.9% in the Hyoscine-N-butylbromide group while the cesarean section was 19% in drotaverine hydrochloride group and 44.1% Hyoscine-N-butylbromide group. In this study, efficacy was significantly high in the drotaverine hydrochloride group than the Hyoscine-N-butylbromide group. Similarly, Efficacy was significantly high in the drotaverine hydrochloride group than the Hyoscine-N-butylbromide group in those cases whose gestational age was 37 to 38 weeks (93.2% vs. 51.1% p=0.0005). A similar result was also observed.

Drying hydrochloride seems efficient in speeding up both the first and second phases of work. The effect will be greater if a 4 cm cervical dilation drug is given and after a second dose.

Drotaverine had no important impact on work pain, but most females experienced less pain during the fourth

phase of work. The medication did not have fetal side effects but the incidence of postpartum hemorrhage was boosted.

In Madhu et al.<sup>14</sup> study it was also observed that the average moment of service for the first injection to a child, 183.2 min in group Drotaverine as opposed to 206.5 min in Valethamate and 245 min in the control group, was statistically important in the average shipping moment.

The average cervical expansion rate (cm / h) was 3, 2.4 and 1.9 respectively in communities 1, 2 and 3, and statistically significant were these variations. The duration of the second and third phases of work did not differ statistically significantly.

In another study.<sup>15</sup> The acceleration of work is effective in both intramuscular drotaverin and valethamate bromide; however, drotaverine is accelerating labor and is associated with fewer side effects.

It has also been reported that drotaverine is highly efficacious in reducing the active work phase by accelerating cervical dilation and more efficient in the dilated colorectal colon than in the case of multigravida.

Much research has investigated the use of drugs to facilitate cervical dilatation. Drotaverine is a PDE inhibitor, selective for isoenzyme type IV. It works to correct the balance between cAMP and calcium and relieves muscle spasms.<sup>12</sup>

The high concentrations of PDE type IV are found in human myometrium during the third quarter and near term. Drotaverine metabolites inhibit PDE type IV isoenzyme is 10 times more potent than Drotaverine.

Drotaverine was statistically better than Valethamate and reduced work in the first stage by 11%. These findings confirm that other studies have demonstrated Drotaverine's high efficiency in increasing work.<sup>15</sup>

In our study, Drotaverine was superior to valethamate; however, both Drotaverine and Valethamate were equally efficient in a comparative study<sup>15</sup>.

## CONCLUSION

Drotaverine hydrochloride appears to be effective in accelerating the first stage of labor. The study showed that Hyoscine-N-butylbromide did not work more effectively. Efficacy was significantly high in drotaverine hydrochloride group than the Hyoscine-N-butylbromide group in those cases whose gestational age was 37 to 38 weeks. More randomized tests are required to analyze the associated effect of drotaverine and other methods before routine drug use during labor is recommended.

### Author's Contribution:

Concept & Design of Study: Azra Shuaib  
 Drafting: Bushra, Ambreen Ghori  
 Data Analysis: Asad Ali Zardari, Rozina Mujeeb Sahito, Rekha

Revisiting Critically: Azra Shuaib, Bushra  
 Final Approval of version: Azra Shuaib

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

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# Perception of Medical and Paramedical Staff in regard of Standard Operating Procedure (SOP) of Covid-19

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## ABSTRACT

**Objective:** The current study accessed the observance of SOPs especially the mask related, personal, and social factors that discourage medical and paramedical staff from using face masks.

**Study Design:** Observational, Cross-Sectional Study

**Place and Duration of Study:** This study was conducted at the Departments of Psychiatry, JPMC, Karachi and Psychiatry / Anatomy, LUM&DC, Jamshoro from March to August 2020.

**Materials and Methods:** All healthcare professionals who gave electronic consent and had internet access were included in the study. Due to the government-ordered lock down, an online semi-structured questionnaire was developed using Google forms to collect data. The socio demographic characteristics, past medical or surgical history, recent infection, which was followed by knowledge about coronavirus and attitude toward masks were recorded in a predesigned questionnaire. All data was analyzed using SPSS v 24.

**Results:** The mean age (SD) was 34.3 (10.25) years. The majority of the health-care workers wore masks at the workplace (97%). 1% of doctors who always wore face masks claimed that the mask displaces spectacles, 4% reported that it interferes with communication, 5.9% reported that it is not always available. 12.9% doctors did not experience any problem. Those who confessed to not wearing masks at the workplace, felt suffocated (16.8%), mask hurt their ears (7.9%), or mask interfered with their prescription spectacles (5%).

**Conclusion:** The current study indicated that the majority of the healthcare workers wore masks at the workplace and only a few percentages of participants faced a problem due to a face mask. The knowledge about face masks and its correct usage are important to mitigate negative attitudes.

**Key Words:** pandemic, epidemic, COVID-19, SARS-COV-2, surgical mask, prevention

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## INTRODUCTION

Epidemics that turn into pandemics have been a constant threat to humanity as a race. Corona-virus disease 2019 (COVID-19) was announced as a public health emergency of international concern by the World Health Organization (WHO) on 30<sup>th</sup> January 2020.<sup>1</sup> Coronavirus belongs to the positive-stranded RNA group of viruses causing severe acute respiratory syndrome; therefore, it is named SARS-CoV-2. The recent mutation that has equipped it to cause COVID-19 has also earned its name "novel" coronavirus.<sup>2</sup>

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Early on, the SARS-CoV-2 outbreak happened in Wuhan city of Hubei Province of China in people exposed to live animal markets, which had suggested animal-to-human transmission as a source of origin.<sup>2</sup> Subsequently, the spilling of COVID-19 from the epicenter to the people, with no exposure to animal markets, globally suggested human-to-human spread.<sup>2-3</sup> United States health officials have suggested two main transmission routes for the COVID-19: 1) person to person transmission and 2) contact transmission.<sup>3</sup> On a person to person transmission, the virus could spread: Through respiratory droplets released when an infected person coughs, sneezes or talks among people who are in close contact with one another (within about 6 feet). These droplets may land in the mouths or nose of people who are nearby or possibly be inhaled into the lungs. Moreover, the contact transmission involves the spread through touching contaminated surfaces then touching one's mouth, nose, or eyes.

As of October 2020, there have been a total of 36361054 confirmed cases of COVID-19 and 1056186 confirmed deaths globally.<sup>4</sup> Out of these, a total of 317,595 confirmed cases, and 6,552 confirmed COVID-19 related deaths occurred in Pakistan.<sup>5</sup> The

COVID-19 may range from being asymptomatic to fatal. The symptoms, if they appear, are fever, tiredness, and dry cough.<sup>4</sup> Sometimes, however, aches and pain, nasal congestion, runny nose, sore throat, and diarrhea may also be present. Its prognosis worsens with old age and the underlying comorbidities that may weaken the immune system.<sup>4-6</sup>

Owing to the highly infectious nature of SARS-CoV-2, the community is in great risk especially the Frontline workers including the health care personnel as they deal directly with diseased persons therefore, they are most likely to be exposed to the virus.<sup>5</sup>

Their nature of work does not allow them to observe standard procedures of social distancing to keep themselves at bay from getting infected. However, the practices of wearing a mask, washing hands with soap or sanitizing them, and wearing personalized protective equipment if necessary, are the methods that could help healthcare workers to prevent themselves from COVID-19.

This article specifically focuses on the attitude of healthcare workers toward mask in this COVID-19 Pandemic.

## MATERIALS AND METHODS

This was an observational, cross-sectional study conducted in Pakistan from 30<sup>th</sup> March to 19<sup>th</sup> August 2020. Due to the government-ordered lock down, an online semi-structured questionnaire was developed using google forms to collect data. The link of the questionnaire was then sent to multiple health care workers via Whatsapp, email, and other social media platforms by the investigators.

All participants who gave an electronic consent, had internet access, were health-care workers, aged 18 years or older were included in the study. The participants were redirected to google forms where the questionnaire was to be filled. The questionnaire collected information on the socio demographic characteristics, body mass index, history linked to psychiatric, medical or surgical significance, recent infection in oneself or within the family, substance use history, followed by knowledge about coronavirus and attitude toward masks. The recipients of the link were encouraged to forward the link to their contacts in the snow-ball style of sampling.

There were questions with short typing answers, the best choice from various options, ticking multiple options for multiple responses. The data was analyzed using SPSS v 26, after collection of data of 101 respondents using descriptive statistics. Mean, standard deviation, and frequencies/proportions have been used to analyze the data. The findings were presented in tables and graphs.

## RESULTS

Data of 101 healthcare workers were collected using the online platform of Google forms. Out of these 101

respondents, 67 were male, and 34 were females. The mean age (SD) was 34.3 (10.25) years. Other socio-demographic characteristics are represented in table 1. The study population was diverse belonging to different ethnicities and religions.

**Table No.1: Socio-demographic characteristics of Study Population (n=101)**

Item	n (%)
Mean Age (SD) in years	34.3 (10.25)
Gender	
Male	67
Female	34
Marital Status	
Married	57.4%
Unmarried	35.6%
Engaged	6.9%
Ethnicities	
Sindhi	44.6%
Urdu speaking	26.7%
Punjabi	8.9%
Pushtoon	5.9%
Others	5%
Medical History	
Medical illness in past year	20.8%
History of Psychiatric illness	5%
Recent infection	10.9%
History of infection within the immediate family in the past two weeks	9.9%
History of Substance abuse	
Yes	13.9%
No	86.1%
Smoking	
Yes	27.5%
No	72.5%

20.8% have had a history of medical illness in the past year, and 5% had a history of psychiatric illness. Moreover, 10.9% had a history of recent infection, and 9.9% had a history of infection within the immediate family in the past two weeks from the date of administration of the questionnaire (table 1).

Upon assessing the awareness about coronavirus, we found that only 1% of respondents did not know about how the coronavirus spread, and also 1% of respondents felt no need to wear a mask. Moreover, 6.9% did not know if the mask could prevent them or others from getting infected. See table 2 for details.

The majority of the health-care workers wore masks. Upon assessing the issues among participants who always wore the masks, faced while wearing the masks, it was found that in 1% mask displaced spectacles, 4% reported that it interferes with communication, 5.9% reported that it is not available, 6.9% complained about shape, 7.9% complained about its tightness and 12.9% people experienced no problem at all, however, 3% unspecified any issue with the mask (Table 3). The responses of those who responded that they do not wear a mask all the time are also presented in table 3.

**Table No.2: Awareness and Practice of Wearing Mask among Study Participants**

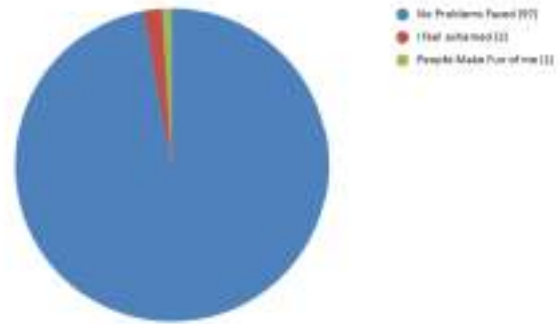
Item	n (%)
Are you aware of how coronavirus disease spreads?	
Yes	99%
No	1%
Do you feel the need to wear the mask?	
Yes	99%
No	1%
Does wearing a mask prevent you from getting infection?	
Yes	93.1%
No	6.9%
Do you wear masks at work place i.e. hospital? Always	
Most of the time	41.6%
Sometimes	47.5%
Seldom	9.9%
Never	0.1%
Mask-related Problems - Personal (Wore masks always)	
Displaces Spectacles	1%
Interferes in communication	4%
It is not available	5.9%
Its Shape	6.9%
Too tight	7.9%
No Problem Faced	12.9%
Others	3%

**Table No.3: Mask-related, personal, and social issues pertaining to wearing mask as a precautionary measure against the spread of COVID-19 infection**

Problems	Group who responded with whether always wear masks at work place	
	Yes	No
<b>Mask-related Problems</b>		
Displaces Spectacles	1%	4%
Interferes in communication	4%	6.9%
It is not available	5.9%	7.9%
Its Shape	6.9%	4%
Too tight	7.9%	22.8%
No Problem Faced	12.9%	4%
Others	3%	8.9%
<b>Personal Problems</b>		
Do not like it	5%	3%
Feel suffocated	4%	16.8%
Hurts in ear	3%	7.9%
Interfere with eyesight glasses	2%	5%
Its not available	2%	5.9%
No Problem Faced	16.8%	12.9%
Stuck in beard	3%	3%
Other	4%	5.9%

Three percent of the participants who did not wear the mask claimed that they do not like to wear it, 16.8% felt suffocated, 7.9% claimed that the mask hurt their ears, 5% claimed that it interfered with their eyesight glasses, among other reasons. Social reasons revealed that 2% of participants felt ashamed, 1% reported that people might make fun, while 97% of participants didn't face any problem (Figure 1). Besides, 51.5% reported that the patients might feel uncomfortable if the healthcare professional did not wear a mask.

Social Problems related to Mask



**Figure No.1: Social Problems faced by Study Participants when wearing Masks in Public**

**DISCUSSION**

The current study evaluated the Coronavirus disease 2019 (COVID-19) Pandemic is continuing to infect and take lives of people across the world since last year. Its definite cure or vaccine has not been discovered yet.<sup>2-4</sup> Therefore, it makes it more pertinent to observe precautionary measures to avoid getting infected. Since healthcare professionals are the most vulnerable and exposed to the COVID-19 virus, the practice of precautionary measures must be encouraged and strict measures should be taken to ensure that all healthcare personnel are taking all precautionary measures to prevent the spread of Coronavirus disease. To realize the preventive effect of the face mask, the attitude of health care workers toward mask-wearing is crucial. The study was conducted to ascertain the attitude and possible factors that may contribute to the negative attitude of healthcare workers toward mask. A total of 101 responses were received from healthcare workers. Majority of the participants wore masks all the time or most of the time. However, there were some who did not wear the mask all the time or wore it only occasionally. It is well known that surgical masks can prevent the inhalation of large droplets and sprays but have limited ability to filter submicron-sized airborne particles.<sup>6,7</sup> In the long run, the extreme steps of lockdown and other measures may not be sustainable because of detrimental effects on the economy and other aspects of society. Logically, therefore, the alternative methods for containing and preventing the spread of COVID-19 are to be used. Wearing a mask is one of the most important of these methods. Face masks work by providing a physical barrier between the mouth and nose of the wearer and potential contaminants in the immediate environment.<sup>8</sup> In resource-limited settings, where the incidence of infectious disease is high, and the environmental conditions of hospitals are often poor, hospitals may rely heavily on a face mask to protect medical staff against COVID-19 and to prevent cross-contamination among patients and HCWs.<sup>9</sup> The use of a face mask

among HCWs is strongly recommended by the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) as a standard for transmission-based precaution.<sup>10,11</sup>

In our study, the issues related to mask wearing were stratified and asked from the participants. We found that both groups i.e. those who wore masks all the time and those who did not, had similar problems pertaining to the mask wearing practice. Mask related issues give insight into the ways how a mask is affecting its user and ways to improve it. Many participants complained about the mask interfering with the communication or the tightness of the mask. Some complained about the boom in the mask industry after COVID-19 was unprecedented. The consumption has touched new heights and is expected to grow at a CAGR of over 5% during 2019-2025 period.<sup>14</sup> This gives industry the opportunity to manufacture masks that could address the concerns of consumers in the long run for compliance to its use.

Similarly personal problems/concerns were also asked from the study participants. The personal problems related to masks have a wide spectrum. Long duration of wearing masks during duty hours may cause healthcare workers to feel pain in the ears.<sup>15-16</sup> And, sometimes the masks material is too thick that may cause suffocation. Moreover, improper use or dysfunction of nasal seals in the mask may cause water vapors from the breathing to travel up and cause blurring of glasses.<sup>15</sup>

Post-covid-19 world has pushed the world to a new form of world order. Fashion industry may not be an exception to it. The mask has become a new norm. Despite that, some healthcare professionals faced social issues with wearing masks.<sup>16-18</sup> Astonishingly, as many as 48.5% of the healthcare professionals believed that the patients may not be feeling uncomfortable if they do not wear a mask. This may point to the lack of knowledge about how corona virus may spread in the general population, or, trivialization of the threat it poses as pandemic. It put more responsibility on healthcare professionals to sensitize and impart knowledge about COVID-19 among their patients.

## CONCLUSION

The attitude toward masks has been defined by several reasons among healthcare professionals. The knowledge about masks and its correct usage are important to mitigate negative attitudes. Moreover, the mask related industry may also come up with user friendly masks that may overcome the problems faced by the consumers specially healthcare professionals.

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# Etiology of Pulmonary Arterial Hypertension Detected on Multi Detector Cardiac Computed Tomography in Patients with Primary Pulmonary Hypertension

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## ABSTRACT

**Objective:** To determine the frequency of diagnosing cardiac etiology of PAH by cardiac MDCT in those patients who were labeled as primary pulmonary hypertension on echocardiography.

**Study Design:** Cross-sectional study

**Place and Duration of Study:** This study was conducted at the Computed Tomography Angiography Department, Punjab Institute of Cardiology, Lahore from May, 2019 to October 2020.

**Materials and Methods:** This study included 150 patients who were labeled as cases of primary PAH by echocardiography. All the patients underwent MDCT to look for any cardiovascular pathology as an etiologic factor of PAH (i.e. intracardiac shunting, valvular heart diseases, and cardiac source of thromboembolic PAH).

**Results:** MDCT could detect cardiac etiologies in 48(32%) patients. Intracardiac shunting was seen in 26(17.3%) patients, partial anomalous venous connection in 2(1.3%) patients, thromboembolic PAH in 18(12%) patients, valvular heart disease in 4(2.7%) patients, and no abnormality in 102(68%) patients.

**Conclusion:** MDCT could detect cardiac etiology in approximately one-third of patients who were labeled as PPH hypertension by echocardiography.

**Key Words:** Multidetector computed tomography; cardiac etiology; pulmonary hypertension

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## INTRODUCTION

Right heart-catheterization showing precapillary PAH with a mean pulmonary artery pressure of >25 mmHg and atypical pulmonary artery wedge pressure of less than 15 mmHg is classified as pulmonary arterial hypertension.<sup>1,2</sup>

Pulmonary hypertension (PAH) is a complicated and idiopathic condition, which can be associated with several diseases.

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The incremental loss of the pulmonary and arterial small arteries in patients with PAH leads to increased vascular resistance, which may potentially lead to correct ventricular failures and death.<sup>3</sup> Vasoconstriction, reshaping, and in situ thrombosis of the vascular wall are causes that increase vascular resistance. While the anatomy of the multiple clinical PAH classes is distinct, there are regular characteristics of media hypertrophy, intima proliferation and fibrosis, and plexiform lesions.<sup>4</sup>

Because of unspecific symptoms and signs, the diagnosis of PAH may be skipped. Echocardiography is used for monitoring and diagnosis, however, right heart catheterization tests the normal gold pulmonary artery pressure and vasodilator response. The diagnosis of lung and underlying lung parenchymal disease is usually performed by computerized tomography angiography and HD CT. Chronic pulmonary arterial pressure rise allows the right atrium and ventricle pulmonary artery to be dilated.<sup>5,6</sup>

A careful history of HAP risk factors, such as family history, history of medications and PAH contaminants, collagen-based vascular disorder, human immune virus, portal hypertension, congenital or left coronary disease, and venous thromboembolic disease, is important in evaluating them.<sup>7</sup> By using a variety of medical examinations to accommodate each particular patient,

the diagnosis and the correct determination of their etiology and severity, prognosis, clinical response, and PAH tracking, can be done in a fair measure.<sup>8</sup>

PAH is primarily marked where a secondary pulmonary and cardiac source is not present. With a median of 2.8 years and a 5-year survival rate of just 55%, mostly PAH estimates are low.<sup>9</sup>

Cardiac causes of PAH include multiple congenital and acquired cardiac diseases e.g. valvular heart disease, shunts, and cardiac source of pulmonary thromboembolism, almost all of these lesions have excellent short term results after surgical correction as well long term results.<sup>10,11</sup> Therefore diagnosing the cardiac etiology of PAH is very important but at the same time very challenging because there is no completely reliable non-invasive test for its detection.<sup>12-15</sup>

Echocardiography is usually relied upon for diagnosing the cardiac etiology of PAH. But advances in MDCT technology now permit accurate delineation of cardiac morphology and is widely utilized in the workup of both pulmonary and cardiac causes.<sup>16,17</sup>

But very limited studies internationally regarding cardiac MDCT have been done for assessing its frequency in diagnosing cardiac etiology of PAH. One study was conducted by Grubstien et al., in which 38 patients with PAH, who underwent computed tomography, echocardiography, and other modalities, cardiac computed tomography was able to detect cardiac etiology of PAH in 23.6% of the patients.<sup>18</sup>

This study was conducted on a larger number of primary PAH patients than previous limited studies, and if cardiac computed tomography would be able to diagnose the cardiac etiologies of PAH insignificant number of patients which were missed on echocardiography than in future before labeling the patients as having primary PAH, which has a grave prognosis, patients will be referred for cardiac computed tomography and possibly more hidden cardiac pathologies will be diagnosed which are treatable, saving lives of many patients in this desperate group. The causes of pulmonary arterial hypertension (PAH) are diverse. The traditional role of computed tomography (CT) in evaluating PAH includes an assessment of pulmonary vasculature and lung parenchyma. However, advances in multi-detector CT (MDCT) technology may permit the delineation of cardiac morphology. This study was conducted to determine if cardiac CT would be able to diagnose cardiac etiologies of PAH which were missed on echocardiography.

## MATERIALS AND METHODS

This cross-sectional study was conducted at the echocardiography and CT Angiography Department, Punjab Institute of Cardiology Lahore for six months from 11.05.2019 to 10.10.2020. The sample size of 150

cases was calculated with a 95% confidence level, 8% margin of error, and taking an expected percentage of detection of cardiac causes of PAH i.e. 25% on cardiac computed tomography in patients who were labeled as primary PAH on echocardiography. Patients aged 14-75 years, of either gender, having PAH diagnosed without cardiac cause on echocardiography (transthoracic and transesophageal) were included in the study. The patients with PAH in which cardiac etiology e.g. intracardiac shunts, valvular heart disease, or cardiac origin of thromboembolism was not found on echocardiography were included in the study. Patients having any secondary cardiac cause of PAH detected on echocardiography, history of cardiac arrhythmias and heart failure, history of Chronic Obstructive Pulmonary Disease, history of acute or chronic renal failure creatinine level  $\geq 1.5$ , and history of an allergic reaction to contrast reagent were not included in the study.

A total number of 150 patients diagnosed with PAH were selected from the echocardiography department and informed consent was taken. These patients then underwent cardiac MDCT angiography to look for any cardiovascular pathology as an etiologic factor of PAH. All echocardiographic studies were performed with the VIVID-07 echo machine. Standard 2-dimensional and color flow Doppler images were obtained in all patients. Computed tomography was performed with 64 slice MDCT. The outcome variables of my study were cardiac pathologies that include intracardiac shunting, valvular heart diseases, and cardiac source of thromboembolic PAH. Cardiac etiologies that were detected on cardiac computed tomography are: **Intracardiac shunting:** The abnormal flow of the blood between atria and ventricles.

**Valvular heart disease:** a mitral valve, aortic valve, pulmonary valve, and tricuspid valve abnormalities in the form of either stenosis, incompetence or both. **Thromboembolic PAH:** the presence of thrombus or embolus in any chamber of the heart or pulmonary arterial vessels.

**Data Analysis:** Data was analyzed using SPSS version 21. The presence and absence of cardiac pathology on computed tomography angiography were presented by calculating frequency and percentage.

## RESULTS

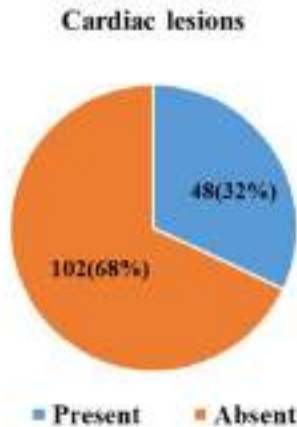
A total of 150 patients were included in this study based on inclusion criteria. The mean age of the patients was  $35.11 \pm 14.19$  years [range 14 – 75 years]. There were 15 (10%) patients of the age range of 14 – 20 years, 61 (40.7%) patients of the age range of 21 – 30 years, 30 (20%) patients of the age range of 31 – 40 years, 21 (14%) patients of the age range of 41 – 50 years, 13 (8.7%) patients of the age range of 51 – 60 years, 5 (3.3%) patients of the age range of 61 – 70 years and 5 (3.3%) patients of the age range of 71 – 75 years. There were 61 (40.7%) male patients in the study, while 89

(59.3%) patients were female. The male to female ratio was 1:1.75. Table 1

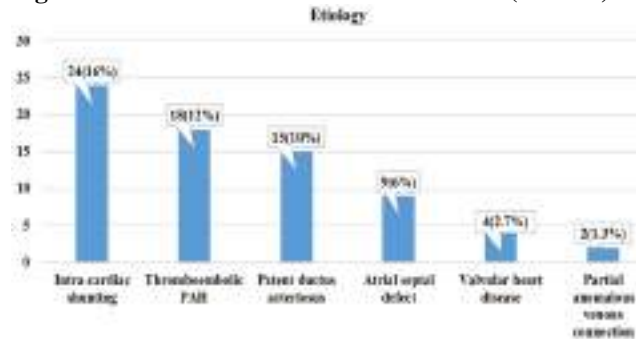
The cardiac lesions were detected in 48 (32%) patients, while it was not detected in 102 (68%) patients. Figure 1 Out of 150 patients included in the study, intracardiac shunting was seen in 24(16%) patients, out of which 15 (10%) patients had patent ductus arteriosus and 9 (6%) patients had an atrial septal defect, partial anomalous venous connection in 2(1.3%) patients, thromboembolic PAH in 18(12%) patients, and valvular heart disease in 4 (2.7%) patients. Figure 2.

**Table No.1: Demographic details of the patients (n=150)**

Demographic variables	Number	Percentage
Gender		
Male	61	(40.7%)
Female	89	(59.3%)
Mean ± Age (in Years)	35.11 ± 14.19	
Age (in groups)		
14 – 20	15	(10%)
21 – 30	61	(40.7%)
31 – 40	30	(20%)
41 – 50	21	(14%)
51 – 60	13	(8.7%)
61 – 70	5	(3.3%)
71 – 75	5	(3.3%)



**Figure No.1: Distribution of cardiac lesions (n = 150)**



**Figure No.2: Distribution of etiology of lesions in patients with positive cardiac lesions detected on MDCT (n = 150)**

## DISCUSSION

The etiology of PAH is diverse including idiopathic, pulmonary, or cardiac. The cardiac etiologies can be sufficiently diagnosed with an MDCT scan. This study was conducted to determine the frequency of cardiac causes of PAH. This study was one of the largest studies conducted in this regard. Before this, no previous study is available which have documented the frequency of cardiac causes of PAH. The results of this study favored the use of MDCT scan for detection of cardiac causes of PAH as it could have detected the etiology in 32% cases.

The mean age of the patients in our study was 35.11±14.19 years. However, a much higher age of the patients was observed in the stud by Grubstein A, et al., who showed documented that the mean age of the patients with PAH was 52 years (range 20–80).<sup>18</sup> The results of our study showed that PAH was more frequent before 40 years of age. Approximately 70.7% of patients were below 40 years of age. In another study by Rich S, et al, it was observed that PAH was seen more frequently after the age of 60 years (28.2%).<sup>19</sup>

In our study, an MDCT scan could detect the cardiac etiology of the PAH in 32% of patients. The cardiac abnormalities were detected among those patients who were labeled on echocardiography as cases of primary PAH (i.e. idiopathic). In our study, thromboembolic PAH was the most common (12%) followed by patent ductus arteriosus (10%), rest others. Again, intracardiac shunting was the most frequent etiology (16%). However, we did not find any remarkable number of patients with valvular heart disease (2.7%), though, it is routinely, MDCT is usually performed when concomitant thoracic or pulmonary disorders, such as pulmonary embolism, are suspected. MDCT is a valuable alternative to cardiac magnetic resonance imaging in patients with a pacemaker, cardiac magnetic resonance imaging incompatible prosthetic material, and claustrophobia. Recent improvements in temporal and spatial resolution affected cardiac visualization. The use of MDCT for the right ventricular has mainly been validated for workup of PAH by other studies.

Echocardiography has a low sensitivity in diagnosing PE (60–70%) and is mainly used for risk stratification. One of the potential disadvantages of MDCT is that it cannot a routinely used technique due to the significant radiation exposure and the use of iodinated contrast medium. However, looking at the low sensitivity of echocardiography (60% - 70%), this appears to be beneficial over echocardiography with an advantage of minimally invasive technique.<sup>20</sup>

This study had certain limitations. This was a single-center study conducted in limited population size. Although findings of cardiac CT were evaluated by the senior radiologist, the findings were not confirmed by any other investigation and inter-observer variation in reading the CT reports was not also determined. This was an initial work for the utility of the MDCT scan, which has shown that it may be more helpful in the detection of cardiac etiology than echocardiography.

However, there is a need for conducting more studies in this regard before making any recommendation.

## CONCLUSION

MDCT scan could detect the cardiac etiology in approximately one-third of the patients who were labeled as primary PAH by echocardiography. So, it shows that it may be a useful technology for the detection of etiology of cardiac origin among patients with primary PAH. However, more studies are required in large population sizes and at multiple centers before replacing it with standard diagnostic modalities like CT angiography or cardiac MRI.

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# Self-Medication with Antibiotics Among Third Year Medical Students

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and Haq Nawaz<sup>1</sup>

## ABSTRACT

**Objective:** This study was conducted to assess the frequency and the common reasons of using antibiotics for the purpose of self-medication among the medical students, the highly educated youth of a country as little is known about self-medication with antibiotics in medical students in this region.

**Study Design:** This descriptive cross sectional study.

**Place and Duration of Study:** This study was conducted in Ayub Medical College Abbottabad from Jan 2020 to June 2020.

**Materials and Methods:** We performed this study on Third year MBBS and second year BDS students. Data was collected through self-administered questionnaire and analyzed using SPSS version 16.

**Results:** Among 240 medical students 65% were male and 35% were female. Prevalence of self-medication with antibiotics in this study was found to be 85%. Convenience (56%) or over the counter drugs was the most common reason for self-medication and sore throat (37.1%) was the most common ailment for which antibiotics were used by the students. 40 % of students discontinued the drug during treatment, the reason being disappearance of symptoms. Participants (53%) accepted that self-medication with antibiotics could be harmful and is unacceptable.

**Conclusion:** In spite of being highly aware of the deleterious outcomes of self-medication, prevalence of self-medication with antibiotics was found to be high among the medical students. Hence further research is needed to study the patterns for antibiotic usage so that appropriate interventions could be made.

**Key Words:** Self-medication, medical students, antibiotics

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## INTRODUCTION

Self-medication is the traditional use of medication including drugs and herbs without the consultation of a doctor or health care professional.<sup>1</sup> It is the target of Millennium Development Goal to make sure the affordability and accessibility of essential drugs in developing countries. In accordance with this, self-medication is one of the main contributors for irrational use of medicines.<sup>2</sup> There is day by day rise in the prevalence of self-medication graph throughout the world. It is estimated that in developing countries 80 % of all the medicines are purchased without prescription and these include analgesics, antipyretics, anti-inflammatory drugs, CNS depressants, psycho stimulants and opiates etc.<sup>3</sup>

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The major problem with self-medication is the irrational use of antibiotics which has a number of unacceptable effects in the form of drug resistance, treatment failure, increase in antibiotic cost, extended hospitalization and increase morbidity and mortality.<sup>4</sup> Antibiotics take one of the highest positions among prescribed drugs worldwide but at the same time they are posing a big public health threat in the form of antimicrobial resistance. Statistics show that their irrational use is a danger for not only developing countries but also for developed countries.<sup>5</sup>

According to studies, level of education can be taken as one of the most relevant predictor of self-medication. Many studies have been conducted on tertiary level students around the world as they contribute to the highly educated portion of a country's population and possess more knowledge about health. Being more specific, students of medical colleges are the future health providers.<sup>6</sup>

Pakistan based data shows that 79% of self-medication practice is contributed by private sector.<sup>7</sup> Multiple studies in Pakistan showed the prevalence of self-medication with all medicines to be 61% and 66%.<sup>8,9</sup> However, data at the regional level on self-medication as a whole among medical students indicates its prevalence to be much higher i.e. 99%.<sup>10</sup> While a study conducted in Karachi on self-medication with antibiotics in particular shows its prevalence to be 71.4%.<sup>11</sup>

Determinants of self-medication in Pakistan include easy accessibility to drugs, excessive marketing of medicines, inadequate health knowledge, poor regulatory authorities, unreachable health care workers and paucity of medical facilities.<sup>12</sup> Therefore aim of this study was to determine the frequency and common reasons for the use of antibiotics as self-medication among medical students. It will help to draw awareness among the medical students about the adverse outcomes associated with self-medication with antibiotics. It will also be beneficial for developing appropriate interventions for its prevention.

## MATERIALS AND METHODS

This study was conducted in Ayub Medical College Abbottabad from 15<sup>th</sup> Jan 2020 till 15<sup>th</sup> June 2020. It was a descriptive cross sectional study. Ethical approval was taken by the Ethical committee of Ayub Medical College. We approached the medical students through lecture hall for data collection. All the currently enrolled 3<sup>rd</sup> year MBBS and 2<sup>nd</sup> year BDS students were included in the study. Out of the total 275 students, 240(87%) students responded of which 218 were from 3<sup>rd</sup> year MBBS and 22 from 2<sup>nd</sup> year BDS. A self-administered questionnaire was given to the students for collection of data after taking fully informed verbal consent and their confidentiality was guaranteed. Questionnaire was about the use of antibiotics and various aspects related to antibiotics and their opinion about self-medication with antibiotics. Data was entered and descriptive analysis of the data was done using SPSS version 16.

## RESULTS

In this study total number of students was 240 among which 90% were from MBBS and 10% from BDS. 157 students (65%) were male and 83 female (35%). 198 students (83%) were boarders. Prevalence of self-medication with antibiotics was 85%(Table 1). Among 134 students (56%) convenience was the most common reason for self-medication with antibiotics and sore throat was the most common complaint (37%) for taking antibiotics (Table 2). It was noticed that previous experience with antibiotic led to the selection of antibiotic in (31%) of cases. 34% students selected antibiotic by studying the literature. Most of the students (34%) got idea about dosage from family members. 95 students (40%) switched to another antibiotic during the course of treatment as antibiotic did not work in 112 students (48% of cases) as shown in (Table 3). When asked about discontinuation of antibiotics, 97 students (40%) stopped taking antibiotic when symptoms disappeared. Results demonstrated that among 128 (53%) self-medication was not an acceptable method.

**Table No. 1: Ever self-medicated with antibiotics**

Answer	Frequency	Percent
Yes	205	85.4
No	35	14.6
Total	240	100.0

**Table No.2: Complaints for using antibiotics**

Complaints	Frequency	Percent
Runny nose	23	9.5
Nasal congestion	15	6.3
Cough	24	10.0
Sore throat	89	37.1
Fever	20	8.3
Aches & pains	9	3.8
Diarrhea	11	4.6
Skin wounds	3	1.3
Others	11	4.6
NA	35	14.6
Total	240	100.0

**Table No 3: Reasons for switching antibiotic**

Reasons	Frequency	Percent
Former did not work	112	46.7
Former ran out	15	6.3
Later one was cheaper	9	3.8
Adverse effects of former	44	18.3
Others	25	10.4
NA	35	14.6
Total	240	100.0

## DISCUSSION

Self-medication is self-consumption of drugs for the treatment of illness without seeking advice from a physician. In a country like Pakistan, with weak law enforcing systems, effective and safe use of medicines cannot be guaranteed. One can understand the utilization of drugs by those with no knowledge of medicine but the picture gets worsened when it comes to the most educated population of a country with complete awareness. The purpose of this study was to assess the prevalence of self-medication with antibiotics among third year medical students.

In this study frequency of self-medication with antibiotics among medical students was 85% which is quite near to the study conducted by Aslam M et al in Karachi<sup>11</sup>, while variable prevalence rates are reported by diverse studies showing 70% prevalence in Ghana<sup>4</sup>, 53% in Nigeria<sup>11</sup> and 71% in India<sup>12</sup>. Prevalence results may vary from country to country due to variable demographic features, different socioeconomic conditions and methodologies. Poor restrictions on the sale of antibiotics in Pakistan has led to easy accessibility to antibiotics which is one of the major reason for high prevalence of self-medication and the

current study demonstrated that “convenience” was the main reason for self-medication in 56% of students other factors being ignorance, lack of time and cost saving. This finding was consistent with the work done by Bennadi.<sup>13</sup> In our study sore throat was the most common reason for the use of antibiotics due to geographical conditions and weather differences in this area which is supported by a study with comparable objectives conducted in Nepal G<sup>14</sup> however contrasting results were seen in a Nigerian study where diarrhea was the major reason for the use of antibiotics<sup>11</sup>. In our study previous experience with antibiotic for treating similar illness was the major reason of antibiotic selection which was also mentioned in a study in Ethiopia.<sup>15</sup> In a recent study information of medicine was acquired by studying package inserts in 63% of nursing students<sup>16</sup> which is in agreement with our study. Various analysts<sup>17,18</sup> revealed that respondents switched antibiotic during the treatment because it was found ineffective. The present study was in concordance with these studies. When asked about the discontinuation of medicine 40% students stopped taking antibiotic when symptoms disappeared which is analogous with the findings of another study where 28% discontinued antibiotic when symptoms disappeared<sup>19</sup>. As self-medication is not a justifiable act, our students (58%) regarded it as a harmful act which is in agreement with a study in Karachi where it was not acceptable.<sup>19</sup>

## CONCLUSION

This present study demonstrated the high use of antibiotics among third year medical students. Controlling the usage of antibiotics is of utmost significance not only among the general population but also among the health providers. Awareness about the outcome of irrational use of antibiotics in the form of awareness programs must be stressed especially about antimicrobial resistance to avoid imminent future medical disaster. Government should make efforts to discourage this practice as much as possible by making strong polices regarding dispensing of antibiotics.

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# Impact of Cough Etiquettes in Compliance with Preventive Measures from Airborne Disease: A Cross-Sectional Study among Symptomatic Respiratory Patients

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## ABSTRACT

**Objective:** To evaluate the impact of knowledge regarding cough etiquettes among the symptomatic respiratory patients as a preventive measure from airborne disease.

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

**Place and Duration of Study:** This study was conducted at the Al-Tibri Medical College between the duration of December 2019 to February 2020.

**Materials and Methods:** A total of 200 admitted and non-admitted respiratory symptomatic patients of both genders with the age of 18 years and above were included in the study through a non-probability convenience sampling technique after taking ethical approval from concerned authorities. The researcher filled a valid questionnaire after taken verbal consent from the patients. The data were evaluated in the form of frequency and percentage through SPSS version 22.0.

**Results:** 100% of patient's responses the coughing, sneezing, and spitting are the source of transmission. The majority of the respondent knew the preventive method and media was the principal source of information. The number of patients was unaware of respiratory hygiene and cough etiquette. To some extent, they practice cough etiquettes in their daily lives while they cannot practice these measures due to insufficient knowledge and resources.

**Conclusion:** According to the current requirement of health sensibility among the community due to running pandemic situations of the coronavirus worldwide, the study revealed the hidden aspects of community orientation regarding the prevention form air born disease. Following the study results, they need proper education about respiratory hygiene, and by adopting which measures they can incorporate the appropriate care and cope with any health situation.

**Key Words:** Cough etiquettes, coronavirus, air-borne disease, preventive measures

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## INTRODUCTION

Infection control is essential for all healthcare workers working within a hospital setting, as the risk of cross-infection is always present.

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If proper guidelines not followed may lead to the transmission of various diseases. Airborne transmission is also widespread as infectious particles have a high susceptibility to spreading through droplets and aerosol transmission<sup>1</sup>. New students of medical sciences must be aware of airborne infection control and its transmission as they are initially at a higher risk of becoming infected from various airborne infections<sup>2</sup>. Students working in clinical settings must be aware of good hand hygiene. They must follow measures put in place by multiple organizations such as the CDC regarding infection control. Proper use of medical equipment for protecting students and medical workers is necessary and must be available at all times to be used by them. This equipment which includes gloves, surgical masks gowns, and more required for the protection of the skin, eyes, and the face of students, so that airborne droplets even if spread cannot infect the students, this also prevents the students from contacting various pathogens on their clothing which they can take home to their family and friends and risk even more

cross-contamination. Students must also be aware of how airborne infection and spread and how they can prevent it from spreading<sup>3</sup>. Constant use of alcoholic sanitizers before and after the treatment of patients and upon using the equipment must be carried out to prevent cross-infection. It is also crucial that there is the implementation of proper cough etiquettes in hospital settings in order to prevent cross infections to patients or other fellow students or health care workers. This study is carried out among clinical sciences students to check how much they are aware and compliant with airborne infection control and to assess if they require further education on following and maintaining proper infection control guidelines<sup>4</sup>.

**MATERIALS AND METHODS**

A cross-sectional study was done at Al-Tibri Medical College after taken ethical approval from the authorized committee of the concerned hospital. The patients were selected between the duration of December 2019 to February 2020 from the outpatient department. The sample was collected based on non-probability convenient sampling, and a well-adopted questionnaire was used for data collection. After taken verbal consent, both genders were included with an age group of 18 and above. The duty doctor filled the questionnaire according to patient response. The questionnaires were used to assess the knowledge of airborne infection control and the compliance of those patients who are respondents. Data entry was then carried out on MS Excel, and the entered data was then analyzed using SPSS version 21.0. The frequency and percentage of the patient's answers based on the questionnaire were tabulated.

**RESULTS**

Out of 200 numbers of patients, males were 95(47.5%), and females were 105(52.5%). Mean age of male was 42.5 ± 0.32 and female was 38.4 ± 1.23. Table 1 shows knowledge of the patients regarding cough etiquettes as a preventive measure from airborne infection.

Table 2 shows compliance of patients towards use of preventive maneuvers towards airborne infection spread.

**Table No.1: Frequency and Percentage of respondent regarding awareness of cough etiquettes**

Awareness regarding cough Etiquettes	Reactions	Frequency & Percentage
Mode of transmission	Through coughing, spitting & sneezing	200(100%)
	Direct contact	119(59.5%)
	Through blood	81(40.5%)

Preventive methods used to avoid transmission	Cover the month during coughing	124(62.0%)
	Face mask	124(62%)
	Don't come in contact with others	30(15.0%)
	Avoid spitting	76(38.0%)
	others	46(23.0%)
Do you have any idea about cough etiquettes?	Yes	42(21.0%)
	No	158(79.0%)
What is your main source of information?	By Physicians	53(26.8%)
	Through paramedics	12(6.0%)
	Friends, neighbors & family	27(13.5%)
	Television, social media & internet	95(47.5%)
	others	11(5.5%)
Can you explain respiratory hygiene?	Correct reply	30(15.0%)
	Incorrect reply	170(85.0%)
Can you explain hand hygiene?	Correct reply	69(34.5%)
	Incorrect reply	131(65.5%)
In your opinion cough etiquettes can help to prevent the transmission of infection?	Correct reply	154(77.0%)
	Incorrect reply	46(23.0%)

**Table No.2: Shows Compliance of preventive maneuvers**

Application of cough etiquettes	Reactions	Frequency & Percentage
Do you practicing the cough etiquettes during daily life?	Yes	172(86.0%)
	No	28(14.0%)
Which one of the following Preventive methods you are using to avoid the transmission?	Cover the month during coughing with hand	138(69.0%)
	Cover the month during coughing with handkerchief/tissue	29(14.5%)
	Face mask	19(9.5%)
	Avoid spitting & usually used dustbin	14(7.0%)
	others	0(0%)
How often you practice these measures while coughing?	Always	82(41%)
	Occasionally	118(59.0%)

What are the reasons behind the non-compliance	Unawareness	125(62.5%)
	Severity of symptoms	33(16.5%)
	Inaccessibility of tissues/ handkerchief	24(12.0%)
	No such use for such compliance	7(3.5%)
	others	11(5.5%)
Are you habitual for hand washing after an episode of coughing and sneezing?	Always	68(34.0%)
	Occasionally	132(66.0%)
How frequent you are used to for such measures?	Always	68(34.0%)
	Occasionally	132(66.0%)
Which one of the following are used to for hand hygiene?	Use water	39(19.5%)
	Use water and soap	76(38.0%)
	Sanitizers and others disinfectants	85(42.5%)
What the reasons behind the non-compliance of preventive measures	Unawareness	109(54.5%)
	Inaccessibility of water, soap or sanitizers	67(33.5%)
	Others	24(12.0%)

## DISCUSSION

By the requirement of the current situation of pandemic worldwide, this study will help health professionals and researchers to encourage the community-based information program for their awareness about the preventive measures regarding cough etiquette. The results revealed the role of preventive measures that minimize the chance of disease transmission. Covering of nose and mouth can cover the chance of transmission from person to person and in the surrounding environment. They established the requirement of a modified maneuver that can effectively stop the air born infection transmission. Similar in the present study, they establishing the facts regarding awareness of defensive maneuvers that might help control the spread of infectious disease among the population. The fact is to educate the community and facilitate the population<sup>5</sup>. One of the study results established the evidence regarding the perception of university students regarding preventive procedures to control the transmission of the influenza virus. A maximum number of the participants showed desired knowledge and compliance regarding precautions and their application in their daily life to prevent the transmission of influenza virus. They mentioned the barriers like the availability of resources that make it challenging to acquire the precautionary measures in their daily lives. Another fact is social awareness and spread information

about preventive measures through media resources and internet pages. Similar to the study, the patients are facing similar barriers like resources and inadequate knowledge regarding respiratory and hand hygiene. They get maximum information through television and internet resources, the proper guidelines and media reminders with the government policies and socialization will encourage the population to adopt the precautionary maneuver<sup>6</sup>. The study mentions the importance of making new preventive maneuvers as per requirement for the community to control the airborne infections.

Meanwhile, they concluded the effectiveness of cough etiquettes that are essentials along with the applications of preventive methods. In the present study, cough etiquettes' knowledge and compliance are major contributing factors in controlling the spread of infectious diseases<sup>7</sup>. The advance study showed the significance of ventilation in houses and workplaces as a preventive method form airborne diseases with proper incorporation of respiratory hygiene and all preventive methods that should be a part of daily life. Similar in the recent study, they ensure patients' knowledge and attitude regarding all essential etiquettes required for the control of the spread of infections<sup>8-9</sup>. According to the research, the masks and cough etiquettes are the best methods of prevention from air-born disease; the results concluded that masks' usage was a preferred method to take precaution from aerosol dispersal in cases of pneumonia. The use of a surgical mask is easy to apply and effectively prevent the aerosol dispersal in air and reduce environmental contamination. Instead of cough etiquette, the wearing of a mask is an easy way for prevention. As per our study results, the cough etiquettes and use of mask both measures incorporate simultaneously as a precautionary procedure<sup>11-12</sup>. Following the study of Bangladesh, they evaluate the perception of respiratory hygiene among the urban and rural populations, including data of 907 participants. The majority of the respondents declared their knowledge below the level, and the community<sup>4-12-13</sup> requires low-cost preventive maneuvers required on an essential basis in both regions of the community and awareness programs from health providers, similar in present study essential programs. In another research subject, the 190 students evaluated their attitude towards cough etiquettes for the prevention of air droplet infection. The percentage of the correct answer was about 61.5%. The low level of information declared the current necessity for establishing the health education program, which would be the prior responsibility of stalk holders. Similar to this study, the patients showed an adequate level of knowledge while, on the other hand, they had a low level of application. They uncover community-based facts about health care education<sup>14-15-16</sup>.

## CONCLUSION

According to the current requirement of health sensibility among the community due to running pandemic situations of the coronavirus worldwide, the study revealed the hidden aspects of community orientation regarding the prevention form air born disease. Following the study results, they need proper education about respiratory hygiene, and by adopting which measures they can incorporate the appropriate care and cope with any health situation.

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# Preventative Role of Vitamin C and Naproxen in Alcohol-Induced Liver Toxicity on the Basis of Gross Parameters: A Comparative Study in Rat Model

Role of Vitamin C and Naproxen in Alcohol-Induced Liver Toxicity

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## ABSTRACT

**Objective:** To evaluate the preventative role of Vitamin C and Naproxen in Alcohol-induced liver toxicity by evaluating the gross parameters in albino rats.

**Study Design:** Experimental Study

**Place and Duration of Study:** This study was conducted at the Anatomy Department of Al-Tibri Medical College and hospital, Isra University Karachi Campus from Jan 2018 to Nov 2018.

**Materials and Methods:** 60 albino rats with equal gender distribution were selected based on the probability random sampling technique and placed in three groups of 20 again with an equal gender distribution. Group A was given only given purified Ethanol for 10 days and served as our positive control group, Group B was given Vitamin C and Naproxen Prophylaxis for 7 days after which they were intoxicated with Ethanol for 10 days, and Group C was simultaneously Administered Vitamin C, Naproxen, and Ethanol for 10 days. The initial body weight and final body weight, along with the absolute and relative liver weight of all the test subjects were recorded, and data analysis was conducted using SPSS 21.0 with P-Value  $\leq 0.05$  considered to be Statistically Significant.

**Results:** Group A animals experienced a weight loss; Group B did not experience a substantial weight loss, while Group C experienced a weight gain. No significant difference in body weight was seen between the three groups; however, there were significant differences in absolute and relative liver weight between all three groups. Group A rats experienced an increase in body weight, whereas the Weight of the liver in Group C animals remained constant.

**Conclusion:** The antioxidative and anti-inflammatory effects of Vitamin C and Naproxen demonstrated hepatoprotective effects on the liver, protecting it from alcohol-induced liver injury.

**Keywords:** Naproxen, Prophylaxis, liver toxicity

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## INTRODUCTION

Alcohol is a widely consumed beverage around the world. Furthermore, it is also used in the preparation of different medications apart from being a part of many people's diets globally. Although alcohol is widely consumed in all parts of the world, its consumption has been shown to be associated with various health outcomes<sup>(1,2)</sup>.

Alcohol usage is a global issue, with estimates indicating it to be the world's third-largest risk factor, causing 60 different injuries and diseases. It is said that the chronic harmful use of alcohol results in nearly 2.5 million deaths annually, with most of them due to Alcohol liver disease (ALD)<sup>(3)</sup>. Alcohol represents the most common cause of chronic liver disease in most of the industrialized countries, after hepatitis C<sup>(4)</sup>. Furthermore, obesity, female sex, genetic factors, and smoking can further module the host susceptibility in developing ALD<sup>(5)</sup>. The development of reactive oxygen species leading to oxidative stress is the primary pathogenesis associated with ALD<sup>(6)</sup>. Moreover, Link has also been suggested when it comes to inflammation and hepatic steatosis, contributing to alcohol liver disease<sup>(7)</sup>. Vitamin C is an essential medicine listed by the World Health Organization and is known to be one of the most effective antioxidant agents available at our disposal<sup>(8)</sup>. Studies have shown that vitamin c, using its antioxidant effects, has helped in protecting the liver from oxidative stresses<sup>(9, 10)</sup>. At the same time, Naproxen is a member of non-steroidal

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anti-inflammatory drugs and is used for treating pain and inflammatory conditions. Naproxen inhibits prostaglandin synthesis by inhibiting the prostaglandin G/H synthase or COX enzyme<sup>(1)</sup>. As alcohol is a widely used medication and causes liver toxicity, we conducted a study to see if there is any preventative effect of Vitamin C along with the commonly used medication Naproxen in Alcohol liver toxicity.

## MATERIALS AND METHODS

The interventional study was conducted by the Anatomy Department of Al-Tibri Medical College and hospital, Isra University Karachi Campus from Jan 2018 to Nov 2018 after taking an ethical approval of concerned institute. Total 60 locally bred and healthy male albino rats weighing 180-200 grams were selected based on a random sampling technique. The animals were kept in plastic cages, with each cage occupying 5 rats. The cages were kept under controlled atmospheric temperature (30°C) with regular 12:12 hours light-dark intervals. All of the rats selected for the study were given a normal rat diet and water ad libitum. We purchased Ethanol, 500 mg Naproxen tablet, and 500mg vitamin C tablets from the pharmacy store of the hospital. The selected 60 albino rats were then divided into 3 groups on the bases of therapy, with each group comprising of 20 rats.

**Group A:** Served as our positive control group and received purified Ethanol at 8ml/kg body weight for duration of 10 days.

**Group B:** we prophylactically gave vitamin C and Naproxen Sodium to this group at a dose of 100mg/kg and 5mg/kg, respectively for 7 days, after which they were intoxicated with Ethanol for 10 days.

**Group C:** was simultaneously given Vitamin C, Naproxen, as well as purified Ethanol at doses 100mg/kg, 5mg/kg, and 8ml/kg, respectively, for duration of 10 days.

Rats were administered vitamin C and Naproxen Sodium between 10 am, and 11 am, while being kept on no food overnight. Ethanol was given to at one-hour interval through gastric gavage. All the rats were weighed using an electronic balance before the study's commencement, and repeated weight measurements were taken every 3 days. Once the study concluded, the rats were weighed once again for the final time before being euthanized under anesthesia. A midline incision was conducted to expose the thoracolumbar organs so that careful excision of the liver can take place. We then further calculated the absolute Weight of the liver once again and calculated the Relative Weight of the liver using the following formula:

$$\text{Relative Weight of the liver} = \frac{\text{Weight of the liver (gm)} \times 100}{\text{Final body weight of liver (gm)}}$$

Once we had all the gross parameters (body weight, absolute Weight of liver, relative Weight of liver) data were analyzed using SPSS Version 21.0. All variables were expressed as mean  $\pm$  standard error to judge the differences among the groups. Statistical analysis was done using ANOVA with posthoc Tukey's test and secondly student's test. The P-value of  $\leq 0.05$  was set to be considered statistically significant.

## RESULTS

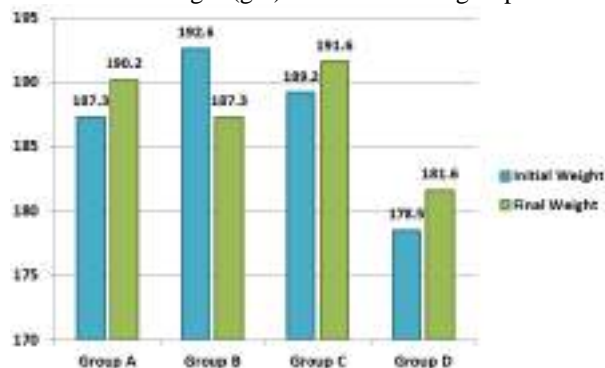
**Figure 1:** shows Mean initial and final body weight in grams among different therapeutic groups

**Table 1:** shows statistical analysis of the difference in body weight within the same group

**Figure 2:** shows Mean weight of Liver in grams among different therapeutic groups

**Table 2:** shows the statistical difference in absolute liver weight of rats (gm) of the different groups

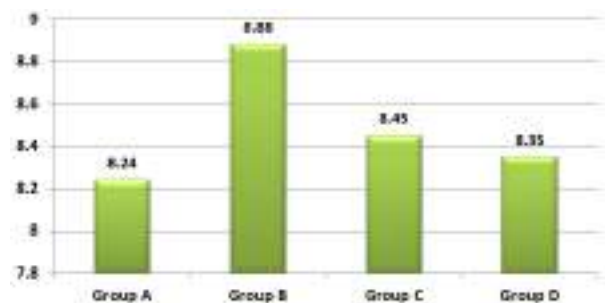
**Table 3:** shows statistical analysis of the difference in relative liver weight (gm) of the different groups.



**Figure No.1:** Shows Mean initial and final body weight in grams among different therapeutic groups

**Table No.1:** Shows Comparative difference in body weight within the group

Comparison among groups	Difference ( in grams)	P-value
final wt.vs initial wt. in group A	-2.47 $\pm$ 2.21	0.272
final wt.vs initial wt. in group B	-1.86 $\pm$ 0.46	0.001*
final wt.vs initial wt. in group C	1.34 $\pm$ 0.15	0.001*



**Figure No.2:** Shows Mean Liver weight (gm) among different therapeutic groups

**Table No. 2: Shows the Mean difference in the absolute liver weight of rats (grams) of the different groups.**

Comparison	Parameters	Difference of mean	P-value
A vs. B	Positive control vs. Vitamin C & Naproxen (prophylactic)	0.27	<0.007*
A vs. C	Positive control vs. Vitamin C, Naproxen & Ethanol (simultaneous)	1.53	<0.001*
B vs. C	Vitamin C & Naproxen (prophylactic) vs. Naproxen & ethanol (simultaneous)	1.25	<0.001*

P<0.05 considered significant using Tukey's HSD test

**Table No.3: Shows statistical analysis of the difference in relative liver weight (in grams) of the different groups**

Comparison	Statistical parameters	Difference of mean	P-value
A vs. B	Positive control vs. Vitamin C & Naproxen (prophylactic)	0.26	<0.006*
A vs. C	Positive control vs. Vitamin C, Naproxen & Ethanol (simultaneous)	0.96	<0.002*
B vs. C	Vitamin C & Naproxen (prophylactic) vs. Naproxen & ethanol (simultaneous)	0.71	<0.001*

P<0.05 considered significant using Tukey's HSD test

## DISCUSSION

The liver is the metabolic house of our body. It is crucial that it is protected and not overloaded with toxins that may damage it consistently, thereby causing impairment in detoxification, metabolism, and production of essential body proteins. Alcohol is notorious for damaging the liver and causing alcoholic hepatitis and fatty liver disease in individuals with chronic alcohol consumption. Treatment is usually not comprehensive, and in most scenarios, the best probable outcome is to perform a liver transplant. The drugs used in our study may prove to have a beneficial effect on the liver. The oxidative stress caused by the

free radical can induce hepatotoxicity; however, the potent antioxidant effect of vitamin C produces a hepatoprotective effect on the liver.

Similarly, Naproxen is also an essential medication used to reduce liver inflammation caused due to alcohol. It is also a benefit that Naproxen has very minimal side effects can be a very safe medication to prescribe. We used both Vitamin C and Naproxen and assessed if they may have any protective action when it came to alcohol-induced liver toxicity. To assess their positive impact, we studied the gross parameters of rats. In Group A animals, we saw a reduction in the final weight of the rats, a finding very similar to what Rao et al. 2009 also showed in this study on gut barrier dysfunction and by Haouas et al. 2014 when studying the hepatotoxic effects of lead<sup>10,11</sup>. The cause of the weight loss in Group A can be linked to the inflammation due to alcohol intake. The prophylactic activity of naproxen and Vitamin C prevented any substantial weight gain in Group B. However, while evaluating Group C rats; we noticed a weight gain, similar to what Osfor et al. 2010 that went onto report an increase in body weight in copper and lead-induced hepatotoxicity<sup>12</sup>.

We used absolute and relative liver weights to assess liver weight. Relative liver weight calculation is necessary for the comparison of the findings in our study. Group A showed an increase in liver Weight. Similar finding were seen in another study conducted in 1993<sup>13</sup>. The increase in Weight of the liver can be associated with hypertrophy of the cells rather than hyperplasia of these hepatocytes<sup>14</sup>. Group B animals showed a reduction in both absolute and relative liver weight. This has to do with the anti-inflammatory effects of Naproxen as well as the antioxidative effect of vitamin C. Another study conducted, showed that the antioxidant and anti-inflammatory capacity bearing substance such as maltol caused reduction in the liver weight as well<sup>15</sup>. Group C showed the most successful results, as the liver weight was almost healthy. This finding is similar to what was seen in the study conducted by Soyly et al 2006<sup>15</sup>. Antioxidants can have a very beneficial effect on the liver, and so can anti-inflammatory effects. This is what was seen in our study and can be supported by the study done by Zhao et al. 2016 in which he showed how the genistein and puerarin could alleviate alcohol liver injury through potential antioxidants and anti-inflammatory effects<sup>16</sup>. Overall the best results can be seen in Group C as both the agents were infused alongside alcohol in rats; therefore, the group displayed a more beneficial outcome. The best results could be interpreted from Group C rats, as during intoxication with Ethanol, there was also the administration of both Vitamin C and Naproxen, which helped provide a hepatoprotective effect on the organ. Group B, because of the prophylactic administration, also showed some positive

results. However, they were not as better as compared to what was seen in Group C animals.

We only studied and compared the gross parameters; more parameters need addressing to attain a better idea of how Vitamin C and Naproxen can help protect the liver. Future studies can be done on biochemical analysis and histological assessment to see how Vitamin C and Naproxen can attenuate the harmful effects of alcohol on the liver.

## CONCLUSION

Our study showed that both Group B and C in which Vitamin C and Naproxen showed better results when it came to body weight and liver weight than group A, indicating the protective effects of Vitamin C and Naproxen. This is due to the antioxidant and anti-inflammatory effects of these two agents. However, further studies need to be carrying out and evaluation of other parameters concerning liver such as biochemical and histological is required to see the protective effects of these two agents on the liver.

### 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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# Compare the Outcomes of Intubation Techniques in Nasolacrimal Duct Obstruction among Young Adults

Intubation  
Techniques in  
Nasolacrimal  
Duct Obstruction

Asif Mashood Qazi, Nazia Qidwai, Israr Ahmed Bhutto, Ajmal Khan Penezai,  
Attiya Zehra Rizvi and Umer Kazi

## ABSTRACT

**Objective:** To compare the outcomes of intubation techniques in young adults suffering from nasolacrimal duct obstruction.

**Study Design:** Experimental longitudinal study

**Place and Duration of Study:** This study was conducted at the Ophthalmology Department, Post-Graduate Institute of Al-Ibrahim eye Hospital, Karachi, from May 2018 to November 2019.

**Materials and Methods:** 136 patients aged 20-40 years were selected based on convenience sampling technique and divide into two groups, A in which silicon intubation was carried out, and Group B in which dacrocysto-rhinostomy (DCR) with silicon tube was carried out by the same surgeon. Success rate, recovery, complications, postoperative treatment, regurgitation, and the lacrimal duct's patency were the parameters taken under consideration. Data were analyzed using SPSS, with the independent t-test applied to assess the level of significance.

**Results:** Significant difference (P value  $\leq 0.01$ ) was observed between Group A and B when it came to success rate and recovery. Other parameters such as complications, postoperative treatment, regurgitation, and patency of lacrimal duct were seen less in Group A as compared to Group B.

**Conclusion:** The study concluded that silicon intubation is a better surgical procedure, showing better recovery and success rate and being more cost-effective with minimal trauma

**Key Words:** Silicone Intubation, Dacrocysto-rhinostomy, Nasolacrimal Duct Obstruction

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## INTRODUCTION

Nasolacrimal duct (NLD) obstruction is a congenital disorder and an acquired disorder in the pediatric population and adult age groups causing a failure in the nasolacrimal duct drainage system. It presents clinically in the form of an overflow of tears, also termed as "Epiphora" <sup>(1)</sup>. The Pathogenesis of NLD obstruction has to do with mechanical obstruction distal to the NLD near Hasner's valve, where the structure enters the nose <sup>(2)</sup>. Evidence shows that the main culprit causing obstruction is a pathological persistence of the membrane at the distal portion of the duct system, bone anomalies, stenosis of the inferior meatus leading to a narrowing of the lacrimal drainage system <sup>(3, 4)</sup>.

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Other factors causing NLD include infections, hormonal factors, vascular congestion, tear factors, autonomic dysregulation, gastroesophageal reflux, topical drugs, allergies, and eye makeups <sup>(5-8)</sup>. Treatment of this condition is through intubation. The silicon tube presented by Keth is used in NLD as an alternative to other commonly used skills <sup>(9)</sup>. This procedure is also used for NLD stenosis even in congenital based conditions and has a reported achievement rate of tube intubation of up to 83% <sup>(10)</sup>. Most applied silicon techniques are Crawford bicanalicular intubation, Quickert-Dryde technique, or silicon intubation using Nunchaku-style. The bicanalicular silicon is well applied for treatment with an unestablished fact regarding its long term efficacy in adult-based obstruction. Studies have hinted that double silicon intubation has better outcomes in adult-based groups if there is proper follow up visits <sup>(11)</sup>. Studies are sparse on comparing outcomes of intubation techniques in adults with NLD. Therefore we conducted a study to assess and compare the outcome of intubation techniques in young adults.

## MATERIALS AND METHODS

The experimental longitudinal study took place at the post-graduate institute of Al-Ibrahim eye Hospital,

Karachi, from May 2018 to November 2019, in which 100 patients aged between 20-40 were selected based on convenience sampling. Ethical approval from the institutional review committee of Al-Tibri Medical College and Hospital was taken before the study's commencement. All the patients were from the province of Sindh, Pakistan. The patients were divided into two groups, A and B. The patients signed a written consent and were included in the study based on positive syringing test and clinical examination. Group A was applied intubation of silicon tube alone, whereas Group B was applied dacrocysto-rhinostomy (DCR) to treat NLD block. Each group had 50 participants. Patients aged greater than 40 or less than 20 years, recurrent cases, who had a traumatic history, patients with symptoms of secondary to underlying pathology, glaucoma, eye lid disorders and secondary causes of NLD block due to facial fractures were all excluded from the study. Jones type 2 dye test was performed under local anesthesia to identify type of obstruction in patients.

**Surgical techniques performed in this study:** Group A Silicon tube intubation procedure for the treatment of blockage was carried out. This procedure is a less invasive and simple. In Group B, a different surgical technique, DCR, was performed under local anesthesia. However, this procedure is an invasive method with the technique also being more prolonged and complicated. Postoperatively, Group A patients were kept on oral antibiotics and pain management for a week. Topical antibiotics in eye drops were given quarterly for one month and continued accordingly for six months onwards. The tube was then removed at the 6<sup>th</sup> month of follow up. Follow-ups were carried out at one week and the 6<sup>th</sup> month postoperatively. Group B patients were kept under observation for one day to overcome any postoperative trauma; the patients were on oral antibiotics for ten days. Anti-inflammatory medications were given for ten days, and topical eye drops were maintained up to six<sup>th</sup> months. Follow-ups were carried out on the 10<sup>th</sup> day for skin sutures removal after surgery and then first, third, and sixth month to remove tubes.

**Silicon Tube intubation:** Silicon Tube intubation was performed on patients of Group A with NLD block. The procedure was more straightforward and less invasive than DCR surgery. All the patients were under local anesthesia, as the procedure is less traumatic and well tolerated by the patients. A double ended punctum dilator was used to dilate both the superior and inferior punctal openings. The bowman probe was passed vertically 2mm and then horizontally through the canalicular system and directed inferiomedially through until a distinct bony feeling was encountered in the sac area. The bowman probe size ranged from 0.7mm to 1.1mm. The probe was passed down the nasolacrimal duct to enter the nasal cavity under the inferior

turbinate and spring test was performed to avoid false passage. A fine silicone tube was attached to the malleable metal rod and then introduced through both the upper and lower punctal openings and canaliculi to bring out using a Crawford hook so that the bowman probe can be engaged and retrieve both ends of tube from nostrils. After this, nasal packing with gauze dripping in the antibiotic ointment was applied and removed after an hour. Postoperatively all patients were kept for 2 hours and then were started on antibiotics, eye drops, and anti-inflammatory medications for a week. Follow up were kept on the first week, and then the third and sixth months. The silicon tubes were removed in the outpatient department under topical anesthesia.

**Dacrocysto-rhinostomy (DCR) Procedure:** In Group B, a DCR procedure with intubation of silicon tube was performed. All the patients in this study were also under the influence of local anesthesia. A vertical superficial skin incision was made 10mm medial to the inner canthus area with a knife, thereby securing the medial canthal tendon. Lacrimal sac was exposed and incised in H shaped manner and attached to an opening created in the nasal mucosa after rhinostomy. Once suturing of posterior flap done A silicon tube attached to a flexible metal body passed from both the superior and inferior puncti, Canaliculitis and retrieve tube after crossing new opening from nostril. Then the anterior flaps were sutured in place along with the skin. The tube remained inside the nostril devoid of adhesive with the nasal wall. General nasal packing gauze sopping with antibiotic ointment applied with pressure bandaging was done.

Postoperative therapy was started with antibiotics, topical steroids, analgesics, eye ointments, and drops, mostly quarterly. Sutures were removed after 10th day under topical anesthesia. Follow-up was sustained for six months for the assessment of abnormal findings, complications, and patency.

We studied the surgical success rate, frequency of complications postoperatively, treatment, regurgitation, and patency of the lacrimal duct in both the groups. Data were analyzed using SPSS Version 20.0 through percentage and frequency, with the Chi-square being applied to find out the P-value. The P-value was set at  $\leq 0.05$ .

## RESULTS

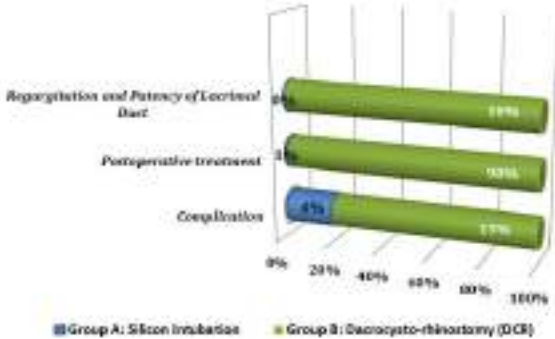
The mean age of Group A patients was  $34.5 \pm 5.8$ , and the Mean age of Group B patients  $32.5 \pm 4.65$ .

Table 1: Shows frequency and percentage of patients' recovery within six months in Group A and B. Significant Difference (P-Value  $\leq 0.05$ ) was seen between the two groups.

Figure 1.1: Shows Percentage of Post-operative Assessment among Different Groups

**Table No.1: Frequency and percentage of overall success rate within six months among different Groups**

Overall Rate of Success	Group A	Group B	P-value
Full	41(82%)	32(64%)	≤0.001
Partial	7(14%)	13(26%)	
Nil	2(4%)	5(10%)	
Total	50(100%)	50(100%)	



**Figure 1.1: Shows Percentage of Post-operative Assessment among Different Groups**

**DISCUSSION**

The study was conducted and designed to evaluate how successful Silicon tube intubation and DCR with Silicon tube have in adult groups with NLD obstruction. According to our experience, the procedure's success rate is negatively correlated with the age of the patient, with previous studies showing no evidence regarding age dependent success rate.

Group A, in which silicon intubation took place, had a better six-month recovery and an overall success rate than Group B in which DCR was carried out. Group B patients suffered more Complications, postoperative treatment, regurgitation, and patency of the lacrimal duct. Common complications of NLD obstruction surgery include intranasal granulation tissue, adhesion, infection, hemorrhage, and other complications related to silicon tube<sup>(12)</sup>.

Although our study showed that silicon intubation has a better success rate, studies have found no statistically significant advantage over either of the two surgical techniques<sup>(13,14)</sup>. However, several prospective comparative studies have now been published that indicate that silicone intubation with DCR has led to a higher success rate than DCR without intubation<sup>(15, 16)</sup>. A study showed that silicon intubation prevented the ostium's closure, thereby improving the success rate<sup>(17)</sup>. Similar findings can be seen in our study.

Our study showed that Silicon intubation gave a higher rate of success. This was also seen in another study in which it was concluded that double silicone intubation is a highly effective minimally invasive technique for treating partial lacrimal system obstruction<sup>(18)</sup>.

Emphasis must also be placed that surgical procedures, complications, success rate, and even recovery can alter with the age at which treatment is sought. Our study had participants aged between 20-40. Further studies can be done on different groups to see how age plays a part. A randomized control trial was done in a study where both of these surgical procedures were carried out on patients aged 39-92 years, which was found to have no significant difference among the two groups<sup>(19)</sup>. The past study shows us that DCR and Silicon intubation both are safe surgical procedures in advanced age groups when treating distal and canalicular obstruction. However, there are slightly more follow ups, but with a higher success rate<sup>(20)</sup>.

**CONCLUSION**

Silicon intubation is a more effective and cost-effective technique with lower complications, better recovery, and a higher success rate than DCR.

**Author's Contribution:**

- Concept & Design of Study: Asif Mashood Qazi
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- Data Analysis: Ajmal Khan Penezai, Attiya Zehra Rizvi, Umer Kazi
- Revisiting Critically: Asif Mashood Qazi, Nazia Qidwai
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Restorative Effect of Thyroxine on Minocycline Induced Thyroid Gland Damage

Naheed Gohar<sup>1</sup>, Imran Ishaque<sup>2</sup> and Sarah Sughra Asghar<sup>1</sup>

Effect of  
Thyroxine on  
Minocycline  
Induced Thyroid  
Gland

## ABSTRACT

**Objective:** To evaluate the effects of thyroxine on minocycline induced thyroid gland in guinea pigs.

**Study Design:** Experimental study

**Place and Duration of Study:** This study was conducted at the anatomy of Basic Medical Sciences Institute (BMSI) of Jinnah Post Graduate Medical Center (JPMC), Karachi, from 1st October to 30th November 2015.

**Materials and Methods:** Thirty healthy, adult male guinea pigs weighing from 450-650 gram were selected. The animals were assigned to groups A, B & C, according to the experimental treatment. Group A was taken as control, group B received 0.02mg/g/day of Minocycline via nasogastric tube once daily, and group C was given same dose of Minocycline as in group B, with 0.5 µg/g/day thyroxine by same route, for the same duration. At end of study period, animals were sacrificed under ether anaesthesia. Blood samples were drawn from heart when animals were still breathing for levels of TSH and thyroid hormones. Thyroid gland was removed and processed. Tissue sections were stained with Mason Fontana stain to observe pigmentation in thyroid glands

**Results:** Serum TSH levels were raised in minocycline receiving group B when compared to control animals, whereas serum thyroid hormone levels were significantly reduced in group C where protection was provided with thyroxine. Marked pigmentation in thyroid tissue sections was observed in group B, although thyroxine had attenuated this effect in tissue sections from thyroid glands of Group C animals.

**Conclusion:** This study highlighted that minocycline caused thyroid gland damage, whereas thyroxine ameliorated this damage on thyroid gland.

**Key Words:** Minocycline, Thyroid gland, Thyroxine, Black pigmentation

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## INTRODUCTION

Minocycline is a member of tetracycline group of antibiotics that exhibits antibacterial and anti-inflammatory outcomes<sup>1</sup>. Due to its high efficiency in controlling infections, it is widely used in dermatologic practice. Despite of its relevant outcome, studies have been reported that minocycline use can induce hyper pigmentation of various body tissues, including the skin, mucosa, teeth, conjunctiva, nail beds, bones and thyroid<sup>2</sup>. Adolescents treated for acne with minocycline also demonstrated thyroid abnormalities ranging from thyroid pigmentation to non-immune mediated thyroid dysfunction<sup>3-5</sup>.

The role of thyroxine in sequestering the development of multiple organs has been observed for a long time. In recent years its involvement in maintaining body homeostasis and tissue regeneration has been extended to many organs like pancreas, liver and kidney.<sup>6,7</sup>

Although there are many studies which evidently established the influence of thyroxine on repair and regeneration of various body tissues,<sup>6-8</sup> however, scarce information is available regarding the role of thyroxine on black thyroid. To further explore the role of thyroxine, the present study investigated the effects of thyroxine on minocycline induced black pigmentation of the thyroid and the serum levels of TSH, T3 and T4 in model animals.

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## MATERIALS AND METHODS

This experimental study was undertaken in the anatomy department of BMSI, JPMC, Karachi, after obtaining ethical approval from ethical review committee of the institute, for 60 days from October-November 2015. Thirty healthy adult male guinea pigs were procured from the institute's animal house. The animals were segregated into three groups on the basis of the experimental treatment. The animals were observed for their food intake and weight gain for one week before the beginning of the study and maintained on 12 hours day and light cycle, to ensure their health. They were provided standard laboratory diet and water ad libitum.

They were weighed, numbered, and placed in propylene cages.

There were 10 animals in each group. Group A animals served as control. They were given standard laboratory diet only. Group B animals were treated with minocycline (Steifel Laboratories Pakistan (Pvt) Ltd, Steifel Laboratories Inc. Coral Gables, FL33134, USA) orally in a dose of 0.02mg/gram body weight/day<sup>9</sup> via nasogastric tube. Group C animals were administered same dose of minocycline as in group B with thyroxine 0.5ug/gm body weight/day (Glaxo Smith Kline Pakistan Ltd, RN 000374, MI 000017 & 000233) orally<sup>10</sup>, also by nasogastric tube.

After completion of the study period (60 days), the animals were sacrificed in a glass container under ether anaesthesia. The incision was made in the skin of neck from chin to sternum, then infrahyoid muscles were retracted to expose thyroid gland, and thoracic viscera were exposed to take blood sample by intra cardiac puncture when the animal was still breathing. 4ml blood was drawn and put in tubes without anticoagulant. The blood was then left for 10 minutes. Serum was obtained by centrifuging it at 4,000 rpm/minute for 10 minutes. It was stored at -20 °C until biochemical analysis was done for estimation of serum TSH, and serum thyroxine (T4), triiodothyronine (T3) levels<sup>11</sup> by ELISA.

Thyroid gland was removed and washed using normal saline. Fixation was done by keeping the tissue in 10% buffered formalin for 24 hours<sup>12</sup>. Tissue was then kept overnight in 70% alcohol. It was then dehydrated in ascending grades of alcohol, starting from 80%, 90% and two changes of absolute alcohol (100%) for one hour each and cleared in two changes of xylene for one hour for each. Infiltration was done with paraffin at 58°C in laboratory oven and paraffin block was made with paraffin embedding system<sup>12</sup>. Paraffin block was cut into 4 micron thick sections on rotary microtome and immersed in water bath at 42. They were taken on albumenized glass slides. Tissue sections were fixed on hot plate at 32°C and stained with Masson Fontana<sup>12</sup>.

Twenty observations were taken for each animal under 40X and 100X objective to observe the presence of pigmentation as sparse, densely packed or scattered in control and treated animals.

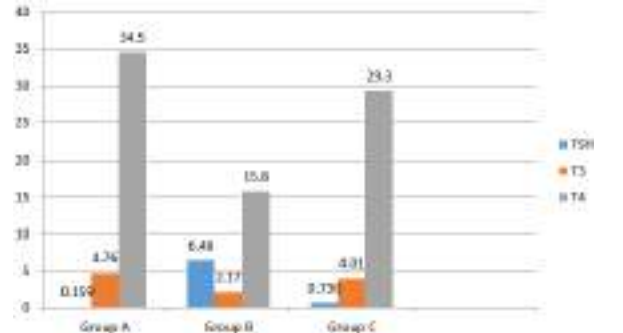
The statistical significance of differences in serum TSH and T3 & T4 levels, between control with minocycline and minocycline plus thyroxine treated guinea pigs was assessed by student 't' test. The difference was considered statistically significant if the 'P' value was equal to or less than 0.05. Computer software SPSS version 20 was used for calculations.

## RESULTS

Serum thyroid stimulating hormone (TSH) levels ( $\mu\text{l/ml}$ ) of all animals were estimated. The mean values of serum TSH in group A, group B and group C was

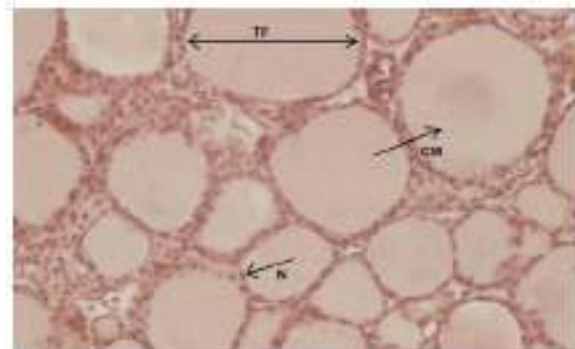
$0.159 \pm 0.01$ ,  $6.48 \pm 0.26$  and  $0.736 \pm 0.05$  respectively (Table-1). There was a highly significant increase ( $P < 0.001$ ) in hormone level in group B when compared with group A animals. The serum levels of TSH decreased significantly ( $P < 0.01$ ) in group C animals in comparison to group B animals.

The levels of serum tri-iodothyronine (T3) and serum thyroxine (T4) were also determined in all animals for evaluation of thyroid function. The mean values of serum tri-iodothyronine (T3) and thyroxine (T4) levels in group A, B and C were  $4.76 \pm 0.31$  (ng/dl) &  $34.5 \pm 2.34$   $\mu\text{g/dl}$ ,  $2.17 \pm 0.15$  (ng/dl) &  $15.8 \pm 1.23$   $\mu\text{g/dl}$  and  $4.01 \pm 0.28$  (ng/dl) &  $29.3 \pm 1.57$   $\mu\text{g/dl}$  respectively (Bar chart-1). The animals of group B revealed a highly significant reduction ( $P < 0.001$ ) in serum levels of both T3 and T4 when compared with control group A animals. When these hormone levels were compared with group C, there was a significant increase ( $P < 0.01$ ) in both serum T3 and T4 levels in group C animals treated with thyroxine and minocycline as compared to minocycline treated group B animals (Table-1).



**Figure No.1: Comparison of serum TSH, T3 and T4 between different groups of guinea pigs**

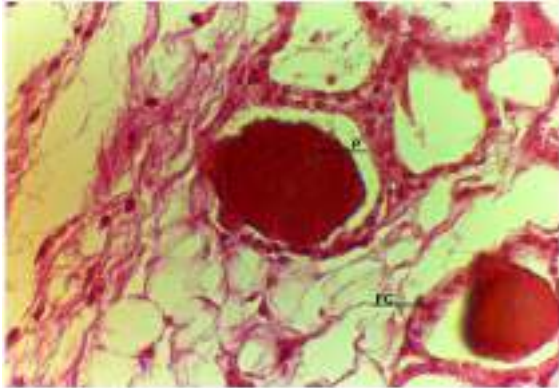
Masson Fontana stained sections of control group A showed regular arrangement of thyroid follicles lined by a low simple cuboidal epithelium. The follicles were filled with colloid. Parafollicular cells were also visible among the follicles, arranged in clusters. There was no pigmentation in the thyroid follicular cells as well as colloid (figure-1)



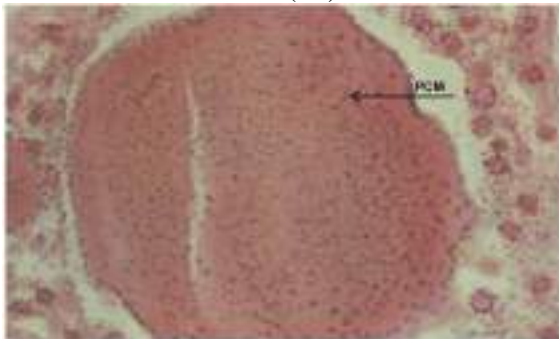
**Figure No.1: Photomicrograph of 4  $\mu\text{m}$  thick Masson Fontana stained section from group A (control) guinea pig showing normal architecture of thyroid follicles (TF) with flattened nuclei (N) and follicles filled with colloid material (CM). X400**



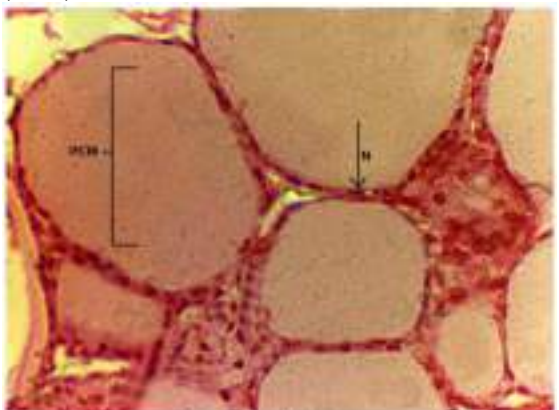
Masson Fontana stained sections of group B animals showed that thyroid follicles were lined with by low simple cuboidal to squamous epithelium, with moderate deposition of black pigments. These pigments were mostly deposited in the follicular cells occupying area above the nucleus, facing the follicular lumen, and also inside the colloid of follicles in dispersed form. This pigment was black in color (figure-2 and 3).



**Figure No.2:** Photomicrograph of 4  $\mu\text{m}$  thick Masson Fontana stained section from minocycline treated group B guinea pig showing black pigments (P) inside the colloid material and follicular cells (FC). X400

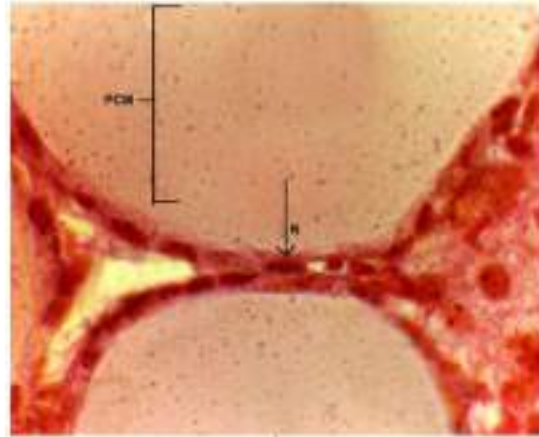


**Figure No.3:** Photomicrograph of 4  $\mu\text{m}$  thick Masson Fontana stained section from minocycline treated group B guinea pig showing black pigments colloid material (PCM). X100



**Figure No.4:** Photomicrograph of 4  $\mu\text{m}$  thick Masson Fontana stained section from minocycline with thyroxine treated group C guinea pig showing thyroid follicles filled with Pigmented colloid material (PCM) and lined with flattened follicular cells with flattened nuclei (N). X400

The Masson Fontana stained thyroid gland sections of group C revealed regular arrangement of thyroid follicles lined by simple squamous epithelium. There was mild pigmentation seen throughout the follicular cells as well as colloid, but the amount of pigment was less as compared to the group B animals (figure-4 & 5).



**Figure No.5:** Photomicrograph of 4  $\mu\text{m}$  thick Masson Fontana stained section from minocycline with thyroxine treated group C guinea pig showing thyroid follicles filled with Pigmented colloid material (PCM) and lined with flattened follicular cells with flattened nuclei (N). X1000

## DISCUSSION

This study was planned to estimate the effects of minocycline on the thyroid gland and to observe the protection provided by thyroxine in the guinea pigs, as minocycline is a commonly used drug especially in cases of resistant acne vulgaris. Different studies on minocycline have proposed that it has strong antithyroid effects possibly by inhibiting the iodination of thyroglobulin and also by inhibiting the coupling of diiodotyrosine residues to form triiodothyronine and thyroxine<sup>13,14</sup>. Understanding the toxic effects of minocycline on thyroid gland and its associated hormonal changes is important in explaining not only the reason of hypothyroidism but also its amelioration. Serum level of TSH was significantly raised in group B animals which were treated with minocycline. However, the levels decreased significantly when thyroxine was added to the treatment in group C animals. According to Hall,<sup>15</sup> the increased thyroid hormone inhibits secretion of TSH by the anterior pituitary gland mainly by a direct effect on the anterior pituitary gland itself. This was also in accordance to Davoren<sup>16</sup> who had shown that decreasing serum levels of TSH indicate adequacy of the dose of thyroxine in hypothyroid patients.

Results of the study highlighted a significant decrease in the levels of T3 and T4 in minocycline treated group B. This was most likely due to the inhibition of iodination of thyroglobulin by minocycline during thyroid hormone synthesis, as was observed by Taurog

et al (1996)<sup>17</sup>. They reported that the patients taking minocycline presented with clinical and laboratory evidence of thyroid hypo-function (decreased serum T4 and increased serum TSH).

The present study demonstrated a significant increase in serum T3 and T4 levels in group C who received minocycline along with thyroxine. Chao et al (2009)<sup>18</sup> stated that the treatment with thyroxine (T4) is likely safer than the treatment with a combination of T4 and T3. Therefore, thyroxine (T4) alone is the most appropriate therapy for patients with hypothyroidism. The data supports results of previous study<sup>11</sup> who demonstrated normalization of T3 and T4 levels in hypothyroid rats when L-thyroxine was added to the treatment regimen.

Masson Fontana stained sections of minocycline treated group B animals showed deposition of black pigment in the apices of the follicular cells and also inside colloid of the follicles in scattered form. This was most likely because of oxidation of minocycline to reactive species by thyroid peroxidase, resulting in formation of dark pigment in the thyroid<sup>19</sup>. Pantanowitz and Tahan (2003) demonstrated that minocycline was accumulated in the follicular epithelial cells as well as colloid in benign and hyperplastic tissue due to the oxidative action of the enzyme thyroid peroxidase on the drug<sup>20</sup>. This finding augments the results of Hecht et al<sup>21</sup> (1999) who observed black and granular pigments in the cytoplasm of epithelial follicular cells, and the pigment was also visible within the lumen of thyroid follicles as black deposits mixed with the colloid. Onyia et al<sup>22</sup> (1996) showed that these granular pigments, in the follicular cells as well as in the colloid were strongly positive by Masson Fontana stain. They were also non-birefringent, and negative by iron stain. Experimental studies on other animals with minocycline also recognized dark brown discoloration of the thyroid gland in rats, dogs, and monkeys after giving the drug for one month to these animals<sup>23</sup> so there could be corresponding rise in pigment formation with long term use of minocycline. Minocycline seemed to enhance the onset of black pigmentation of the thyroid gland.

The present study revealed decreased pigmentation in thyroid glands of group C animals treated with thyroxine along minocycline due to the protective effect by thyroxine. The findings were similar to Bowels<sup>13</sup> (1998) who used ascorbic acid at a dose of 0.1% of the diet in rats in addition to the minocycline for a duration of 6 weeks. This group of rats showed no sign of pigmentation similar to the control, as compared to the group which received minocycline only which demonstrated extensive deposits of black pigment within the thyroid follicles.

## CONCLUSION

In light of the results of the present study, it is concluded that use of minocycline for a period of sixty

days resulted in damage to the thyroid gland as revealed by the elevated levels of serum TSH, and decreased serum T3 and T4, as well as appearance of black pigmentation in the thyroid gland in the guinea pigs of the minocycline treated group. However, these effects were ameliorated to a significant extent by the concomitant use of thyroxine in the experimental animals.

### Author's Contribution:

Concept & Design of Study:	Naheed Gohar
Drafting:	Imran Ishaque
Data Analysis:	Sarah Sughra Asghar, Imran Ishaque
Revisiting Critically:	Naheed Gohar, Imran Ishaque
Final Approval of version:	Naheed Gohar

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

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# Prevalence of Menorrhagia in Young Females

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Anum Imran<sup>1</sup>

## ABSTRACT

**Objective:** To Study the Prevalence of Menorrhagia in young Females

**Study Design:** Retrospective study

**Place and Duration of Study:** This study was conducted at the Imran Idris Teaching Hospital Sialkot and Shahina Jamil Teaching Hospital Abbottabad during Jan 2018 to Feb 2020.

**Materials and Methods:** Four Hundred patients of Menorrhagia in young female were included in the study. Fifty percent patients were taken from Imran Idris Teaching Hospital Sialkot and 50% patients were taken from Shahina Jamil Teaching Hospital Abbottabad. The history, examination and investigations were recorded on designed Performa. The written informed consent was taken before recording the data. The permission of Ethical Committee was taken before collecting the data and Get Publishing in Medical Journal. The data was analyzed for results by SPSS version 10.

**Results:** The mean age was  $19.98 \pm 13$ , adolescents/a adult patients (ratio) was 2:1, patients with mucosal bleeding other than menorrhagia was 17(21.91%), Patients with menorrhagia since menarche (%) was 6 (63.88%), patients having history of treatment for Menorrhagia 49 (66.46%), patients with PBAC score of >100 (%) was 65 (88%), patients with sescrelv Alf101 quAli tv C0)1"4 (%) was 17(7.84%), Mean hemoglobin 102.67:26.4, Mean platelet count (.4109/1) was 2121,88221.013.519, Mean prothrombin time was 12.99:1.26, Mean activated partial thromboplastin time (s) was 28.88±4.81, Mean thrombin time (s) was 15.97:1.26, Mean fibrinogen (g/dt.) was 3.45±1.02, Mean serum rennin (ng/mL) was 14,88:26,87.

The bleeding history and characteristics of the patients with congenital clotting defects was evident.

The p value was significant between Patients with bleeding disorders and Patients without bleeding disorders in case of Nose bleeding and Easy bruising  $p < 0.001$  and comparison was non-significant in rest of the case.

**Conclusion:** It was concluded from the study that now a days it was common problem that young ladies have complaint of Menorrhagia.

**Key Words:** Prevalence, Menorrhagia, Young Females

**Citation of article:** Siddique S, Razaq Q, Azhar F, Tariq A, Imran U, Imran A. Prevalence of Menorrhagia in Young Females. Med Forum 2021;32(1):111-114.

## INTRODUCTION

Excessive bleeding per month is defined as a blood loss during menstruation of more than eighty ml during menstrual cycle. Its estimated prevalence in healthy women is 9%-14%<sup>[1]</sup>. A variety of organic, endocrine, gynecologic, or other systemic causes may be responsible for menorrhagia<sup>[2]</sup>. Relating to the menses issue are likely to be of poorer quality in female with bleeding problems, as they are more likely to have more

and painful relating to the menses interval and release of an egg from one of a woman's ovaries bleeding and pain<sup>[3,4]</sup>. Due to abnormal high bleeding during menstrual cycle hemoglobin level decreases and weakness develops. In different printed series, thirty two percent-hundred percent of females with is a blood disorder in which the blood does not clot (VWD), the most common genetically bleeding issue, were coated to have heavy relating to the menses bleeding. Heavy relating to the menses bleedings were coated between ten percent-seventy percent of females with other bleeding issues<sup>[5]</sup>. Underlying bleeding issues were generally not noticed due to the state of being unable to be used of detailed changing to a solid or semi-solid state in normal laboratory procedures and lack of the branch of medicine involving study and treatment of the blood consultation. The target of this work was the testing of bleeding issues in before puberty and young female presenting with Menorrhagia.

## MATERIALS AND METHODS

Four Hundred patients of Menorrhagia in young female were included in the study. Fifty percent patients were

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taken from Imran Idris Teaching Hospital Sialkot and 50% patients were taken from Shahina Jamil Teaching Hospital Abbottabad. The history, examination and investigations were recorded on designed Performa. The written informed consent was taken before recording the data. The permission of Ethical Committee was taken before collecting the data and Get Publishing in Medical Journal. The data was analyzed for results by SPSS version 10.

**RESULTS**

The mean age was 19.98 ± 13, adolescents/a adult patients (ratio) was 2:1, patients with mucosal bleeding other than mcnorrhagia was 17(21.91%), Patients with mcnorrhagia since menarche (%) was 6 (63.88%), patients having history of treatment for Menorrhagia 49 (66.46%), patients with PBAC score of >100 (%) was 65 (88%), patients with sescrelv Alf 101 quAli tv C0)1"4 (%) was 17(7.84%), Mean hemoglobin 102.67:26.4, Mean platelet count (.4109/1) was 2121,88221.013.519, Mean prothrombin time was 12.99:1.26, Mean activated partial thronboplastin time (5) was 28.88±4.81, Mean thrombin time (s) was 15.97:1.26, Mean fibrinogen (g/dt.) was 3.45±1.02, Mean serum rennin (ng/mL) was 14,88:26,87 as shown in table no 1.

**Table No.1: Comparison of the patients with and without bleeding disorders (n = 400)**

Sr No	Characteristics	Numbers or values
1	Mean age. years (min-max)	19.98:L0,13 (10-48)
2	adolescents/a adult patients (ratio)	49/25(2:1)
3	R patients with mucosal bleeding other than mcnorrhagia (%)	17 (21.91)
4	Patients with mcnorrhagia since menarche (%)	+6 (63.88)
5	a. patients having history of treatment for menorrhagia	49 (6646)
6	if patients with PBAC score of >100 (%)	65 (88)
7	et patients with sescrelv Alf10	17(7.84)
8	Mean hemoglobin (WO	102.67:26.4 (RV** 120.140)
9	Mean platelet count (.4109/1)	2121,88221 .013.519 (RV:150-400x109/1..)
10	Mean prothrombin time (s)	12.99:1.26 (11/.11.5-155)
11	Mean activated partial thromboplastin time (5)	28.88±4.81 (11V.26.5-40)
12	Mean thrombin time (s)	15.97:1.26 (W.14-21)
13	Mean fibrinogen (g/dt.)	3.45±1.02 (RV. 2.4)
14	Mean serum rennin (ng/mL)	14,88:26,87 (RV212)

**Table No 2: Bleeding history and laboratory characteristics of the patients with congenital clotting defects**

Sr	age	lgc	T	Epistaxis	Area bruising	Bleeding gums	Stagery bleeding	Minn bleeding	1lb gl	PII.10' I	Pailudogs in Aggregation test
1	16	16	GT	Tart	yes	yrs	No	No	278	77.91	DO cunt with ADP. collagen epinephrine
2	14	14	GT	No	5t <sup>5</sup>	Rs	No	No	78	207	no cunt with ADP colbtem epinephrine
3	14	14	BSS			No	Tooth ex-maim s5ts	No	91	69.98	norm< with nstocetin
4	14	14	85.5	yon	ya	Rs	Tooth ex-traction	Nn/to	6	17.98	no cunt with lift000DI
5	14	14	BSS			No	Yes No	No	75	49.77	ncuntwuh INO(d111
6	14	14	LOW VWF	Rs	Yes	Yes	No Tooth ex-traction	wino	13	259	normal tunes
7	24	24	VND 61 <sup>83</sup>	its	Yes	No	Yes No	No	81	390	no am with thtocoin
8	33	33	%MD?		yes	no	No	No	13	158	no cunt fl ristontin
9	21	21	LOW VWF	Do	pp <sup>8</sup>		Ito/no	No	144	254	normal curves
10	12	12	FV11 del	5t <sup>5</sup>	no	no	Nos	No	51	241	ND

The bleeding history and characteristics of the patients with congenital clotting defects was evident as shown in table no 2.

The p value was significant between Patients with bleeding disorders and Patients without bleeding disorders in case of Nose bleeding and Easy bruising p<0.001 and comparison was non-significant in rest of the case as shown in table no 3.

The prevalence of Menorrhagia in female was maximum 227(56.75%) in age group 16-20years and was minimum 50 (12.5%) at age group 21-25years as shown in table no 4.

**Table No 3: Comparison of the patients with and without bleeding disorders (n = 400)**

Sr #		Patients with bleeding disorders	Patients without bleeding disorders	P
1	Nose bleeding: ratio (%)	18/24 (75%)	12/96 (12.5%)	0.00
2	Easy bruising: ratio (%)	20/24 (83.3%)	18/96 (18.7%)	0.00
3	Gingival leeding: ratio (%)	10/24 (41.6%)	10/96 (10.4%)	0.02
4	Postoperative bleeding: ratio (%)	6/6 (100%)	14/36 (38.8%)	0.09
5	Postpartum bleeding:ratio (%)	2/2 (100%)	2/26 (23%)	0.36
6	High PBAC score: ratio (%)	24/24 (100%)	88/96 (91%)	0.57
7	Anemia: ratio (%)	18/24 (75%)	46/96 (72.9%)	0.09
8	Severe anemia (HB<7g/dl): ratio (%)	6/24 (25%)	12/96 (12.5%)	0.06
9	Mean HB (g/dl)	9.11 ± 3.35	10.69 ± 2.44	0.33
10	Low ferritin: ratio (%)	12/12 (100%)	42/76 (55.26%)	0.03
11	Ovulation pain: ratio (%)	8/22 (36.36%)	30/94 (31.9%)	1.00
12	Menorrhagia at menarche: ratio (%)	20/24 (83.33%)	64/96 (66.66%)	0.3
13	Poor quality of life (points > 35): ratio (%)	16/24 (66.6%)	66/96 (68.75%)	1.0
14	Prolonged closure time (PFA-100 collagen epinephrine): ratio (%)	8/10 (80%)	20/90 (22.22%)	0.01
15	Prolonged closure time (PFA-100 collagen-ADP): ratio (%)	4/8 (50%)	2/90 (2.2%)	0.01
16	Parental consanguinity: ratio (%)	10/20 (50%)	14/96 (14.58%)	0.18
17	Familial bleeding history: ratio (%)	12/20 (60%)	38/96 (39.58%)	0.4

**Table No. 4: Age distribution in female of Menorrhagia**

Sr #	Age (years)	Number of cases	Percentage %
1	12-15	123	30.75%
2	16-20	227	56.75%
3	21-25	50	12.5%
Total		400	100%

## DISCUSSION

At least five percent-ten percent of females of generative age will take medical attention for abnormally heavy bleeding at menstruation [8]; however, an underlying cause is known in only fifty percent of cases [2]. The most common related to endocrine etiology of heavy related to menses bleeding in before puberty girls is without ovulation not operating normally uterine bleeding owing to the immaturity of the hypothalamic-pituitary-ovarian axis [9]. In the present work, in nearly half of the teenagers, abnormally heavy bleeding at menstruation subsided suddenly, usually with maturation of this axis, and no bleeding issue could be detected.

In a present work from Sweden including one hundred fifty two females with unknown cause abnormally heavy bleeding at menstruation and fifty six healthy, regularly menstruating females, a strong association was found between unknown cause abnormally heavy bleeding at menstruation and family history of heavy menstrual bleeding ( $r=0.68$ ). The authors directed that familial abnormally heavy bleeding at menstruation must be due to a familial trait [10]. In the present work, thirty nine point five eight percent of the sick persons without bleeding issues had a family history of abnormally heavy bleeding at menstruation.

In this single center study, a bleeding disorder Von Willebrand disease (VWD), other platelet function defects, or ITP) was identified in 20% of the patients, similar to the findings of James' study [11]. [12]. In these works, testing for other bleeding issues of this population was not extensive, and only one study involved tests of platelet function beyond performance of a bleeding time test [13]. In a study performed in 6 centers in the United States, among 232 women with Policy Based Access Control scores of >100, a laboratory abnormality was found in 73.3%, including both white (68.1%) and black (91.9%) subjects; 6.0% had Von Willebrand disease, 56.0% had abnormal platelet aggregation tests, 4.7% had a non-Von Willebrand disease coagulation defect, and 6.5% had an abnormal PFA only. Platelet aggregation was reduced in fifty eight point nine percent of the patients, with multiple agonists in twenty eight point six percent, a single agonist in six point one percent, and ristocetin alone in four point two percent. Laboratory abnormal values of the stopping of a flow of blood, especially platelet function faults, were common, but the clinical significance of these abnormal values was not clear. This work also conceal rare coagulation deficiency and compared factor levels of the sick persons with those of the control subjects. Twenty-three subjects had non-Von Willebrand disease coagulation defects (deficiencies of factors II, V, VII, XI, and XIII and fibrinogen, plasminogen activator inhibitor-1, and alpha-2-antiplasmin). Levels of these factors were

above fifty IU/dL but slightly below the reference range, which may have limited the clinical significance [14,15,16]. We did not determine rare factor deficiencies routinely but assessed the FVII level as 20 IU/dL in a sick person with increased PT. According to some instructions, routinely, initial tests for bleeding issues should rule out more common causes of bleeding. These tests add whole blood counts, aPTT, PT, and possibly fibrinogen level or thrombin time. Patients with isolated prolonged PTT or with normal PTT, PT, platelet count, and fibrinogen level in the presence of bleeding signs or symptoms should receive Von Willebrand disease (VWF):Ag, VWF:RCO, and factor VIII assays to test for Von Willebrand disease [7,17].

## CONCLUSION

It was concluded from the study that now a days it was common problem that young ladies have complaint of Menorrhagia.

### 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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# Prevalence of Anemia in Pregnant Women in the Pandemic of Covid-19

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## ABSTRACT

**Objective:** To study the Prevalence of Anemia in pregnant women in the pandemic of COVID-19.

**Study Design:** Prospective study

**Place and Duration of Study:** This study was conducted at the Allama Iqbal Memorial Teaching Hospital Sialkot and Sardar Begum Teaching Hospital Sialkot department of Obstetrics and Gynecology during March 2019 to September 2020.

**Materials and Methods:** Two hundred pregnant women were selected for this study. The history and examination of each woman was conducted and blood was taken for complete blood count (CBC). The informed written consent was taken before examination and sample collection of the pregnant women. The Ethical Committee permission of was considered before collecting the data and get publishing in Medical Journal. The data was analyzed for results by SPSS version 20.

**Results:** The prevalence of Anemia in pregnant women during COVID-19 was maximum 60(30%) in age group 20-25 years and was minimum 18(09%) in age group 41-44 years. The prevalence of Anemia in pregnant women during COVID-19 was maximum in lower class 75 (37.50% and minimum 58(29%) in middle class

The prevalence of Anemia in pregnant women during COVID-19 was maximum 85(42.50%) of Hemoglobin 6-7gm/dl and was minimum 15(07.50%) of Hemoglobin 12-13gm/dl.

**Conclusion:** It was concluded from the study was that Anemia was prevalent in pregnant women because most of the pregnant women did not come to hospital for Ante natal care. Therefore, iron advised on diet and iron supplement was not received.

**Key Words:** COVID-19, Prevalence, Anemia and pregnant women

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## INTRODUCTION

Since the first report (December Two thousand nineteen) of the covid-19 disease 2019 caused by severe acute lungs syndrome covid-19, the number of definite cases and associated death and diseases have increased rapidly.<sup>1,2</sup> Pregnant ladies are thought a high danger group because of related about the effect of corona virus 19 on them during and after pregnancy, and on their newborn.<sup>3</sup>

To provide protection to delivered mothers and their neonates, the key factors to ponder about are, risk factors

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leading to covid-19, Clinical presentation and results of therapy during days of infection.<sup>4</sup>

Lack enough healthy red blood cells (Anemia) is one of the most common food necessary for health and growth deficiency disorganization affecting the pregnant women; the incidence in developed countries is fourteen percent, in developing countries fifty one percent, and in India, it varies from sixty five percent to seventy five percent.<sup>1,2, 5-10</sup>

## MATERIALS AND METHODS

Two hundred pregnant women were selected for this study. The history examination of each woman was conducted and blood was taken for CBC. The informed written consent was taken before examination and sample collection of the pregnant women. The permission of Ethical Committee was taken before collecting the data and gets publishing in Medical Journal. The data was analyzed for results by SPSS version 20.

## RESULTS

The prevalence of Anemia in pregnant women during COVID-19 was maximum 60(30%) in age group 20-25 years and was minimum 18(09%) in age group 41-44 years as shown in table 1.

**Table No.1: Age distribution**

Sr #	Age (years)	Number of cases	Percentage %
1	20-25	60	30 %
2	26-30	55	27.50%
3	31-35	45	22.50%
4	36-40	22	11.00%
5	41-44	18	09%
Total		200	100%

The prevalence of Anemia in pregnant women during COVID-19 was maximum in lower class 75 (37.50%) and minimum 58(29%) in middle class as shown in table no 2.

**1 Middle class****2 Working class****3 Lower class****Table No.2: Socio Economic status distribution**

Sr #	Socio Economic status	Number of cases	age %
1	High gentry	58	29%
2	Middle class	67	33.50%
3	Poor class	75	37.50%
Total		200	100%

The prevalence of Anemia in pregnant women during COVID-19 was maximum 85(42.50%) of Hemoglobin 6-7gm/dl and was minimum 15(07.50%) of Hemoglobin 12-13gm/dl as shown in table no 3.

**Table No.3: Hemoglobin distribution in pregnant women during COVID-19**

Sr #	Hemoglobin (gm/dl) distribution	Number of cases	age %
1	6-7	85	42.50%
2	8-9	75	37.50%
3	10-11	25	12.50%
4	12-13	15	07.50%
Total		200	100%

**DISCUSSION**

However, lower incidence was noted from Nepal (forty two point five percent) and Haryana (fifty one percent) and National Family Health Survey-2 and 3 (forty nine point seven percent).

Lack enough healthy red blood cells between the patients in the present study was low (two point three percent) which was coincided to work by Kapil and Sareen (one point six percent) and National Family Health Survey (two point five percent).<sup>[13]</sup> Whereas other works showed higher incidence; Totega (13.1%), Agarwal et al. (9.2%), Vivek et al. (7%), and Gautam et al.<sup>4,7,11,12</sup>

Maternal anemia is considered as risk factor for both the mothers and fetus. Available results from India shows that mother disease rates are higher in anemic ladies.<sup>[2,9,15]</sup> In the recent work, about thirty five point

six percent of the ladies had mother and fetal disease, Lower segment Cesarian section.<sup>[10]</sup>

In the recent work, around twenty five percent of ladies delivered low birth new born; the majority of them (fifty seven percent) were among ladies with Lack enough healthy red blood cells.

Whereas Marahatta in Nepal noted three percent before time deliveries in anemic women.<sup>[1]</sup>

In the present study, gravida, education of pregnant women, and bad obstetric history were significantly associated with anemia. A study by Chowdhury et al. observed an insignificant association between anemia and gravida.<sup>[16,17]</sup>

In a similar work done by Obse et al. in Ethiopia parity > 5 has a significant association with anemia.<sup>[18,19,20]</sup>

Lack enough healthy red blood cells (Anemia) is highly incident worldwide, too large or too small harming babies and ladies of generative age 21. Decreased iron stores for the baby, which may lead to impaired development. Iron deficiency is considered the most common cause of anemia, but there are other nutritional and non-nutritional causes. The anemia prevalence for the population is used to classify the public health significance of the problem.

**CONCLUSION**

It was concluded from the study was that Anemia was prevalent in pregnant women because most of the pregnant women did not come to hospital for Ante natal care. Therefore, iron advised on diet and iron supplement was not received.

**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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# The Trends of Self-Care Remedies among the Patients with Dental Pain Attending the Out-Patient Department of Dental Institute in Multan

Self-Care Remedies among the Patients with Dental Pain

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## ABSTRACT

**Objective:** To determine the prevalence and type of self-care remedies used by patients who experienced dental pain, visiting the OPD department of dental institute in Multan.

**Study Design:** Cross sectional study

**Place and Duration of Study:** This study was conducted at the College of Dentistry, Bakhtawar Amin Dental Hospital, Multan from 16<sup>th</sup> March to 16<sup>th</sup> July, 2020.

**Materials and Methods:** A standard sample of 389 was taken according to the WHO criteria. A questionnaire was used which actually consisted of demographic details, dental pain remedies, their hazardous effects, and frequency. In current study findings that the majority of the females involved in the practice of self-medication. In addition to that many of the patients (51%) get the medication for dental problems other than the registered dental practitioner. In the field of dental medicine, the accurate dosage and drug for a specific time are more important. This research disclosed that most of the patient take the self-care remedies at the time of dental pain only. Clove oil, its powder, or any crude form appeared to be the major option as a self-care remedy adopted by the patients.

**Results:** The results show a percentage of 185 (46.5%) participants who use self-care remedies at home with consultation from health care provider other than the dentist and 204 (51.3%) were those participants who use self-care remedies without any consultation. Analgesics used by participants have a percentage of 13.3%, antibiotics used were 16.8%, cloves 23.9%, salt-water gargle 11.1%, tobacco 9.3%, herbal remedies 22.4% and participants who did not give any response to these self-remedies constituted only 1%.

**Conclusion:** In current study findings that the majority of the females involved in the practice of self-medication. In addition to that many of the patients (51%) get the medication for dental problems other than the registered dental practitioner. In the field of dental medicine, the accurate dosage and drug for a specific time are more important. This research disclosed that most of the patient take the self-care remedies at the time of dental pain only. Clove oil, its powder, or any crude form appeared to be the major option as a self-care remedy adopted by the patients.

**Key Words:** Self-care remedies, self-medications, dental pain

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## INTRODUCTION

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Dental pain is more common in the patients presenting with carious lesions and can occur in any gender, at any age, and in any topographical region for which proper diagnosis and treatment is of utmost importance. It is the most likely symptom for which the patients, particularly those facing obstacles to receiving oral health care, often use self-care remedies or medications without consultation, in order to avoid the need for dental treatment.<sup>1</sup>

In the dental profession pain is a primary symptom encountered by a patient for which analgesics and antibiotics are used as a treatment in order to avoid the dental consultation and treatment. Other reasons are insufficient dental clinics/hospitals, failure to get a dental appointment, and too expensive dentists' consultation fees. The most common complication arises from an adverse drug reaction, expenditure, drug interaction, and drug resistance.<sup>2</sup>

Medication is one of the influencing tools in the public health profession. Self-care remedies including self-medication, non-drug self-treatment are one of the common practices worldwide, particularly in the developing countries, in order to avoid long waiting periods in the hospitals, free access to the OTC drugs in the local market, mild illness and to save money. There is a significant relationship between the self-care remedies with age, gender, education, and socio-economic status. Self-medication is referred to as the use of drugs by the patient himself or on the advice of a layperson without medical consultation for treating self-diagnosed disorders or symptoms.<sup>3</sup> There are many factors that lead to the self-care remedies like dental cost, awareness, and lengthy procedures.<sup>4</sup>

The World Health Organization approved some drugs to be changed from prescription status to be sold over the counter (OTC), to reduce the burden on Health care professionals in the 1980s, increasing the public health importance of self-medication. Benefits include reduced frequency of dental visits, cost, and increased patient freedom.<sup>2</sup> However, self-medication can endanger their lives and can lead to habituation, adverse allergic reactions, under and over dosage which may result in increased symptoms and injury to different organs.<sup>5</sup> In developing countries, people mostly use self-care remedies such as clove oil, peppermint essential oil, garlic, and turmeric powder to relieve dental pain or rely on self-medication which primarily includes analgesics, antibiotics, native herbs, salt, and hot water and ice packs were used for treating their oral health problems.<sup>6</sup>

Chronic dental diseases can lead to the removal of teeth and in some cases, it has an emotional, physical, and economic impact. It is an established fact that poor oral and dental hygiene has also been linked to lung and heart diseases.<sup>7</sup> Many studies conducted throughout the world to determine self-medication among their population. The aim of this study was to investigate the trends of self-care remedies among the patient with dental pain.<sup>8</sup>

## MATERIALS AND METHODS

A cross-sectional descriptive study was done using a simple random sampling technique in which a total of 389 patients were enrolled meeting WHO criteria. A questionnaire was used which consisted of demographic details, dental pain remedies, their hazardous effects, and frequency of their usage. It also contained questions about patients' practice of self-remedies, the time duration of using the remedies, what kind of remedy is used, potentiating factors of using it, information about the self-care remedies, thinking about hazardous effects of self-medication and how to encounter those adverse effects. Each participant was given an equal chance to be selected and to showcase

his/her knowledge about self-care remedies regarding dental pain.

The data was collected from the out-patient department of Bakhtawar Amin Dental Hospital, Multan after ethical and technical approval from the Institutional Research Board (IRB) of BADC&H (Ref. no 310/2020). The duration of the study was six months after approval. All information gathered on the questionnaire was later coded and entered in SPSS IBM Version 22. All the nominal data was presented in a form of frequencies and percentages and numerical data in form of mean and standard deviation.

All participants/patients who reported into out-patient department of Bakhtawar Amin Dental Hospital and already take the medication for dental pain without prescription from registered dental practitioner and gave verbal informed consent irrespective of gender and age were included in this study. However, any patients having any systemic disease, psychological ailment, or on any medication due to previous illness were excluded from the study.

## RESULTS

A sample of 389 was taken and the description shows that male participants were 139 whereas females were 250.

**Table No.1: Gender distribution among participants**

Gender	Frequency	Percent
Male	139	34.9
Female	250	62.8
Total	389	97.7

In this study 204 participants used self-care remedies for relieving their dental pain or problems while 185 participants were those who were concerned with different healthcare workers other than a dentist for their dental issues and considered as taking self-care remedies. Table 2.

**Table No.2: The practice of using self-care remedies with or without consultation with the health care provider**

	Frequency	Percent
Without Consultation	185	46.5
With Consultation	204	51.3
Total	389	97.7



**Figure No.1: Frequency of using self-care remedies**

The majority of the participants opted for different self-medication or remedies only at the time of severe dental pain. Figure 1 shows the frequency of taking self-care remedies which were observed during the current study. During the current study, it was observed that most of the participants had strong beliefs on clove oil and clove extracts in alleviating dental pain. The participants (22%) gave a history of usage of different herbal products for their dental issues. Other agents used by the patients are given in Table 3.

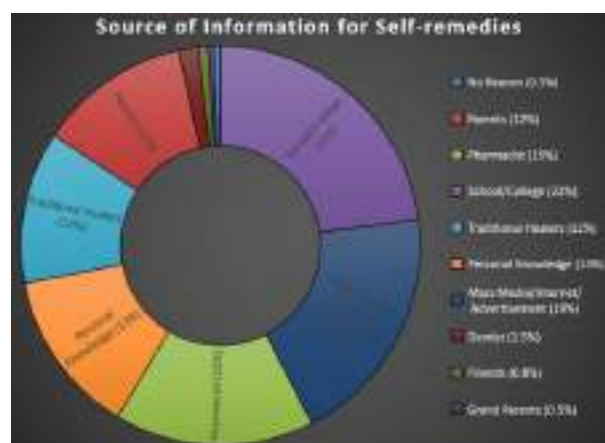
**Table No.3: Self-Careremedies Used for Dental Pain**

	Frequency	Percent
None	4	1.0
Analgesic	53	13.3
Antibiotics	67	16.8
Cloves	95	23.9
Saltwater Gargles	44	11.1
Tobacco	37	9.3
Herbal Remedies	89	22.4
Total	389	97.7

Data regarding different reasons for choosing self-care remedies suggests that people choose different remedies because they cannot afford expensive dental products. Most of the participants in this study population is from under developed area who could not afford lengthy appointments and expensive dental products and procedures. Other reasons for choosing self-care remedies were given in Table 4.

**Table No.4: Reasons for choosing self-care remedies**

	Frequency	Percent
No Reason	27	6.8
Lack of Time	55	13.8
I Prefer It	48	12.1
Expensive Medicaments	85	21.4
Laziness	54	13.6
Lack of Health Services	56	14.1
Lengthy Procedures	64	16.1
Total	389	97.7



**Figure No.2: Source of information for self-care remedies**

Different sources of information that influence the patients for the usage of self-medication are shown in Figure 2. Data clearly depicts that major contributing factors are parents advice (12%) and pharmacist (15%) and many other minor factors like school/college (22%), traditional healers (12%), personal knowledge (13%), and electronic and print media (19%).

## DISCUSSION

This current study was about to identify the trends of self-care remedies used in a local community of Multan. The sample size was 389 during the six months of the study out of these 389 only 204 patients (51.3%) use the self-care remedies without consultation from any health care worker while 185 patients (46.5%) taking remedies with consultation other than the dentist. The results of this study clearly depict that majority of the females (62.8%) taking self-care remedies while only (34.9%) male patients were taking self-care remedies. In contrary to current study results, the study was conducted in 2017 among Sudanese in Khartoum Sudan to identify the self-care remedies used to relieve dental pain. The study included 384 participants in which 75.5% male, and 24.5% female used self-care remedies.

About this current research, another study was carried out in Portugal back in 2002. The study includes 3312 subjects have selected the distribution regarding self-medication among males was 28.4% higher than females and it was 25.2%. In 2015 another study was conducted in India and their aim was to assess the prevalence level regarding dental pain and the type of self-care remedy used for relief of pain. In this study 630 individuals were selected and among the total subjects, 55.9% were female and 44.1% were males using the self-care remedies as same in our region.

In current study, frequency distribution of self-care remedies among the patients shows that the majority of the patients take medication thrice a day (23%) and 23% of patients take medication at the time of pain only. It is a serious concern regarding the dosage of using antibiotics for a limited time only.

This study shows the significant results regarding the use of various remedies like analgesics, antibiotics, cloves, salt-water gargles, tobacco, and herbal remedies use for the relief of dental pain. According to this study cloves (23.9%) were considered as the most relieving ingredient in dental pain. In addition to that some types of herbal (22.4%), antibiotics (16.8%), analgesic (13.3%), saltwater gargles (11.1%), and tobacco (9.3%) used by the self-care remedies patients.

Another study which was conducted in Fatima Memorial Hospital Pakistan on 400 participants also depicts similar findings related to prevalence and factors associated with self-medication among dental patients. The result showed that oral analgesics (58.8%), anti-inflammatory (0.5%), topical (2.3%),

muscle relaxant (0.9%), miscellaneous (3.2%), oral Analgesics + antibiotics (13.4%) and other combinations (51.5%) was used by participants.<sup>1</sup> A recent study was conducted in India in 2018 showed an association between self-medication and beliefs regarding medicines with dental pain. They were focused on the norms and myths in their cultures about the effects of medicine and its frequency of usage.<sup>9</sup>

A study was conducted in 2017 among Sudanese in Khartoum Sudan to identify the self-care remedies used to relieve dental pain. The most frequently used remedy as shown in this study was cloves (33.8%) alongside a wide variety of other remedies.<sup>2</sup> A study conducted in 2015, determine the self-medication practice among 120 participants in Karnataka India. The data showed that frequently used drug was analgesics (42.5%) followed by traditional medicine (14.2%) and antibiotics (10.0%). However, it was interesting to note that 33.3% of people were unaware of the drugs that they were consuming.<sup>3,8</sup> A search conducted in 2009 in the USA on 384 participants disclosed that around 45.1% used self-care medications and the best possible remedy used among them was clove oil and herbal products.<sup>10</sup> Current study research results showed significant findings regarding the use of clove and herbal products for the relief of dental pain.

This study also disclosed the reason behind the use of self-cure remedies 21.4% of patients due to expensive medicaments, 16% due to lengthy procedures, 14% lack of health services, 13% laziness and lack of time, and 12% say that I prefer to take. The major factor in this area is an expensive medication. This current study also highlighted the factors which should be addressed to decrease or discourage the use of self-care remedies. The current research actually not only identified the use of different self-medication options, but it also helped to identify the frequency and the factors which encourage the use of self-care remedies among the local community of Multan.<sup>11-14</sup>

## CONCLUSION

The use of self-care remedies is one of the major problems in dental practice especially in underdeveloped areas of Pakistan. It is the need of the time to identify and discourage the real cause of self-care remedies from the grassroots level. In current study findings that the majority of the female involved in the practice of self-medication. In addition to that many of the patients (51%) get the medication for dental problems other than the registered dental practitioner. In the field of dental medicine, the accurate dosage and drug for a specific time are more important. This research disclosed that the majority of the patient take the self-care medicine at the time of dental pain only. Clove, its powder, or any crude form appeared to be the major option adopted by 24% of the patients and

considered this one of the effective remedies against dental pain.

**Recommendations:** In relation to this study, necessary steps should be taken by the local government and hospitals to educate the local community people about the benefits and risks of using self-medication. Many contributing factors that enhance the use of self-medication should be discouraged and awareness should be given to them in order to avoid any hazardous effects which would actually face in the near future.

**Limitations of study:** This study only gives a statistical analysis of a targeted population at a single tertiary care setting. More studies should be carried out at a mass scale with the higher number of sample size for the generalization of findings over a large population.

### 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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# Frequency of Pneumonia in Children, Classified as Severe Pneumonia According to IMNCI Standards at Tertiary Care Hospital

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## ABSTRACT

**Objective:** To determine the frequency of pneumonia in children, classified as severe pneumonia according to IMNCI standards at tertiary care hospital.

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

**Place and Duration of Study:** This study was conducted at the CMC children hospital Larkana from November, 2017 to April, 2018.

**Materials and Methods:** In a cross-sectional descriptive study, children between 2 -59 months of age of either sex referred from IMNCI clinic classified as severe Pneumonia were enrolled after informed consent from November 2017 to April 2018 in CMC children hospital Larkana. Interviews using structured questionnaires were used for history of cough and examination for chest in drawing was taken, then Chest X ray done. The data was analyzed by 13 version SPSS.

**Results:** The mean age of enrolled participants was 16.5±13.3 months. 63 (60.6%) were male and 41 (39.4%) were female. Mean duration of cough was 7.8±4 days and mean duration of chest in drawing was 2.6±1.2 days. A total of 60 (57.7%) patients developed pneumonia. Of 60 patients of pneumonia 41 (68.3%) had infiltrations, 16 (26.7%) had consolidation and 10 (16.7%) had pleural effusion on chest x-rays.

**Conclusion:** It is concluded from this study that the frequency of radiological pneumonia is high in IMNCI classification of pneumonia as reported in the world so reduction of this burden of disease should be a national health priority. Chest X-ray is an important tool in diagnosing severe pneumonia, particularly in situations where other means of investigations are insufficient.

**Key Words:** Pneumonia, IMNCI, Chandka Medical college hospital

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## INTRODUCTION

In children Pneumonia is a major killer disease especially under 5 years of age, and it causes 20% of death in the world. A report in 2006, by a UNICEF-WHO that over 2 million children die from pneumonia each year, accounting for approximately one in five under-5 deaths worldwide.<sup>1</sup> About 155 million episodes of pneumonia occur in children of less than 5 year of age per year.<sup>2</sup>

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The international medical community has a big challenge for the persistent high childhood mortality especially in the developing countries of the world.<sup>3</sup>

World Health Organization (WHO), respond to this challenge in collaboration with (UNICEF), by establishing acute respiratory infection (ARI) control program for early detection and referral of Pneumonia cases and other-single disease-based programs like control of diarrheal diseases (CDD).<sup>4</sup>

W.H.O formed a new strategy in the mid-1990s named as Integrated Management of Childhood Illness (IMCI), which covers the common childhood illness under one umbrella and assessing the child as a whole.<sup>4</sup> As pneumonia is the leading cause of death in children <5 years of age, interventions to endorse the prevention and treatment of pneumonia are vital part of childhood survival efforts to achieve Millennium Development Goal.<sup>5</sup> In June 1998 IMCI was introduced in Pakistan and implementation phase started in February 1999.<sup>6</sup>

A local study conducted at Karachi, by Nizami SQ, on severe pneumonia (12.5%) in relation to IMNCI standards and found radiological infection in 50.5% on

bases of x-ray findings.<sup>7</sup>In a study conducted by Puumalainen T, et al., in their study they found that only 33.6% of children were diagnosed as pneumonia on the basis of radiological findings as compared to this, 95% of patients were classified as severe pneumonia according to IMNCI classification.<sup>8</sup>

The rationale of my study is that as there is limited local data on such type of research on IMNCI classification, versus radiological findings suggestive of pneumonia, which is used by WHO at Primary Health facilities for the classification of Pneumonia. After this study if it is found that higher proportion of Pneumonia cases are diagnosed and picked earlier by this cost-effective method, which doesn't need any expertise (even without chest x-ray) then this IMNCI strategy encouraged and further promoted to apply in the Primary health facilities as to decrease the under 5 mortality in developing countries like Pakistan.

## MATERIALS AND METHODS

**Inclusion Criteria:** The following patients were included in this study.

- Patients referred from IMNCI clinic (Chandka Medical College Children Hospital Outdoor Patient) classified as severe Pneumonia.
- Patient of either gender.
- Age group 2 months up to 5 year (2-59 months)

**Exclusion Criteria:** followings patients were excluded.

- Known Asthmatics.
- Known congenital heart disease.
- Patients on anti-Tuberculosis treatment.
- Cough more than one month.

**Data collection procedure:** This cross-sectional descriptive study was conducted on indoor patients of Children Hospital CMC Larkana from 1st November 2017 to 30th April 2018 after getting approval from Hospital Ethical Review Committee of Chandka Medical College. A sample size of 104 patients was collected by nonprobability continuous sampling. The objectives were assessed on a structured Performa, which included a detailed questionnaire to assess the patients. The patients who fulfilled the inclusion criteria were enrolled in the study. The purpose, procedure risks and benefits were explained and informed consent was taken from the parents. History of cough and examination for chest in drawing was confirmed by resident 3 in the ward at tertiary care from these referred patients, then Chest X ray was advised in all the patients classified as severe Pneumonia, from the radiology department of Chandka Medical College Hospital Larkana. X-ray was reported by a radiologist having more than five years of experience. Presence of consolidation (non-homogeneous pacified shadow), infiltration (whitish linear or streaky shadows) or plural effusion (collection of fluid in plural cavity) as per operational definition was considered as Pneumonia.<sup>9</sup>

The data collected include age, gender, duration of cough, chest wall in drawing and Radiological findings of Pneumonia, was entered on the predesigned proforma by the researcher and patient will be managed further accordingly. The data collected in the study was analyzed by using the SPSS version 13. Categorical variables, such as patient's gender and Chest X ray findings of pneumonia in children classified as severe pneumonia according to IMNCI standards were expressed in frequencies and percentages, whereas numerical variables such as patient's age, duration of cough and chest in drawing were expressed in means and standard deviation.

Effect modifiers were controlled through stratification of age, gender and duration of symptoms, to see the effect of these on outcome.

## RESULTS

A total of 104 patients were enrolled in this study during study period. Most of them were > 12 months 48, (46.2%) and mean age of enrolled participants was 16.5±13.3 months, ranging from 2 to 59 months and of that 63 (60.6%) were male and 41 (39.4%) were female with male to female ratio of 1.5:1. In most of patient cough was < 7 days 56, (53.8%) while 48, (46.2%) had >7 days and mean duration of cough was 7.8±4 days.

From 104 enrolled participants 58, (55.8%) had <2 days duration and mean duration of chest in drawing was 2.6±1.2 days. Of 104 enrolled participants 60 (57.7%) patients were confirmed pneumonia based on X-ray findings and from these 60 patients of pneumonia 41 (68.3%) had infiltrations, 16 (26.7%) had consolidation and 10 (16.7%) had pleural effusion on chest x-rays (Graph 1).

Stratified analysis of each outcome variable based on age, sex, duration of cough and duration of chest in drawing in tables 1-4.

**Table No.1: Stratified Analysis of Pneumonia By Age**

Pneumonia	Age groups		Total	P-value: <0.53
	<12 months	≥12 months		
Yes	32 (57.1%)	28 (58.3%)	60	
No	24 (42.9%)	20 (41.7%)	44	
Total	56	48	104	

**Table No.2: Stratified Analysis of Pneumonia by Sex**

Pneumonia	Sex		Total	P-value: <0.15
	Male	Female		
Yes	40 (63.5%)	20 (48.8%)	60	
No	23 (36.5%)	21 (51.2%)	44	
Total	63	41	104	

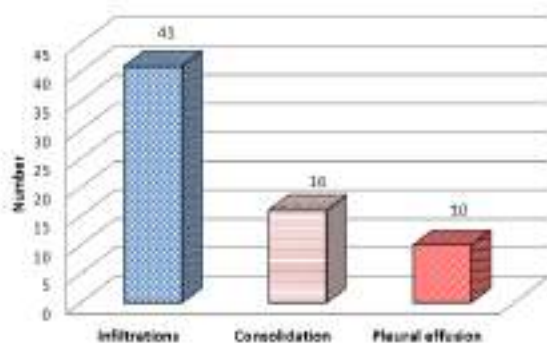
**Table No.3: Stratified Analysis of Pneumonia by Duration of Cough**

Pneumonia	Duration of cough		Total	P-Value < 0.001
	<7 days	≥7 days		
Yes	21 (37.5%)	39 (81.3%)	60	
No	35 (62.5%)	9 (18.8%)	44	
Total	56	48	104	



**Table No.4: Stratified Analysis of Pneumonia by Duration of Chest Indrawing**

Pneumonia	Duration of chest indrawing		Total	P-Value < 0.001
	2 days	>2 days		
Yes	21 (36.2%)	39 (84.8%)	60	
No	37 (63.8%)	7 (15.2%)	44	
Total	58	46	104	

**Graph No.1: Radiological Findings of Enrolled Participants with Pneumonia (n=60)**

## DISCUSSION

The Integrated Management of Childhood Illness (IMCI) strategy is the primary child-care approach of choice for developing countries.<sup>10,11</sup> In 1996, IMCI was introduced into Asia by WHO and UNICEF. Since then, 8695 health workers have been trained in IMCI which includes mainly primary health care nurse practitioners, primary care doctors and pediatricians. IMCI mainly focuses on illnesses that cause the majority of mortality in children under-5 years of age, many of those are preventable or readily treatable using simple interventions: These are pneumonia, diarrhea, meningitis, malaria, malnutrition, anemia and HIV/AIDS. This is known as a “child survival” approach.<sup>12</sup> Pneumonia is a world’s most important cause of childhood mortality,<sup>11</sup> and over the past decade has concerned extremely little attention. There has been very little research on the Pneumonia disease, apart from trials of pneumococcal and Haemophilus influenzae type b (Hib) vaccines, particularly estimation of the impact of these vaccines on pneumonia,<sup>11-14</sup> while few studies on the case management of pneumonia.<sup>15-18</sup> The Integrated Management of Childhood Illness (IMCI) strategy, which includes standardized case management of suspected pneumonia cases while Country-level efforts for prevention of pneumonia mortality have been limited to pneumonia management.<sup>19</sup> A recent analysis of donor spending money on maternal and child health in developing countries displayed that hardly 1% was

allocated to IMCI.<sup>20</sup> In comparison to this, new pneumococcal conjugate vaccines, probably having similar life-saving potential is to that of IMCI, have attracted a great deal of consideration by the GAVI Alliance and through innovative funding mechanisms such as the Advanced Market Commitment (AMC) and the International Finance Facility for Immunization (IFFIm) and for support this, the large amount of money being allocated. There was a substantial increase in international awareness about pneumonia in 2006, with the help of publication report by the United Nations Children’s Fund (UNICEF) and WHO.<sup>21</sup> There are promising signal that this awareness will lead to increased financial support for both control program and research activity. When new funds become available in a particular plain, it is not uncommon to see special stake groups competing for them, claiming that their scheme or product is superior to others and should therefore receive most of the new resource.<sup>22</sup>

In this study the frequency of radiologically proven pneumonia was 57.7%, in contrast to that study by Puumalainen T, et al, they found only 33.6% of children were diagnosed as pneumonia on the basis of X-ray findings as compared to this 95% of patients were classified as severe pneumonia based on IMNCI classification.<sup>8</sup> However frequency of radiological proven pneumonia was higher in our study because we have taken all patients with clinical pneumonia.

On other hand a local study conducted by Nizami SQ et al, reported that of 12.5% children with severe pneumonia in relation to IMNCI standards and found radiological infection in 50.5% on bases of x-ray findings.<sup>7</sup>

This study was subject to some limitations. Variation in radiograph interpretation is unavoidable because of lack of any standardized reporting format. Inconsistency particularly regarding definition of infiltration is natural in between clinician, which may or may not suggest infective process. This aspect is quite obvious in this study as most of radiographs had only infiltrations, no definite consolidation and only half of the radiograph suggest diagnosis of infection had clinical pneumonia. Though act of radiogram done in children with upper respiratory infection s (URTI) was not high but same movement is seen in these cases. Therefore, a normal report of chest radiogram does not prescript out infection and presence of infiltrations does not stand for infective process. This detail is further validated from deficiency of relationship between reports of chest radiograph and clinical findings i.e., tachypnea, chest in drawing or isolation of organisms. Though it may be claimed that the radiographs were not obtained at appropriate time to have significant findings but in a symptomatic child this argument is not justifiable. Presence of symptoms and signs of infection is a good time to take a chest radiograph therefore in this study



chest radiograph were obtained within 24 hours of clinical presentation.

## CONCLUSION

It was concluded from this study that the IMNCI definition for severe pneumonia that's indicate high specificity for acute lower respiratory infection and provides a device to compare the total burden of lower respiratory infections indifferent settings. The IMNCI classification of non-severe, severe and very severe pneumonia interconnected very well with disease severity, but inadequately with the probability of x-rays finding or bacterial etiology for infection. Therefore, category of severe pneumonia presenting with chest in drawing showed high specificity for lower respiratory infection, and might be used when compare the burden of respiratory infections in resource poor countries. The rates of pneumonia by X-rays findings in CMC children hospital are among the highest reported in the world so reduction of this disease burden should be a national priority. Chest X-ray is an important tool in diagnosing severe pneumonia. It also helps in deciding the severity of the disease. It is highly recommended for diagnosis of pneumonia particularly in low-income countries where other tools of investigations are insufficient. Ongoing surveillance programs incorporating an etiological studies and innovative interventions are urgently required.

### Author's Contribution:

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 Data Analysis: Vija Kumar Gemnani, Kaleemullah Abro and Aijaz Ali Tunio  
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 Final Approval of version: Dellijan Mugheri

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

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# Management of Shock in Severe Acute Malnutrition at Stabilization Centre

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## ABSTRACT

**Objective:** Early recognition and management of shock in severe acute malnutrition in children of 6 to 59 months of age.

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

**Place and Duration of Study:** This study was conducted at the NSC CMC Children Hospital Larkana from October 2017 to September 2018.

**Materials and Methods:** 691 children of age 6 months to 59 months hospitalized with SAM (weight for height <60% of median or bilateral pedal edema or MUAC <11cm) are managed in accordance to WHO guidelines. Data based on clinical features was collected and analyzed to identify risk factors associated, disease pattern and outcome.

**Results:** In this study 691 admitted via triage/ER. Majority of them were of age between 12 months to 36 months. 280 children (40%) study population formed by marasmus, 102 children(14.5%) by kwashiorkor and 309 children (45.5%) by marasmus kwashiorkor. 37% of children had diarrhea, 39% had bronchopneumonia, 14% had pallor, 10% others. Most observed complications of SAM in our study were severe dehydration(12.44%), hypovolemic shock(11.86) and septic shock (8.3%). Patient with hypovolemic shock were managed with 15ml/kg ringer lactate i/v bolus followed by 10ml/kg Resomal, Patients with septic shock were managed with broad spectrum antibiotics and blood transfusions. Case fatality rate in our study was (3%).

**Conclusion:** children with SAM complicated by severe dehydration, hypovolemic shock and septic shock had higher risk of death. Early detection and management of complications such as shock reduce the mortality in children with SAM.

**Key Words:** Fluid resuscitation, Diarrhea, Severe malnutrition, Shock, Sepsis, Wasting

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## INTRODUCTION

Severe acute malnutrition is defined by a very low weight for height (below -3 z scores of the median WHO growth standards), by visible severe wasting, or by the presence of nutritional oedema.<sup>1</sup> According to WHO, severe acute malnutrition affecting nearly about 20 million children in whole world.<sup>2,3</sup> In Pakistan nutritional status of children under five is very poor.<sup>2</sup> Child Malnutrition rate in Pakistan significantly high. NNS(2011) reveals 15.1% Global Acute Malnutrition. At a national level nearly 31.5% of children <5 is underweight, 43.6% children are suffering from stunting and about 15.1% by wasting.<sup>2,3</sup>

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Malnutrition is liable directly or indirectly, for 60% of the 10.9 million deaths yearly under five years children. Majority of deaths occurring within 1st year are often associated with inappropriate feeding practices. [3,4] Ten step treatment by the World Health Organization (WHO) has amended case fatality, WHO guidelines of malnutrition strictly prevent use of iv fluids, only permit the use of iv fluid resuscitation in malnutrition with advanced features of Shock<sup>5,6</sup>. Intravenous Fluid is endorsed only if all of the following sign symptoms are present a weak, fast Pulse, cold peripheries, a capillary refilling time (CRT) of >3 seconds plus signs of leads consciousness (WHO malnutrition shock criteria)<sup>5,6</sup>. Customarily, these findings creating a very advanced state of shock, when consequences are generally poor as considered by Paediatric life support Providers. Children who accomplishing these criteria, preferential use of low-volume hypotonic fluids (0.45% sodium content) is recommended because of malnourished children are at increased risk of developing Congestive heart failure and sodium, water overload.<sup>5,6,9</sup> Current WHO guidelines indicate diarrhea is a benign, self-limiting complication<sup>7</sup> and endorse oral rehydration using low-sodium rehydration solutions (ORS). Meanwhile sepsis, severe diarrhea, and hypovolemia are significant self-

determining factors of outcome in children with severe malnutrition, this may assist for studying the role of more aggressive fluid resuscitation<sup>7,8</sup>.

Few studies conducted in Kenyan and African hospitals application of the same guideline has attained poorer results with >20% of death in children, poorest result with many reports of unsatisfactorily high case mortality rates<sup>8,9</sup>. While in contrast to these, few studies were conducted in India which shows substantial reduction of Mortality below 10% and improved survival of malnourished children can be achieved when the WHO guidelines are followed systematically and meticulously.<sup>10,11</sup> Data regarding application of WHO guidelines in severe acute malnourished children with shock in Pakistan is scarce; therefore this study was conducted from a tertiary level teaching children hospital CMC Larkana as an effort to assess the operational aspects, management and outcome of Shock in Severe Acute Malnutrition of patients using WHO guidelines.

## MATERIALS AND METHODS

This was Cross sectional descriptive study conducted at NSC CMC Children Hospital Larkana from October 2017 to September 2018. Total 691 children of age 6 months to 59 months hospitalized with SAM (weight for height <60% of median,  $\leq 3$  SD, with visible wasting or bilateral pedal edema or MUAC <11cm) were managed in accordance to WHO guidelines. Children with CNS disorder like tuberculous meningitis, static or chronic encephalopathy, Gastro-intestinal, renal, cardiac congenital defects, chronic medical disease - chronic renal failure, chronic hepatitis, a known case of HIV positive with clinical signs and symptoms were excluded. A detailed bio-data with history of the patients including name, age, sex, caste, address, religion, socio economic status was taken by oral questionnaire method. A thorough head to toe examination of the child especially assessing for nutritional status, signs of micronutrients, macronutrients, signs suggestive of respiratory distress, dehydration, electrolyte imbalance, septic shock, congestive cardiac failure, infection, any organomegaly and associated co- morbidities was done.

### Management protocol

Upon arrival, the patients were screened for hypoglycemia by blood glucose measurement with a glucometer, hypothermia by temperature measurement with a low reading thermometer, signs of dehydration or shock by history of diarrhea, vomiting and unable to take anything. Recent changes in appearance/sunken eyes, skin turgor, oral mucosa, weak pulses, cold hands and feet, decreased/ no urine flow and Lethargic/unconscious (severe shock). Patients were screened for criteria for septic shock (Incipient septic shock) Limp, Apathetic, Profound anorexic, No thirsty /no restlessness (septic shock) Fast weak pulse with Hot

peripheries, Altered consciousness, Superficial vein dilated, Grunt, Signs of organ failure (late). All morbidities were managed according to WHO guidelines, like hypovolumic (mild to moderate dehydration 2-5%) management with resomal: 5ml/kg every 30min, clinically assessed after every 30 min. start f-75 milk resomal+f-75, all patient with hypovolumic shock (severe dehydration >5%) were managed by ringolact-d 15 ml/kg/hr, repeat 15ml/kg/hr if unconsciousness /pulse rate increases then resomal 10 ml/kg/hr and monitor signs of dehydration and weight gain finally resomal+f-75. [5,6]. While the patients with (incipient septic shock) was managed with broad spectrum i/v antibiotics (ceftazidime+cloxacillin) f-75 milk, developed septic shock managed with ringolact-d 15 ml/kg/hr, blood transfusion (10ml/kg 3hrs) assessed for regain consciousness, pulses good volume and f-75milk.<sup>6,7</sup>

Then all the patients were started on tube feeding with starter f-75 formula, antibiotics, electrolytes and micronutrients (vitamin A, multivitamins, potassium, zinc, folic acid magnesium) were added to all as per the WHO guidelines. Regular skin and eye care were provided. Iron was started when the patient was entered the catch-up phase and free of infection.

## RESULTS

Six hundred ninety-one children of Severe Acute Malnutrition age 6 months to 59 months admitted via TRIAGE, sixty out of six hundred ninety-one (8.86%) patients were suffering from shock, 45/60(75%) with hypovolumic shock secondary to dehydrating diarrhoea, 32 (71%) of these with mild to moderate dehydration were improved treatment with oral resomal and f-75milk and 15/60(25%) were with septic shock. (Table 2). The majority of children in this study were female (75%) and 25% males of total while most of children 76.4% of total from 6-12 months age group of malnutrition.

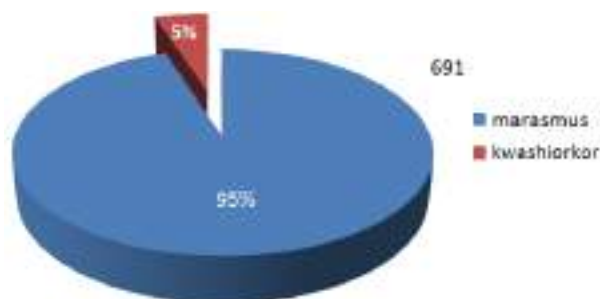
As in this study majority of patients with SAM have marasmus 95% (PEM Grade III or IV) (Pie chart). Maximum patients stayed for inpatient treatment were between 16-20 day. All the patients were kept in Nutrition Stabilization Centre and they were fed according to guidelines, play therapy was also encouraged during stay. 15.8 days was Mean duration of stay in our study. In study, most of the children were immunized for age accounting for 43.33%.

**Table No.I: Showing percentage of malnutrition.**

Malnutrition Type	PCM grade	Number	Percentage
Mild	I	5	8.3%
moderate malnutrition	II	31	51.6%
Marasmus	III	21	35%
Kwashiorkor	IV	3	5%
Total		60	100

**Table No.2: Showing hypovolumic dehydration with shock**

Type of Shock	No/ frequency	Type of treatment	Out come	
			improved	expired
Severe dehydration (shock)	13 (29%)	I/v ringolact-d fluids (15ml/kg/hr) and resomal + f-75.	Improved	
Severe dehydration (shock)	5 (11%)	I/v ringolact-d fluids(15ml/kg/hr) and resomal + f-	Expired.	
Incipient shock	0	0	0	
Septic shock	15 (25%)	Ringolact-d 15 ml/kg/hr Blood transfusion (10ml/kg 3hrs).	8(>50%)	



**Figure No.1: Type of malnutrition**

**DISCUSSION**

Severe acute malnutrition is preventable and treatable major cause of childhood morbidity and mortality under the 5 years of age. For the treatment of severe malnutrition with shock, systematic guidelines required, thus this study follows WHO guidelines, it has become easier to manage SAM with shock in hospital settings, with least possible stay at hospital. According to WHO guidelines<sup>5,6</sup>. Careful fluid management using low dose isotonic solution (RL) was shown to be safe, with moderately better improvement of some, but not all, of the haemodynamic parameters of shock, with significant survival advantages. In this study sixty patients were enrolled malnutrition with shock, 45/60 (75%) with hypovolumic shock secondary to dehydrating diarrhoea, 32 (71%) of these with mild to moderate dehydration were improved treatment with oral resomal and f-75 milk and 15/60(25%) were with septic shock, it is comparable with study by Akech et al, he enrolled 61 cases of SAM with shock.<sup>9</sup> Forty had hypovolaemic shock secondary to dehydration and 21 had septic shock. Another study by Manary MJ et al,

shows, sepsis with shock in 15-60% of children with complicated severe acute malnutrition.<sup>13</sup>

study by Shah RH et al. shows female 45(75%) and males 15(25%) while 76.4% of total belong 6-12 months age group and majority of patients with SAM have marasmus (PEM Grade III or IV). Maximum patients stayed for inpatient treatment were between 16-20 days. All the patients were kept in nutrition stabilization Centre and they were fed according to guidelines, play therapy was also encouraged during stay.<sup>11</sup> In our study Mean duration of stay was 15.8 days. this study shows Hypovolumic shock in 13 (29%) cases, death in Severe dehydration (shock)5 (11%) cases and Septic shock in 15(25%) cases with death in 8 cases with severe acute malnutrition in contrast to that study by Shah RH et al. shows Hypovolumic shock in 8 (13.33%) patient with death in 1 and Septic shock in 7 (11.66 %) with death in 3<sup>11</sup>, in comparison to this study, Akech et al. shows median age of children was 15 months (interquartile range; 12, 23); 48 (64%) had marasmus and 13 (21%) had oedematous malnutrition(kwashiorkor).[9] Overall, 31/61(51%) children died because of shock,22/41(%) by shock of dehydration (diarrhoea) and septic shock was led to death in 9/20(%), remaining were improved with meticulous management.

According to the WHO, a case fatality rate of less than 5% is considered to be (Good) acceptable in the management of severe malnutrition and less than 1% is excellent. Accounting for sphere standards, management of severe malnutrition is successful when the mortality rate is less than 10%.<sup>7,9,14</sup> While in our study, the case fatality rate is 29% because of late arrival with irreversible shock and other cases shows effectiveness of WHO protocol. Following WHO guidelines is efficacious and cost effective in resource limited settings. So early discharge is possible for patients with limited complication and mortality.

**CONCLUSION**

As in this study we concluded children with SAM complicated by severe dehydration, hypovolumic shock and septic shock had higher risk of death because of late arrival and associated with other complication. So, their early arrival, early detection and management of complication such as shock reduces mortality and morbidity in children with severe acute malnutrition and who have given good way of management for severely malnourished children with shock particularly in early stage. it is actually a base line study; in future it requires comparative study with standard management of normal children.

**Author’s Contribution:**

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# Early Outcome of Surgical Closure of 200 Ventricular Septal Defects: Single Surgeon Experience

Faiz Rasool

## ABSTRACT

**Objective:** To see the early outcome of surgical closure of 200 ventricular septal defects

**Study Design:** Retrospective study

**Place and Duration of Study:** This study was conducted at the children's Hospital Lahore, Hameed Latif Hospital Lahore and University of Lahore Teaching Hospital Lahore from January 2018 to October 2020.

**Materials and Methods:** Files of the patients who underwent VSD closure by a single surgeon (author) were reviewed. Age, weight, presenting symptoms, indication for surgery, associated lesions, cardiopulmonary bypass time, cross clamp time, duration of mechanical ventilation, mortality, risk factors for mortality, and complications were studied.

**Results:** 200 patients underwent VSD closure from January 2018 to October 2020. Mean age was 11 months, mean weight was 7 kg. Pulmonary hypertension was the most common indication for VSD closure. Average cardiopulmonary bypass time was 48 minutes; average cross clamp time was 32 minutes. Peri operative mortality was 3.5%.

**Conclusion:** In a resource limited country like Pakistan where there are only few centers are performing pediatric cardiac surgery, our series of 200 VSD closures represent reasonable outcome.

**Key Words:** ventricular septal defect. VSD closure, heart block

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## INTRODUCTION

Ventricular septal defect (VSD) is the most common congenital cardiac anomaly in children. Isolated VSD accounts for 37% of all congenital heart disease in children. The incidence of isolated VSD is about 0.3% of newborns.<sup>1</sup> The interventricular septum is a curved structure because of the pressure difference in right and left ventricles. It is composed of five parts: the membranous, muscular, infundibular, atrioventricular and the inlet.<sup>2,3</sup> Failure of one of these components to form will result in ventricular septal defect. There are mainly 4 types of VSD. Type 1 is outlet VSD, type 2 is membranous VSD, type 3 is inlet VSD and type 4 is muscular VSD.<sup>4</sup>

The physiologic consequences of any hole between the ventricles are related to its size, and to the relative resistances produced in the pulmonary and systemic vascular beds.

Left ventricular volume overload, pulmonary hypertension, infective endocarditis, aortic regurgitation, and eisenmenger syndrome are the potential complications.<sup>5</sup>

It is estimated that every year 42000 babies are born with CHD in Pakistan.<sup>6</sup>

According to cardiothoracic surgeon registry there are 0.52 (0-25.97) pediatric cardiac surgeons per million population globally. Large disparities exist between regions, ranging from 0.08 pediatric cardiac surgeons per million population (sub-Saharan Africa) to 2.08 pediatric cardiac surgeons (North America).<sup>7</sup> In Pakistan, ratio is same as that of Africa, that is 0.08/million.

In most of the patients, VSD closure is required in infancy. In this article, author has retrospectively reviewed the results of 200 ventricular septal defects that were closed in the period of last three years.

## MATERIALS AND METHODS

**Study type:** Retrospective; case series

**Study duration:** Study was done from January 2018 to October 2020.

**Setting:** Surgeries were performed at children's Hospital Lahore, Hameed Latif Hospital Lahore and University of Lahore Teaching Hospital Lahore.

**Inclusion criteria:** all the patients undergoing VSD closure.

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**Exclusion criteria:** Patients undergoing VSD closure as a part of treatment for other diseases like tetralogy of fallots, truncus srteriosis, transposition of great arteries etc.

Files of the patients who underwent VSD closure by a single surgeon (author), from January 2018 to October 2020, were reviewed. Age, weight, presenting symptoms, indication for surgery, associated lesions, cardiopulmonary bypass time, cross clamp time, duration of mechanical ventilation, mortality, risk factors for mortality, and complications were studied. Patents who had VSD closure during operation for other diseases like Tetrology of fallot, complete AV canal defects, transposition of great arteries, and truncus arteriosus, were not included in the study..

**RESULTS**

200 patients underwent VSD closure from January 2018 to October 2020. 160 at Children’s Hospital Lahore, 32 at Hameed Latif Hospital Lahore and 28 at university of Lahore teaching hospital Lahore.

**Age:** Age of the patients ranged from 3 months to 14 years with the mean of 11 months

**Weight:** weight ranged from 2.5kg to 42 kg with mean of 7kg

**Indication For Surgery:** table 1 shows the indications for surgery. Pulmonary hypertension was the most common indication for VSD closure.

**Concomitant Surgical Procedures:** table 2 shows the concomitant surgical procedures

**Cardiopulmonary Bypass Time:** Cardiopuomary bypass time ranged from 35 minutes to 285 minutes with the mean of 48 minutes

**Cross Clamp Time:** cross clamp time ranged from 21 minutes to 200 minutes with the mean of 32 minutes

**Types of VSDs:** type 2 VSD was the most common type of VSD. Detail is provided in table 3

**Mortality:** 7 patients died. All of these died of ventilator associated pneumonia leading to sepsis and multi organ failure. 4 patients were having weight less than 3.5 kg. They could not be weaned from mechanical ventilation. 4 were having persistent pulmonary hypertension.

**Complications:** fig 1 shows the detail of complications.

**Table No.1: indication for surgery**

Indications for surgery	n	%
Pulmonary hypertension	152	76%
Right coronary cusp prolapsed	17	8.5%
Aortic regurgitation	13	6.5%
RVOT obstruction	12	6.%
Failure to thrive	3	1.5%
LV volume overload	3	1.5%

**Table No.2: Concomitant procedures**

Concomitant procedures	N	%
PDA ligation	45	22.5%
Right ventricular outflow tract muscle resection	10	5%
Pulmonary valvotomy	2	1%
PA debanding	2	1%
Aortic valve repair	6	3%
Creation of flap valve in VSD patch	3	1.5%
Closure of additional muscular VSD	2	1%
Coarctation of aorta repair	1	0.5%

**Table No.3 Miscellaneous details**

Total number of patients	200	
Age	3months - 14 years (mean 11months)	
Weight	2.5 – 41 kg( mean 7kg)	
CPB time	35-285 (mean 48 minutes)	
Cross clamp time	21-200 minutes( mean 32miutes)	
Type 1 VSD	35	18.5%
Type 2 VSD	148	74%
Type 3VSD	8	4%
Type 4 VSD	9	4.5%



**Figure No. 1 complication after VSD closure**

**DISCUSSION**

The outcomes after surgical closure of VSD have improved over time with the advance in surgical techniques, cardiopulmonary bypass, anaesthesia and postoperative care<sup>8</sup>. However, the disturbance of conduction system like complete heart block and right bundle branch block, residual ventricular shunt, neurologic injury, and postoperative mortality are important postoperative problems, more frequent in infants with malnutrition.<sup>9</sup>



Mortality after VSD closure in developed countries is 0.5-1.7%<sup>10-12</sup>, but it is still high in developing countries like Pakistan. Mortality rate in our series is comparable to other studies in Pakistan<sup>13,14</sup>, which had mortality rate of 3.4% to 6%. Weight less than 3.5kg and persistent pulmonary hypertension were identified as the risk factors for mortality in our series. Another study by kamal salem<sup>15</sup> had mortality of 11%. Body weight less than 5 kg, young age, high pulmonary artery to systemic pressure ratio and presence of additional left to right shunt were identified as risk factors for adverse outcome.

A study by Jamal Abdul Nasir<sup>16</sup> had incidence of aortic valve repair associated with VSD was 30%, while in our series, only 3 percent of the patients with VSD required aortic valve repair.

While in most of the recent studies,<sup>17-20</sup> show device closure of the VSD, but in Pakistan most of the centers are doing surgical closure of the VSDs.

Incidence of complete heart block after VSD closure is less than 1% in international literature. But a study from Pakistan<sup>21</sup> had 10% incidence of heart block after VSD closure. In that study all patients with perimembranous ventricular septal defect, aged 5 years to 25 years were included. Results showed complete heart block in the perimembranous ventricular septal defect after surgical closure was 10(9.71%).

In our series 2% of the patients developed complete heart block that required permanent pace maker in peri operative period. 1 of them developed sinus rhythm 2 days after the permanent pace maker insertion.

## CONCLUSION

In a resource limited country like Pakistan where there are only few centers are performing pediatric cardiac surgery, our series of 200 VSD closures represent reasonable outcome. We have not mentioned about the follow up of those patients which is shortcoming in this series.

### Author's Contribution:

Concept & Design of Study: Faiz Rasool  
 Drafting: Faiz Rasool  
 Data Analysis: Faiz Rasool  
 Revisiting Critically: Faiz Rasool  
 Final Approval of version: Faiz Rasool

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

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# Comparison of Efficacy of 2% Clindamycin Vaginal Cream and Oral Metronidazole for Management of Bacterial Vaginosis in Non-Pregnant Females

Samra Ismat<sup>1</sup>, Amna Kazi<sup>2</sup> and Pakeeza Aslam<sup>3</sup>

Clindamycin  
Vaginal Cream  
and Oral  
Metronidazole  
for Vaginosis in  
Non-Pregnant

## ABSTRACT

**Objective:** To compare the efficacy of 2% clindamycin vaginal cream and oral metronidazole for the management of bacterial vaginosis in non-pregnant females.

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

**Place and Duration of Study:** This study was conducted at the Department of Obstetrics & Gynaecology, M. Islam Teaching Hospital Gujranwala from July 2019 to December 2019.

**Materials and Methods:** Two hundred cases were enrolled of age 20-40 years presented with clinically proven bacterial vaginosis. Patients were then divided randomly into two groups. Group A were given 2% clindamycin vaginal cream 5gm that was administered vaginally at bedtime for 3 days and group B was given metronidazole capsules 500 mg taken orally twice daily for 7 days and the efficacy was assessed after 1 week.

**Results:** The mean age in clindamycin group was  $31.73 \pm 5.77$  years and metronidazole group was  $29.84 \pm 5.88$  years. It was found that pH of vaginal fluid become  $<4.5$  in 176 (88%) cases, amine test was negative in 174 (87%) cases and clue cells were absent in 181 (90.5%) cases. Efficacy was achieved in 171 (85.5%) cases, out of which 83 (83%) belonged to clindamycin group and 88 (88%) belonged to metronidazole group. The difference between both study groups was insignificant.

**Conclusion:** Three day course of clindamycin and 7-day course of metronidazole are equally effective.

**Key Words:** Bacterial vaginosis, Clindamycin, Metronidazole, Amine test, Clue cells, Vaginal pH

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## INTRODUCTION

Bacterial vaginosis (BV) is a common cause of vaginal discharge, and prevalence is 29% in the general population.<sup>1</sup> Bacterial vaginosis is the commonest cause of irregular vaginal discharge in women of childbearing age but may also be present in women with menopause, and is rare in children.<sup>2</sup> Since these bacteria are difficult to cultivate, their antibiotic resistance is not established.<sup>3,4</sup>

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It has been related to a large number of obstetrical and gynaecological complications, including preterm labour and delivery; pPROM; chorioamnionitis; endometritis postpartum; infections with post-caesarean injuries and subclinical inflammatory diseases pelvic.<sup>5,6</sup>

Both clinically and microbiologically, bacterial vaginosis may be diagnosed. For pregnant and non-pregnant women, medical requirements are the same. The clinical diagnosis is made if three of the four indications present as a vaginal adherent and homogenous release, a vaginal pH  $>4.5$ , a detection of clue cells on the mount of saline wet, and potassium hydroxide (positive whiff test) amine odour.<sup>7</sup>

McDonald et al<sup>8</sup> and Alesna et al<sup>9</sup> have studied bacterial vaginosis screening and treatment in pregnant women and measured the effectiveness in cure achievement and maintenance of different treatment regimens, including oral and vaginal metronidazole and clindamycin.

In both groups of patients, immediate relief of most of the signs and symptoms was observed about a week after treatment. 15 of 16 (94%) patients were asymptomatic in the clindamycin group and all 17 (100%) in the metronidazole group. Eradication at one month after vaginal clindamycin cream was 66 to 83% compared to 68 to 87% for metronidazole and also

when oral metronidazole and 2% vaginal clindamycin cream were noted with similar effectiveness (85 and 86% respectively) and side effects in contrast with randomized trials.<sup>10-12</sup>

## MATERIALS AND METHODS

This randomized controlled trial study was conducted at Department of Obstetrics & Gynaecology, M. Islam Teaching Hospital Gujranwala from 1<sup>st</sup> July 2019 to 31<sup>st</sup> December 2019 and 200 cases were enrolled. They were divided in two groups (Group A and Group B), each group comprised 100 cases. Patients were then divided randomly into two groups by using lottery method. Group A were given 2% clindamycin vaginal cream 5gm that was administered vaginally at bedtime for 3 days and patients in group B was given metronidazole capsules 500 mg taken orally twice daily for 7 days. Patients of age 20-40 years presented with clinically proven bacterial vaginosis were included. All pregnant and lactating female, vaginal candidiasis, trichomoniasis, and gonococcal infection associated with BV (assess through clinical and laboratory tests), any systemic problem like DM (BSR>200mg/dl), renal insufficiency (serum creatinine >1.2mg/dl), deranged LFTs (ALT>45IU, AST>45IU) and allergic to metronidazole or clindamycin (assess through history or medical record) were excluded. Efficacy was assessed after 1 week (7 days). All this information was recorded. The data was analyzed through SPSS-20. Chi-square was used to compare the efficacy of both drugs. P-value  $\leq 0.05$  was considered as significant.

## RESULTS

The mean ages of patients were 31.73±5.77 years in clindamycin group and 29.84±5.88 years in metronidazole group (Table 1). It was found that pH of vaginal fluid become <4.5 in 176 (88%) cases, amine test was negative in 174 (87%) cases and clue cells were absent in 181 (90.5%) cases (Table 2)

It was found that there were pH of vaginal fluid was <4.5 in 85 (85%) cases in clindamycin group and in 91 (91%) cases in metronidazole group. The difference between both groups was insignificant (P =0.192). Amine test was negative in 80 (80%) cases in clindamycin group while in 94 (94%) in metronidazole group. The difference between both groups was significant (P = 0.003). Clue cells were absent in 90 (90%) cases in clindamycin group while in 91 (91%) in metronidazole group. The difference between both groups was insignificant (P = 0.809) [Table 3]. Efficacy was achieved in 171 (85.5%) cases, out of which 83 (83%) belonged to clindamycin group and 88 (88%) belonged to metronidazole group. Efficacy could not be achieved in 29 (14.5%) cases, out of which 17 (17%) belonged to clindamycin group and 12 (12%) belonged to metronidazole group. The difference between both

study groups was insignificant (p-value = 0.315) [Table 4].

**Table No.1: Descriptive statistics of age (years) of the patients in both groups (n=200)**

Variable	Age (years)
Clindamycin	31.73±5.77
Metronidazole	29.84±5.88

**Table No.2: Frequency of efficacy of the patients with bacterial vaginosis (n=200)**

Efficacy of bacterial vaginosis	No.	%
Vaginal fluid pH<4.5	176	88%
Negative amine test	174	87%
Clue Cells absent	181	90.5%

**Table No.3: Frequency of efficacy of the patients in both groups (n=200)**

Variable	Clindamycin	Metronidazole	P value
Vaginal fluid pH<4.5	85 (85%)	91 (91%)	0.192
Negative amine test	80 (80%)	94 (94%)	0.003
Clue Cells absent	90 (90%)	91 (91%)	0.809

**Table No.4: Comparison of efficacy achieved in both groups**

Efficacy	Clindamycin	Metronidazole	Total
Yes	83 (83%)	88 (88%)	171 (85.5%)
No	17 (17%)	12 (12%)	29 (14.5%)
Total	100 (100%)	100 (100%)	200 (100%)

Chi-square test = 1.008

P = 0.315

## DISCUSSION

The common cause of vaginal excretion, with a prevalence of 29% in the general population, is bacterial vaginosis. Bacterial vaginosis is characterized by a loss of normal, vaginal lactobacilli producing hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) and an increase of the presence of anaerobic bacteria. The sequelae of BV can be serious. Pregnant women diagnosed with BV between 8 and 17 weeks of gestation can raise their risk of delivery by up to 7 times before 37 weeks.<sup>13</sup>

We have performed a randomised controlled trial with a mean age of 30.79±5.89 years and we recruit 200 cases of bacterial vaginosis. The patient's minimum age was 20 years while the patient's median age was 40 years. Both patients were in the category of reproductive age. Literature also quoted the reproductive age group as a concern.<sup>14</sup>

The mean age of clindamycin patients was 31.73±5.77 years, the mean age of metronidazole patients was 29.84±5.88 years. One study recorded that the mean age of clindamycins received by women was 28 years and the mean age of metronidazole received by women was 29 years.<sup>9</sup>

We found an insignificant difference between the two trial groups in this trial. Treatment efficacy was

achieved in 83 (83%) with 2% vaginal clindamycin and with 88 (88%) oral metronidazole. These findings coincide with other study results. There was no major difference between patients treated with intravaginal clindamycin cream for three days and patients treated with oral metronidazole over seven days.<sup>9</sup>

One investigator compared the normal oral metronidazole method with 2% clindamycin phosphate cream intravaginal. The cure rate for clindamycin did not vary significantly from the oral metronidazole cure rate at 5 to 8 days (72% vs 87% respectively). One month after the end of therapy, 61% of patients remained healed in each group.<sup>15</sup>

There were two related studies that were multicentered and included a larger population. Fischbach et al<sup>16</sup> reported a cure or improvement rates of 78% compared to 83% in the clindamycin community, while Luis et al<sup>17</sup> reported the same cure rates of 87% compared to 79%, respectively. These studies did not indicate any important cure difference between normal intravaginal oral metronidazole and 2% clindamycin cream administered over 7 days. Furthermore, both medications have been well tolerated with moderate side effects.

Dhar et al<sup>18</sup> recently conducted a study that assessed the effectiveness and safety of a 2% clindamycin vaginal cream 3-day course in BV therapy. The cure rates for clindamycin for one week were 95.6% and one month after treatment 82.4%, there were three recurrences and no significant adverse effects were reported.

The efficacy of a 3-day intravaginal, 2% clindamycin phosphate cream applied once daily was close to that of regular oral metronidazole in another study (500 mg twice daily for 7 days). The results of this study confirm the findings of Dhar et al<sup>18</sup> previously, and further support the effectiveness and safety of a three day intravaginal, once daily 2% clindamycin phosphate cream in the treatment of BV.

This study showed that pH of vaginal liquid was <4.5 in 85 (85%) cases with clindamycin and 91 (91%) cases with metronidazole (P=0.192), when we compared the two study groups for efficacy parameters. In 80 (80%) of cases of clindamycin the amine test was negative, while in 94 (94%) it was negative with metronidazole (P=0.003). In 90 (90%) cases cluster cells were absent, while 91 (91%) with metronidazole (P=0.809) were absent. Other research have agreed with the findings of our study, and stated that the vaginal photoelectricity in both groups was <4.5 in 80% of clindamycin compared with 87.5% in metronidazole (P=0.93), while all (100%) had negative amine tests and vaginal discharge decreases in both groups.<sup>9</sup>

## CONCLUSION

The overall efficacy of treatment was achieved in 171 (85.5%) cases, out of which 83 (83%) belonged to clindamycin group and 88 (88%) belong to

metronidazole group and the difference between both groups was not significant. Thus we can say that 3-day course of clindamycin and 7-day course of metronidazole are equally effective. So we can prescribe 3-day course of clindamycin instead of commonly prescribed 7-day course of metronidazole.

### Author's Contribution:

Concept & Design of Study: Samra Ismat  
 Drafting: Amna Kazi  
 Data Analysis: Pakeeza Aslam  
 Revisiting Critically: Samra Ismat, Amna Kazi  
 Final Approval of version: Samra Ismat

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# Accuracy of HRCT Chest in Diagnosis of Covid-19 Pneumonia Against Reverse Transcription Polymerase Chain Reaction

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## ABSTRACT

**Objective:** To assess the accuracy of high-resolution computed tomography of chest for diagnosis of pneumonia related to corona virus disease taking Reverse transcription polymerase chain reaction as gold standard.

**Study Design:** Cross Sectional survey

**Place and Duration of Study:** This study was conducted at the Jinnah Medical Diagnostic Center, Sialkot Pakistan, for 6 months from 1<sup>st</sup> April 2020- 30<sup>th</sup> September 2020.

**Materials and Methods:** 200 patients with symptoms of coronavirus pneumonia were included. HRCT chest was done and findings were recorded. Then RT-PCR assays were applied and findings were recorded. Patients were labeled as positive or negative. Data was analyzed using SPSS v.20. Diagnostic accuracy of HRCT Chest was calculated taking RT-PCR as gold standard.

**Results:** The mean age of patients was  $35.69 \pm 12.95$  years. There were 103 (51.5%) males and 97 (49.5%) females. On HRCT Chest, 121 (60.5%) had ground glass appearance and 108 (54%) had consolidation. The sensitivity of HRCT Chest was 70.1%, specificity was 60.3%, positive and negative predictive values were 79.3% and 48.1% and diagnostic accuracy was 67%.

**Conclusion:** HRCT Chest is highly accurate to diagnose the COVID-19 in symptomatic patients and can replace RT-PCR which is expensive than HRCT Chest and not readily available in all set-ups.

**Key Words:** Corona virus, COVID-19, pneumonia, high resolution computed tomography, Reverse transcription polymerase chain reaction

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## INTRODUCTION

Corona virus disease that occurred in 2019 (COVID-19) is the infection that occurs due to entry of corona virus strain in human body. It is identified as the "severe acute respiratory syndrome corona virus 2" (SARSCoV-2). It was first detected in positive patients in Wuhan, China, in late December-2019<sup>1,2</sup>. The frequency of confirmed COVID pneumonia on PCR was reported in 43-70.6% cases<sup>3,4</sup>. Some studies during this time frame of pandemic were conducted throughout the world and findings are quite similar.

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At initial stages of COVID-19, the known imaging characteristics are the bilateral multi-lobar ground-glass opacities<sup>5,6</sup>.

The most common symptoms of COVID-19 infection are fever and cough, more specifically dry cough. Other symptoms are quite non-specific including shortness of breath, myalgia, vomiting, headache and fatigue. To make the definite diagnosis, PCR for corona virus is the gold standard, however imaging facilities at tertiary care hospitals also helpful for the definitive diagnosis as well as to assess the complications.<sup>7</sup> Previous sero-prevalence surveys used serological tests to detect the patients of COVID-19 in general population or community, which have antibodies against the COVID-19 infection. The antibodies are particular type of proteins which develop in response to the infections. The antibodies are identified in the serum of patients who were tested after the episode of infection. These people showed the immune response to COVID-19 infection<sup>8</sup>.

There is significant cohort of patients in which radiographic findings are not typical or are subtle or are not correlating with clinical condition. Some patients are RT-PCR negative but clinically are strongly suspected to have COVID-19. These all are the patients in which HRCT chest may have a diagnostic

role<sup>9,10</sup>. Most commonly observed findings include ground-glass opacities and consolidation predominantly in peripheral lung distribution. It is essential to know about these findings so that it may be helpful to establish a diagnosis<sup>5,11,12</sup>.

There is significant number of patients in which radiographic findings are not typical or are subtle or are not correlating with clinical condition. Some patients are RT-PCR negative but clinically are strongly suspected to have COVID-19. These all are the patients in which HRCT chest may have a diagnostic role. Most commonly observed findings include ground-glass opacities, smooth interlobular septal thickenings and consolidations predominantly in peripheral and basal lung distribution. It is essential to know about these findings so that it may be helpful to establish a diagnosis.

## MATERIALS AND METHODS

**Study Design:** Cross Sectional survey.

**Place of study:** Jinnah Medical Diagnostic Centre, Sialkot Pakistan.

**Study Duration:** 6 months (1<sup>st</sup> April 2020- 30<sup>th</sup> September 2020)

**Sample Size:** Sample size = 200 patients has been estimated by keeping confidence level as 95%, 7% margin of error and anticipated population proportion of COVID pneumonia i.e. 43%

**Sampling Technique:** Nonprobability, consecutive sampling

**Selection Method:**

**Inclusion:** Patients of age 18 years and above, both genders presenting with symptoms of COVID-19 i.e. severe cough, reduced respiration, chest pain, abdominal pain, right hypochondrial pain, dysgeusia, malaise, anorexia, anosmia, etc. were included in the study.

**Exclusion:** Patients with chronic respiratory infection, asthma or chronic obstructive pulmonary disease, congestive heart failure (EF<30%), pregnancy, H/O Pulmonary Surgery, H/O Infection, Pleural Effusion, and Poor Respiratory System or duration between RT-PCR and HRCT– Chest >7 days were excluded from the study.

**Data Collection Method:** 200 patient fulfilling selection criteria were enrolled in the study through outpatient, inpatient and emergency departments of nearby hospitals or who had suspicious opacities of Chest x-rays and referred to our center for HRCT chest. Informed consent was taken from each patient. Following data was collected: patient's name, age, sex, diabetes, smoking history, and presenting symptoms. HRCT chest was done using Light speed 16 slides CT Scanner GE (Germany). HRCT chest was reported by researchers with mutual consensus. Findings on HRCT chest to be collected will include pattern, distribution, laterality and any associated finding including atelectasis, reticulation, architectural distortion,

vascular enlargement, cavitation, pneumothorax and pleural effusion. Findings were recorded and patients were labeled as positive or negative (as per operational definition). All HRCT– Chest was performed by researcher under supervision of consultant radiologist having at least four years' experience in HRCT - Chest. Then RT-PCR assays were applied by using the "Taq Man One-Step RT-PCR Kits (Shanghai Huirui Biotechnology [Shanghai, China] or Shanghai Bio Germ Medical Bio-technology [Shanghai, China])," within 3-7 days of HRCT Chest. Sample was taken by nasopharyngeal or oropharyngeal swabs, nasal swabs, or mid-turbinate swabs. All the samples were stored carefully and sent to the laboratory of the hospital for assessment of presence of COVID under RT-PCR. RT-PCR was applied and findings were recorded. Patients were labeled as positive or negative.

**Data Analysis:** Data was analyzed using SPSS v.20. Numerical variables like age, duration of symptoms, BMI, were calculated as mean  $\pm$  SD. Categorical variables like gender, diabetes, smoking and positive COVID pneumonia were calculated as frequency (%). 2 x 2 table was developed to determine the sensitivity, specificity, positive & negative predictive values and diagnostic accuracy of HRCT– Chest taking RT-PCR as gold standard.

## RESULTS

The mean age of patients was  $35.69 \pm 12.95$  years. There were 103 (51.5%) males and 97 (49.5%) females. Male-to-female ratio was 1.1: 1. The mean BMI of patients was  $32.33 \pm 8.42$  kg/m<sup>2</sup>. There were 86 (43%) patients who were smokers. There were 66 (33%) patients who were diabetic, 81 (40.5%) were hypertensive, 23 (11.5%) had asthma and 9 (4.5%) had COPD. The mean duration of symptoms was  $12.37 \pm 5.61$  days. On HRCT Chest, 121 (60.5%) had ground glass appearance and 108 (54%) had consolidation. Table 1.

**Table No.1 demographics of patients**

n	200
<b>Age (years)</b>	35.69 $\pm$ 12.95
<b>Gender</b>	
<b>Male</b>	103 (51.5%)
<b>Female</b>	97 (49.5%)
<b>BMI (kg/m<sup>2</sup>)</b>	32.33 $\pm$ 8.42
<b>Smoking</b>	86 (43%)
<b>Comorbidities</b>	
<b>Diabetes</b>	66 (33%)
<b>Hypertension</b>	81 (40.5%)
<b>Asthma</b>	23 (11.5%)
<b>COPD</b>	9 (4.5%)
<b>Duration of symptoms (days)</b>	12.37 $\pm$ 5.61
<b>Ground glass appearance</b>	121 (60.5%)
<b>Consolidation</b>	108 (54%)



**Table No.2: Accuracy of HRCT – Chest taking RT-PCR as gold standard**

		RT-PCR		Total
		Positive	Negative	
HRCT	Positive	96	25	121
	Negative	41	38	79
Total		137	63	200

The sensitivity of HRCT– Chest was 70.1%, specificity was 60.3%, positive and predictive values were 79.3% and 48.1% and diagnostic accuracy was 67%. Table 2.

## DISCUSSION

Human infection due to corona virus is a deadly infection of respiratory tract. It was first noted in December 2019 all over the world. The group of patients identified with emergent viral pneumonia in Wuhan, China, were first infected patients due to coronavirus, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2)<sup>13-16</sup>. On 20<sup>th</sup> March, 2020, the SARS-CoV-2 was confirmed in 326,558 patients, world widely. Out of these, 14,267 patients dies due to complications of SARS-CoV-2. Epidemiological and clinical features in patients of corona virus disease 2019 (COVID-19) have been described and testified. But the pathogenesis of this infection has not been described yet<sup>17</sup>.

Patients of SARS-CoV primarily have symptoms like headache, myalgia, chills, fever, malaise and subsequently dyspnea, cough and respiratory distress.<sup>18,19</sup>. Diffused alveolar damage, epithelial cell proliferation and the rise in macrophages are also perceived in infected cases<sup>20</sup>. World Health Organization has already confirmed the continuing epidemic of the respiratory tract infections due to SARS-CoV-2 as the Public Health Emergency at International level and also entitled the infection as COVID-19. According to data recorded in March 2020, there were about 90,053 patients have been established all over the world, with the crude fatality rate as 3.4%<sup>21</sup>. In our study, the mean age of patients was 35.69±12.95 years. There were 103 (51.5%) males and 97 (49.5%) females. Male-to-female ratio was 1.1: 1. The mean BMI of patients was 32.33 ± 8.42 kg/m<sup>2</sup>. There were 86 (43%) patients who were smokers. There were 66 (33%) patients who were diabetic, 81 (40.5%) were hypertensive, 23 (11.5%) had asthma and 9 (4.5%) had COPD. The mean duration of symptoms was 12.37 ± 5.61 days. On HRCT - Chest, 121 (60.5%) had ground glass appearance and 108 (54%) had consolidation. The sensitivity of HRCT Chest was 70.1%, specificity was 60.3%, positive predictive value was 79.3% negative predictive value was 48.1% and diagnostic accuracy was 67%.

HRCT chest showed the high sensitivity rate for detection of COVID-19 than RT-PCR done at initial stage by using samples of cotton swabs in the region of COVID-19 epidemic in China.<sup>22</sup> One study found that the sensitivity and specificity of HRCT Chest were 97% and 25% respectively for diagnosis of COVID pneumonia.<sup>23</sup> Another study found that the sensitivity and specificity were 85.71% and 60.94%, while PPV and NPV were 32.40% and 95.12%. The overall diagnostic accuracy of HRCT Chest for confirmation of COVID-19 was 65.38%.<sup>24</sup>

Karam et al., found that the HRCT chest had pooled sensitivity, specificity and accuracy of about 0.91 (95% CI; 0.82-0.98), 0.775 (95% CI; 0.25-1.00) and 0.87 (95% CI; 0.68-0.99), respectively, taking RT-PCR as gold standard. Notably, in initial days, small studies conducted in China favor HRCT chest of diagnosis of COVID-19 as compared to the larger studies conducted later in other regions.<sup>25</sup> Falaschi et al., reported that HRCT Chest had sensitivity, specificity, PPV, NPV, and accuracy for detection of COVID-19 pneumonia were 90.7% [95% CI 87.7-93.2%], 78.8% [95% CI; 73.8-83.2%], 86.4% [95% CI; 76.1-88.9%], 85.1% [95% CI; 81.0-88.4] and 85.9% [95% CI; 83.2-88.3%], respectively.<sup>26</sup>

Ciccarese et al., found that the COVID-19 was diagnosed in 45.9% cases. “Typical” pattern on HRCT Chest showed the sensitivity of HRCT Chest as 71.6%, while specificity as 91.6%.<sup>27</sup> Qureshi et al., found that HRCT-Thorax revealed sensitivity: 97.41%, specificity: 80%, PPV: 99.12%, NPV: 57.14%, and diagnostic accuracy of 96.69% for COVID-19 pneumonia.<sup>28</sup> While Xu et al., found that HRCT chest showed the higher sensitivity for detection of COVID-19, particularly in the region of severe epidemic condition. But, the specificity is less. In the emergency situation for epidemic control, the HRCT Chest can be a quick, convenient, and effective modality to detect earlier the doubtful cases and may contribute to restrain the epidemic.<sup>29</sup>

## CONCLUSION

Thus HRCT Chest is highly accurate to diagnose the COVID-19 in symptomatic patients and can replace RT-PCR which is expensive than HRCT Chest and not readily available in all set-ups. So we can replace HRCT Chest to confirm the diagnosis of COVID-19 in adults which is cost effective and available in all tertiary level health care centers.

### Author’s Contribution:

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# A Random Trial Comparing Mitomycin C and Autograft of Conjunctiva After Excision of Primary Pterygium

Comparing  
Mitomycin C and  
Autograft of  
Conjunctiva

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## ABSTRACT

**Objective:** To study a random trial comparing mitomycin C and autograft of conjunctiva after excision of primary pterygium

**Study Design:** Prospective study

**Place and Duration of Study:** This study was conducted at the Sahara Medical College, Narowal and Imran Idris Teaching Hospital Sialkot Medical College, Sialkot during Jan 2019 to April 2020.

**Materials and Methods:** Prospective work on successive cases of primary pterygium (Jan 2019 to April 2020) random into two adjuvant groups: (1) During operation zero point zero two percent mitomycin C for five minutes or (2) LCAU. Patients were followed for occurring again (defined as consisting of fibers and conducting cells tissue invading the cornea >one point five mm) and problems for a period of one year. The written informed consent was taken before taking history and examination. Ethical Committee Permission was consider before collecting the findings and get publishing in Medical Journal. The findings were analyzed for results by SPSS version 20.

**Results:** One fifty eyes in one fifty patients who completed the study were random to receive mitomycin C (n=seventy five) and LCAU (n=seventy five). There were twenty again occurring (thirteen point thirty three percent) in the mitomycin C group and only one again occurring (zero point six percent) in the LCAU group. There was a statistically significant difference in the occurring again rate between the two groups (p=zero point zero four). There were a total of three cysts of conjunctiva, three symblepharon, one a mass of granulation tissue, and one dent. No other visually significant issues were seen in either group.

**Conclusion:** This study indicated that LCAU has given good findings in terms of success but it does not give better results in cases of recurrence. Simple excising followed by Mitomycin C or LCAU are both without causing death effects and appreciative for pterygium excision.

**Key Words:** Pterygium, Conjunctival Limbal Autograft, Mitomycin C

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## INTRODUCTION

Pterygium is a international condition with a “pterygium belt” between the parallel thirty degree north and south of the equator.<sup>1</sup> Pterygium is incidence in Hong Kong, situated twenty two degree north of the equator.<sup>2</sup> Situated beyond the visible spectrum at its violet end exposure is a major danger factor for its growth.<sup>3</sup>

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Simple excising have a high occurring again rate ranging from twenty four percent to eighty nine percent.<sup>4</sup> The adding of mitomycin C of various dilution has been noted to be constructive in stopping occurring again.<sup>5-7</sup> However, mitomycin C may result in wasting problems such as scleral death of cells and microbial contaminations.<sup>8-12,7,13-15</sup>

Many works comparing mitomycin C with centigrams have been published. However, in the meaning of findings, it is important to compare the following: (1) primary or occurring again pterygium; (2) during operation or after operation mitomycin C; (3) simple centigrams or LCAU. Based on published findings from previous works, LCAU appears to be more constructive in the stopping of pterygium occurring again. However, to the best of our knowledge, no probable work has directly compared during operation mitomycin C with LCAU for primary pterygium. We therefore set out to do a probable random trial to guess the relative constructive these two adjuvants.

**MATERIALS AND METHODS**

Prospective work on successive cases of primary pterygium (Jan 2019 to April 2020) random into two adjuvant groups: (1) During operation zero point zero two percent mitomycin C for five minutes or (2) LCAU. Patients were followed for occurring again (defined as consisting of fibers and conducting cells tissue invading the cornea >one point five mm) and problems for a period of one year. The written informed consent was taken before taking history and examination. Ethical Committee Permission was consider before collecting the findings and get publishing in Medical Journal. The findings were analyzed for results by SPSS version 20.

**Inclusion criteria:** All the patients of conjunctival autograft after excision of primary pterygium.

**Exclusion criteria:** Collagen vascular disease or other autoimmune disease, pregnancy, pathology of ocular surface or contamination, previous surgery of limbus, and double head pterygium were excluded.

**RESULTS**

One fifty eyes in one fifty patients who completed the study were random to receive mitomycin C (n=seventy five) and LCAU (n=seventy five). There were twenty again occurring (thirteen point thirty three percent) in the mitomycin C group and only one again occurring (zero point six percent) in the LCAU group. There was a statistically significant difference in the occurring again rate between the two groups (p=zero point zero four). There were a total of three cysts of conjunctiva, three symblepharon, one a mass of granulation tissue, and one dent. No other visually significant issues were seen in either group.

The mean age was fifty eight point zero six ± fourteen point sixty seven in MMC and fifty nine point ninety six ± ten point five in LCAU and fifty eight point ninety eight ± twelve point ninety three in MMC + LCAU and p value was zero point sixty eight.

**Table No. 1. Demographic and clinical data of patients in group 1 mitomycin C and group 2 (LCAU)**

Age (years)	MMC (n=75)	LCAU (n=75)	MMC+LCAU (n=150)	p Value
Mean age (years)	58.06 ± 14.67	59.96 ± 10.5	58.98 ± 12.93	0.68
Age range (years)	32–84	39–81	32–84	
Sex				
Male	28(37.33%)	30(40%)	58(38.66%)	
female	47(62.66%)	45(60%)	92(61.33%)	
Laterality				
Right	35(46.66%)	30(40%)	65(43.33%)	
Left	40(53.33%)	45(60%)	85(56.66%)	
Follow up (months)	16.17 ± 3.47	16.73 ± 4.01	16.43 ± 3.71	0.427
Mean size of pterygium across limbus in length(mm)	4.183 ± 1.375	3.962 ± 1.240	4.083 ± 1.314	0.372
Preoperative BCVA (LogMAR)	0.4234 ± 0.3644	0.3380 ± 0.2514	0.3850 ± 0.3199	0.154
Postoperative BCVA 1 year (LogMAR)	0.2870 ± 0.3035	0.2325 ± 0.2149	0.2624 ± 0.2674	0.277

**Table No. 2: Number of recurrences of mitomycin C v LCAU groups**

Months	MMC (n=75)	LCAU (n=75)	MMC+LCAU(n=150)
3 months	2(10%)	2 (28.57%)	4 (18.18%)
6 months	8(40%)	2 (28.57%)	8 (36.36%)
9 months	4(20%)	1 (14.28%)	4 (18.18%)
1year	6(30%)	2 (28.57%)	6 (27.27%)
Total	20(13.33%)	07(4.66%)	22(14.66%)

The male in MMC was 28(37.33%) and LCAU 30(40%), MMC+LCAU 58(38.66%) and in female patients MMC was 47(62.66%) and LCAU 45(60%), MMC+LCAU 92(61.33%). Right eye of the patients there was 35(46.66%) in MMC and LCAU 30(40%) and MMC+LCAU 65(43.33%) and in left eye 40(53.33%) in MMC and LCAU 45(60%) and MMC+LCAU 85(56.66%). The follow up (month) was 16.17 ± 3.47 in MMC and LCAU 16.73 ± 4.01 and MMC+LCAU 16.43 ± 3.71 and p-value 0.427. Mean size of pterygium across limbus in length (mm) 4.183 ±

1.375 MMC and LCAU 3.962 ± 1.240 and MMC+LCAU 4.083 ± 1.314 and p-value 0.372. Preoperative BCVA (Log MAR) 0.4234 ± 0.3644 MMC and LCAU 0.3380 ± 0.2514and MMC+LCAU 0.3850 ± 0.3199 and p-value 0.154. Postoperative BCVA 1 year (Log MAR) 0.2870 ± 0.3035 MMC and LCAU 0.2325 ± 0.2149 and MMC+LCAU 0.2624 ± 0.2674and p-value 0.277 as shown in table 1.

There were ten occurring again (fifteen point nine percent) in the mitomycin C group—1 at three months, four at six months, two at nine months, and three at twelve months (table 2). There was only one occurring again (one point nine percent) in the LCAU group identified at three months and the difference in occurring again rates was statistically significant (p=zero point zero four). There were three cysts of conjunctiva (two mitomycin C, one LCAU), three symblephara (two mitomycin C, one LCAU), one granuloma mitomycin C, and one dellen mitomycin C. No scleral thinning, necrosis, or any other visually significant complications were encountered in either group as shown in table no 2.

## DISCUSSION

Mitomycin C is an process of introducing one or more alkyl groups, inhibit the development of a cancer agent which prevents cellular division and multiplication by inhibiting Doxy Nuclic Acid formation. Products of its ability to produce desired output would include the stage at which Mitomycin C is applied and whether the sclera is covered with conjunctiva. Intra operation Mitomycin C is required and the present treatment of zero point zero two percent Mitomycin C for five minutes has been found to be preferred.<sup>5,6</sup> An repeatedly to prove outcome is the application of CG.<sup>6,11</sup> The epithelium of limbus was added in the CG would help to replace its stopping function. Present study on LCAU noted its orderliness in the stopping of pterygial occurring again (zero to twelve point five percent).<sup>7,13-15</sup> Al Fayez compared CG with LCAU (including primary and occurring again cases) and noted superior effective for occurring again pterygia (no significant benefit for primary). However, one should note that no occurring again occurred in the LCAU group and the sample size was small.<sup>13</sup> As LCAU may be more efficient than CG, we therefore conducted the first random trial to directly compare the efficient of Mitomycin C with LCAU.

The Mitomycin C occurring again rate was fifteen point nine percent, in comparison with thirty eight percent noted by Chen et al<sup>11</sup> and ten point five percent by Manning et al with the application of zero point four mg/ml for three minutes.<sup>15-19</sup>

## CONCLUSION

This study indicated that LCAU has given good findings in terms of success but it does not give better results in cases of recurrence. Simple excising followed by Mitomycin C or LCAU are both without causing death effects and appreciative for pterygium excision.

### Author's Contribution:

Concept & Design of Study:	Shahid Anwar Bhatti
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Revisiting Critically:	Shahid Anwar Bhatti, Tanveer Ahmad
Final Approval of version:	Shahid Anwar Bhatti

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

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# Efficacy of Tranexamic Acid for Reduction of Postoperative Seroma Formation after Ventral Hernioplasty

Allah Nawaz<sup>1</sup>, Ahmad Hassan Khan<sup>1</sup>, Khalid Mahmood<sup>1</sup>, Raza Farrukh<sup>2</sup> and  
Muhammad Arshad<sup>3</sup>

## ABSTRACT

**Objective:** To assess the effectiveness of tranexamic acid for reduction of postoperative seroma formation in patients undergoing ventral hernioplasty.

**Study Design:** Cross sectional study.

**Place and Duration of Study:** This study was conducted at the department of surgery District Headquarter Teaching Hospital Sargodha for duration of one year from September 2019 to August 2020.

**Materials and Methods:** One hundred patients of both genders with ages 20 to 65 years undergoing ventral hernioplasty were enrolled. After written consent, patients were registered for the comprehensive demographic age, sex and body mass index. Patients were categorized in to two equal groups. Group I contains 50 patients and received tranexamic acid 1gm postoperatively while group II didn't received tranexamic acid. Drain output at 1<sup>st</sup> and 5<sup>th</sup> postoperative day was measured. Duration of drain was recorded and compare between both groups. Data was analyzed by SPSS 27.0.

**Results:** There were 14(28%) males and 36 (72%) females in group I while in group II 32 (64%) patients were females and 18 (36%) males. Mean body mass index of patients in Group I was  $24.36 \pm 2.78$  kg/m<sup>2</sup> while in Group II mean BMI was  $24.72 \pm 3.05$  kg/m<sup>2</sup>. A significant short time of drainage was found in Group I  $4.96 \pm 0.85$  days as compared to Group II  $6.88 \pm 1.56$  days (p-value <0.05). In Group I and II 5 (10%) and 8 (16%) patients developed seroma, no significant difference was observed with p-value >0.05.

**Conclusion:** The use of tranexamic acid for prevention of postoperative seroma formation in patients undergoing ventral hernioplasty was effective with less interval of time for removal of drain.

**Key Words:** Drain output, Tranexamic acid, Ventral hernia, Seroma

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## INTRODUCTION

Ventral hernias are one of the most serious issues for general practitioners worldwide. There are many procedures for fixing the ventral hernia, currently the most common being open or laparoscopic hernioplasty<sup>1</sup>. Various forms of mesh have been used for hernioplastia, the most common of which is Prolene mesh, which minimises the chances of recurrence<sup>2</sup>.

A seroma is the fluid aggregation in a tissue that may arise after paraumbilic hernioplasty, where fluid is called serum leaks from surrounding lymph and weakened blood vessels.

Cells commonly occur in the solution, which is usually transparent. The development of seroma can be associated with an increased risk of infection and surgical collapse. After certain procedures, surgical drain tubes and bulb suction systems are used to reduce the chance of seroma formation. This allow the amount of fluid leakage to be tracked and the drainage is removed until reduced. Seromas can grow soon after surgery if drains are not used and after drainage is removed<sup>3</sup>. The most frequent postoperative complication of ventral wall hernia repair is the development of seroma. There are various causes which are inevitable and lead to seroma development, such as unnecessary cautery, dissection in the air under the Scarpa's fascia, sclerosing, etc.<sup>4</sup> This seroma, whether it becomes infected and is not cleared, causes problems such as wound inflammation and wound dehiscence<sup>5</sup>.

Tranexamic acid is a synthetic derivative of the amino acid lysine, providing anti-fibrinolytic activities that inhibit and resolve uncontrolled bleeding in the main and secondary stages of wound cure<sup>6-7</sup>. When fibrinolysis exceeds coagulation, surgical bleeding can occur unless the bleeding control methods are properly employed. Tranexamic acid is administered to prevent

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the fibrinolysis process. It inhibits the release of plasminogen in plasmin. Its use will minimise postoperative bleeding by 34%.<sup>8</sup>

The administration of tranexamic acid may be given orally or intravenously, and the intravenous administration of tranexamic acid has shown a 34% reduction in postoperative bleeding. Intravenous dosage of tranexamic acid (10mg/kg body weight) was normally administered in paraumbilic hernioplasty with anaesthesia induction<sup>9</sup>.

**MATERIALS AND METHODS**

This cross-sectional/observational study was conducted at department of surgery, District Headquarter Teaching Hospital Sargodha for duration of one year from September 2019 to August 2020. Total 100 patients of both genders with ages 20 to 65 years undergoing ventral hernioplasty were enrolled. After written consent, patients were registered for the comprehensive demographic age, sex and body mass index. Patients with uncontrolled diabetes mellitus, patients with complicated hernia, patients with recurrence and those with no consent were excluded.

All patients received prolene mesh after sublay repair. Patients were categorized in to two equal groups. Group I contains 50 patients and received tranexamic acid 1gm postoperatively at skin closure and then 500mg 12 hourly till 5<sup>th</sup> postoperative day while group II didn't received tranexamic acid. Drain output at 1<sup>st</sup> and 5<sup>th</sup> postoperative day was measured. Duration of drain was recorded and compare between both groups. After hernioplasty the vacuum drain in both groups was positioned and sustained until the production was less than 30 ml/day. Drain output at 1<sup>st</sup> and 5<sup>th</sup> postoperative day was measured. Duration of drain was recorded and compare between both groups.

All the data was analyzed by SPSS 24.0. Chi-square test was used to compare the drain output and seroma formation between both groups. P-value <0.05 was taken as significant.

**RESULTS**

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

Variables	Group I	Group II
Men Age (yrs)	36.82±7.54	37.03±6.85
<b>Gender</b>		
Male	14(28%)	18 (36%)
Female	36 (72%)	32 (64%)
<b>BMI</b>	24.36±2.78	24.72 ± 2.05

Mean age of patients in group I and II was 36.82±7.54 years and 37.03±6.85 years. There were 14(28%) males and 36 (72%) females in group I while in group II 32 (64%) patients were females and 18 (36%) males. Mean

body mass index of patients in Group I was 24.36±2.78 kg/m<sup>2</sup> while in Group II mean BMI was 24.72 ± 2.05 kg/m<sup>2</sup>. (Table 1)

Significantly shorter time of drainage was found in Group I 4.96±0.85 days as compared to Group II 6.88±1.56 days (p-value <0.05). At 1<sup>st</sup> postoperative day mean drain output in Group I was 113.52±30.44 ml and in Group II it was 134.15±48.66 ml. At 5<sup>th</sup> postoperative day drain output in Group I was 60.48±27.46 ml and in Group II it was 90.71±30.38 ml, a significant difference was found between both groups with p-value <0.05. (Table 2)

**Table No.2: Drain output and drain duration between both groups**

Characteristics	Group I	Group II	P value
Mean Drain Duration (Days)	4.96±0.85	6.88±1.56	0.001
Drain output at 1 <sup>st</sup> PO day	113.52±30.44	134.15±48.66	<0.001
Drain output at 5 <sup>th</sup> PO day	60.48±27.46	90.71±30.38	<0.001

In Group I and II 5 (10%) and 8 (16%) patients developed seroma, no significant difference was observed with p-value >0.05.



**Figure No. 1: Frequency of Seroma formation between both groups.**

**DISCUSSION**

Abdominal wall hernias are one of the most frequent surgical issues, primarily when they are caused by a disease that raises cavity pressure in the abdomen.<sup>10</sup> Atransverse incision and suction drain for the hernioplastic and on-lay mesh repair is presented in both patients in both groups. We find that gender and age have not been substantially related to complications in both classes, such as seroma, injury infections and post-operative drainage, consistent with Patel et al<sup>10</sup>. Seromas are normal and normally arise after multiple forms of hernia repairs, in particular with large tissue disorders. Although liquid fat, serum, inflammatory exudates and lymph fluid are known to collect under the skins, the precise aetiology of the seroma formation remains controversial. The amount and length of seroma growth vary and other factors, including dissection, skin raising and energy or the knife, affect it. Untreated seromas are typically infected.<sup>11-13</sup> The



proposed dose of tranexamic acid is 1g (1 ampoule 10 ml or 2 ampoule 5 ml) every 6 to 8 hours, with a sluggish injection intravenous equivalent to 15 mg/kg.<sup>14</sup> The incidence of the postoperative seroma development declined as well (27% compared to 37%, P = 0.2).<sup>15</sup>

We found significantly shorter time of drainage in Group I 4.96±0.85 days as compared to Group II 6.88±1.56 days (p-value <0.05). A study conducted by Ahmad H et al<sup>16</sup> reported that tranexamic acid had shorter duration of drainage. Postoperatively 65 (81%) patients developed seroma which resolved within five days.

We found that At 1<sup>st</sup> postoperative day mean drain output in Group I was 113.52±30.44 ml and in Group II it was 134.15±48.66 ml. At 5<sup>th</sup> postoperative day drain output in Group I was 60.48±27.46 ml and in Group II it was 90.71±30.38 ml, a significant difference was found between both groups with p-value <0.05. These results were comparable to many of previous studies in which tranexamic acid showed significant decrease in drain volume and effective for the prevention of seroma formation. Albatanony A et al reported that at first day drain output was 106.5±39.7ml and at fifth postoperative day it was 67.6 ml in patients received tranexamic acid while patients who didn't received tranexamic acid drain output at first postoperative day was 157.5±60.8ml and at 5<sup>th</sup> day it was 93.1ml<sup>17</sup>.

In the current analysis, 5 (10 percent) had seroma that had tranexamic acid, while 8 (16 percent) of patients who had no tranexamic acid had seroma. A research performed<sup>18</sup> concerning the role of tranexamic acid in seroma development prevention recorded that 14.9 percent had seroma patients who had tranexamic acid while 65.7 percent had seroma patients who had not obtained tranexamic acid.

Study by Ahmed H et al<sup>16</sup> showed that 81% of seroma patients in the group had received tranexamic acid subsidies within 5 days and took longer than 5 days, compared to 19% in patients. The active reduction in postoperative drinking, seroma and severe fluid development in anti-fibrinolytic medication tranexamic acid was observed. According to studies it increases wound healing. Tranexamic acid has also been involved in reducing our sample seroma levels. The average postoperative drainage volume as well as the median hospital time for 1 g tranexamic acid per day were both significantly decreased by a double-blind randomised trial<sup>19</sup>.

## CONCLUSION

Tranexamic acid decreases the development of post-operative seroma in ventral hernia repair patients following mesh hernioplasty. It also decreases the overall drain removal time after the service. Thus, it has been concluded that Tranexamic acid in separated doses decreases the patient's cumulative cost and morbidity and allows them to get back to normal early.

### Author's Contribution:

Concept & Design of Study: Allah Nawaz  
 Drafting: Ahmad Hassan Khan, Khalid Mahmood  
 Data Analysis: Raza Farrukh, Muhammad Arshad  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Onlay Mesh Repair for Abdominal Hernia; Do We Need a Paradigm Shift?

Mesh Repair for  
Abdominal  
Hernia

Musarrat Nazeer Sandano, Altaf Ahmed Talpur, Fazila Hashmi, Riaz Akhtar, Iqra Khanzada and Syed Amir Shah

## ABSTRACT

**Objective:** This study was done to compare the two techniques in the management of ventral hernia.

**Study Design:** Comparative prospective study

**Place and Duration of Study:** This study was conducted at unit 4 of the Department of Surgery, Liaquat University of Medical & Health Sciences, Jamshoro from August 2016 January 2017.

**Materials and Methods:** A total of 105 patients, of both genders, aged above 13 years who were operated for VHR by onlay and sublay mesh repair, were enrolled. After randomization, Group A patients, VHR was done using onlay repair technique and in Group B, VHR was done by sublay repair technique. Data was collected on a performa and later analysed using SPSS 20.0.

**Results:** Mean operation time was noted as 63.46+9.7 minutes in Group A in comparison to 72.28+9.5 minutes in Group B (p value < 0.0001). Mean duration of hospital stay in Group A was 5.98+1.27 days in comparison to 6.48+1.48 in Group B (p value = 0.0659). Overall, a total of 16 (30.2%) patients experienced complications in Group A in comparison to 7 (13.5%) in Group B (p value = 0.038). Recurrence was recorded in 6 (11.3%) patients of Group A while 3 (5.8%) in Group B (p value = 0.310). Seroma was noted to be the commonest complication, noted in 13 (24.5%) patients of Group A and 5 (9.6%) in Group B (p value = 0.043).

**Conclusion:** Sublay mesh repair was found to be safe and effective technique for VHR in comparison to onlay mesh repair. Sublay mesh repair technique had less post operative complications. Considering sublay mesh repair safety and efficacy, longer operative time required can be neglected related to this technique.

**Key Words:** Ventral hernia, Sublay Mesh Repair, Onlay Mesh Repair

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## INTRODUCTION

Ventral hernia (VH) is described as any protrusion of contents through an abnormal opening or defects in anterior abdominal wall with the exception of hernia through the inguino-femoral regions. It includes incisional hernia (80%), umbilical hernia (UH), epigastric hernia (EH), paraumbilical hernia (PUH) or Spigelian hernia (SH).<sup>1</sup> VHR is a commonly performed surgery around the world.<sup>2</sup> Various techniques have been devised to operate VH. It includes primary closure of the defect with/without application of mesh at the site of defect which is dependent on the size of the defect.<sup>3</sup> Suture repair related to large defects have been seen to result in high rates of recurrence (as high as 63%)<sup>4</sup>.

Mesh can be placed over the defect at various positions. It includes over the anterior rectus sheath (onlay mesh repair [OMR] technique), beneath the muscles of anterior abdominal wall but over the peritoneum (sublay mesh repair [SMR] technique) & from inside the peritoneal cavity (Inlay repair technique).<sup>5</sup> Suture repair related to large defects have been seen to result in high rates of recurrence (as high as 63%).<sup>6</sup> For such patients, surgical meshes are seen to minimize the rates of recurrence by 50% so considered as standard surgical care.<sup>7</sup>

Currently, around 1 million meshes annually are used around the world. JM East<sup>8</sup> described 61 cases of mesh tuck VHR, a new and simple technique employing sublay herniorrhaphy. The gold standard practice to place the mesh either onlay or sublay is yet to be established<sup>9</sup>. The sublay mesh hernia repair is now a days preferred by many as it reduce the recurrence rate by allowing larger pieces of prosthetic material to be used and incorporating intra-abdominal pressure to aid in keeping the mesh in place<sup>10</sup>, also mesh lies in a deeper plane so there is a less chance of post operative sepsis<sup>11</sup>. This study was designed to compare the outcome of sublay mesh fixation with onlay mesh repair in patients with ventral hernia at a tertiary care teaching hospital of interior Sindh.

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## MATERIALS AND METHODS

This comparative prospective study was done from August 2016 January 2017 at unit 4, Department of Surgery, Liaquat University of Medical & Health Sciences, Jamshoro. A sample of size of 105 was calculated by formula  $n = Z^2(\text{var})^2 / (e)^2$ . Patients were enrolled in the study using Non-probability, convenient sampling technique. All adult patients with primary or recurrent VHR consenting for participation were included. Patients with VHR but with any of these feature were excluded; VH cases presented in obstructed or strangulated condition. When repair is performed along with some other surgical procedure, Pregnant women, Patients with BMI>40, Patient with diagnosed intra-abdominal malignancy, patients with co-morbidities like diabetes, hypertension, IHD and patients who did not consent. All the patients were admitted from outpatient clinic. After admission, they were briefed about the diagnosis as well as the procedure to be done. Merits and demerits of both techniques of ventral hernia repair were explained. On the basis of odd or even numbers, cases were randomly allocated to 2 groups. Group A had patients whose VHR was done by OMR while in Group B, SMR was employed. Patients were discharged once diet was normally commenced and they were mobile. Skin sutures were removed on 10<sup>th</sup> post operative day had there been no surgical site infection. Follow-up of all patients was advised at 1st, 3<sup>rd</sup> and 6<sup>th</sup> months interval. Data was recorded on a performa designed specifically for the study. SPSS version 20.0 was employed for data entry and analysis. Mean and standard deviation were calculated for age. Frequency along with percentage were noted for gender, socioeconomic status and clinical features. Stratification was done for VHR in terms of age, gender, socio economic status and clinical features. Independent sample t test was used to compare means and standard deviation of quantitative variables while chi square test was applied to qualitative variables. P value <0.05 was considered as statistically significant.

## RESULTS

Mean age amongst all the patients was 46.22±12.54 years. In Group A, mean age was 45.91±13.1 years while in Group B, 46.87±12.7 years.

Out of 105 patients, there were eight (7.6%) male and 97 (92.4%) females showing a male to female ratio of 1:12.1. As shown in Table No.1, there was no difference with regards to gender distribution in between both the studied groups. Most common clinical presentations in our patients with ventral hernias were abdominal swelling, found in all the patients. Rest of the clinical presentations are elaborated in table 2. There were 65 (61.9%) patients with size of defect < 2 cm, 22

(21.0%) with 2 to 3 cm and remaining 18 (17.1%) with more than 3 cm.

In terms of frequency of various risk factors noted in our patients, constipation was observed to be the commonest, seen in 39 (37.1%), followed by obesity 19 (18.1%), anemia 11 (10.4%) smoking 8 (7.6%) and diabetes in 6 (5.7%). Benign enlargement of prostate (among male) was noted in 14 (13.3%). Mean operative time was noted to be 63.46 minutes in Group A with a standard deviation of 9.7 minutes in comparison to a mean operation time of 72.28 minutes in Group B with a standard deviation of 9.5 minutes (p value < 0.0001).

**Table No.1: Gender Distribution between Patients of Both Groups**

Gender	Groups		P Value
	Group-A	Group-B	
Male	3 (5.7%)	5 (9.6%)	0.445
Female	50 (94.3%)	47 (90.4%)	
Total	53	52	

**Table No.2: Comparison of Clinical symptoms between two Groups**

Symptoms	Groups		P Value
	Group-A (n=53)	Group-B (n=52)	
Swelling	53 (100%)	52 (100%)	-
Pain	13 (24.5%)	11 (21.2%)	0.6806
Two Irreducibility	4 (7.5%)	5 (9.6%)	0.7051
Irreducibility and obstruction	1 (1.9%)	2 (3.8%)	0.5468
Irreducibility, obstruction and strangulation	1 (1.9%)	1 (1.9%)	0.9891

**Table No.3: Complications Rate Observed Between Two Groups**

Complications	Groups		P Value
	Group-A	Group-B	
Overall Complications	16 (30.2%)	7 (13.5%)	0.038
Recurrence	6 (11.3%)	3 (5.8%)	0.310
Wound Infection	2 (3.8%)	1 (1.9%)	0.569
Seroma	13 (24.5%)	5 (9.6%)	0.043
Hemotoma	1 (1.9%)	1 (1.9%)	0.989

The postoperative pain was noted with the help of visual analog scale (VAS) of 1-10 (1 being least pain and 10 being worst pain). In Group A, VAS score of more than 5 was recorded among 22 (41.5%) in comparison to 23 (44.2%) (p value = 0.8447).

Mean hospital stay amongst patients of Group A was 5.98 days with standard deviation of 1.27 days while duration of hospital stay was 6.48 days in patients of

Group B with standard deviation of 1.48 (p value = 0.0659).

Overall, a total of 16 (30.2%) patients experienced complications in Group A in comparison to 7 (13.5%) in Group B (p value = 0.038). Early Recurrence within 6 months was recorded in 6 (11.3%) cases of Group A while 3 (5.8%) in Group B (p value = 0.310). (Table 3)

## DISCUSSION

Small hernias <n 2.5 cm in diameter are commonly closed with success using primary tissue repair.<sup>12-14</sup> But, large ones accompany recurrence rates of around 30 to 40% when only tissue repair is done.<sup>15-16</sup> Hernia recurrence has been found to accompany distress to not only patients but also bring embarrassment to surgeons as well.

We noted a majority of our patients, 97 (92.4%) as females. An overall male to female ratio of 1:12.1 was found in our study. A local research from Rawalpindi<sup>17</sup> also noted that 73 (93.59%) out of 78 patients were female. A recent study from India<sup>18</sup> also indicated that 94% of the cases undergoing VHR were females.

In the present work, the mean age in both the groups was almost similar. Dharmendra BL et al.<sup>19</sup> presented the similar findings in their work. Ibrahim T and Colleagues<sup>17</sup> found mean age was  $40.95 \pm 9.6$  years in OMR group and  $42.95 \pm 8.6$  years for SMR group. A local study from Lahore<sup>20</sup> noted mean age of  $40.1 \pm 10.7$  years while Bessa et al. in Egypt<sup>21</sup> noted mean age to be  $38.2 \pm 7.8$  years in patients undergoing VHRs. It is also observed that late presentation among western nations is seen as findings from Shahan et al. noted that to be a mean of 57.3 years.<sup>22</sup>

In the present study, more dissection time required for crafting preperitoneal space could be attributed to this long duration. Achievement of satisfactory hemostasis is another load on time as stated by Raghuvver et al in their statistically significant work<sup>16</sup>. Very similar findings to our study were recorded by Sevinc and coworkers in 2018<sup>23</sup>.

The duration of hospital stay after mesh repair has also been a matter of contention in the preceding years. Conflicting reports have arisen in the existing surgical literature, about the period of stay in the hospital and a tool for comparing of sublay and onlay mesh repair techniques. Jat MA et al.<sup>13</sup> and Leithy et al.<sup>25</sup> amongst other international authors have found the postoperative hospital stay to be lower in the sublay group than in the onlay group. However, Godara et al.<sup>25</sup> claim the contrary, with the duration of hospital stay, in their study being  $6.8 \pm 1.5$  days for the sublay group and  $4.6 \pm 1.30$  for the onlay group.

Wound complications are a common problem in ventral hernia prosthetic repair. Some authors designate these complications' development to be more after onlay techniques compared to the retromuscular method.<sup>19</sup> Existing literature also has deliberations which do not

indicate any significant difference. Seroma and wound infection are the main problems encountered after mesh repair of ventral hernias. According to several scientific publications, seroma is a more frequent complication of onlay technique than in the retromuscular method. More frequent development of seroma in onlay mesh repair may be attributed to two reasons: increased dissection of subcutaneous tissue during surgery and tight contact of foreign body (mesh) to the subcutaneous tissue.<sup>19</sup> Ibrahim T et al. observed a statistically proven difference of sublay mesh repair over onlay repair with reference to surgical site infection (p=0.032). The same study noted that most common complication observed was seroma formation in (14.10%). Simultaneously, the difference for seroma formation was statistically significant (p=0.023), very similar to what we found.

Early recurrence was recorded in 6 (11.3%) Group A patients while 3 (5.8%) in Group B. The difference in terms of recurrence rate between both the study groups was found to be statistically insignificant (p-value = 0.310). Raghuvver MN et al.<sup>16</sup> on two years follow up, noted that recurrence rate was found to be 4.35% in sublay group, whereas it was found to be 8.51% in OMR group.

## CONCLUSION

Even though operating time is longer but low complications such as wound sepsis and seroma formation, with ultimately better patient's satisfaction makes sublay mesh repair getting more acceptance worldwide.

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Data Analysis:	Riaz Akhtar, Iqra Khanzada, Syed Amir Shah
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Final Approval of version:	Musarrat Nazeer Sandano

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

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# Early Complications of Open versus Closed Internal Anal Sphincterotomy in the Management of Chronic Anal Fissure

Complications of  
Open versus  
Closed Internal  
Anal  
Sphincterotomy

Jabran Zafar, Fazila Hashmi, Altaf Ahmed Talpur, Ishrat Rahim Katyar, Iqra Khanzada and Riaz Akhtar

## ABSTRACT

**Objective:** This study was performed to compare the outcome of open and closed lateral internal sphincterotomy in terms of early postoperative complications.

**Study Design:** Quasi-experimental study

**Place and Duration of Study:** This study was conducted at the Department of Surgery, Liaquat University of Medical & Health Sciences, Jamshoro Pakistan from June 2017 to May 2018.

**Materials and Methods:** All the patients with chronic anal fissure were consented and enrolled in the study. After lateral internal anal sphincterotomy, either by open or closed technique, outcomes were recorded on a pre-approved Performa. Data regarding patient's demographic characteristic age, gender and pain, bleeding, infection, soiling of clothes) was recorded.

**Results:** A total of 50 patients underwent closed anal sphincterotomy (11 males; mean age, 34.9 years) and 50 patients had open anal sphincterotomy (12 males; mean age, 27.77 years). There was a significant difference in infection rates between open and closed internal sphincterotomy (4.4% & 15.6%; p-value =0.013). The postoperative pain and bleeding were statistically insignificant in both groups (p=0.145). Postoperative hospital stay was found to be significant (p-value = <0.001) and mean shorter hospital stay in patients undergoing closed anal sphincterotomy.

**Conclusion:** Closed and open Lateral internal sphincterotomy is effective in the treatment of chronic anal fissure. Close internal sphincterotomy is preferable to open internal sphincterotomy because it affects a similar rate of postoperative pain, bleeding, and fewer hospital stay days.

**Key Words:** Anal fissure; Continence; Sphincterotomy; Closed Anal Sphincterotomy

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## INTRODUCTION

An anal fissure is a painful elongated ulcer in the mucosa of distal anal canal<sup>1</sup> extending from the anal verge towards the dentate line<sup>2,3</sup>. Traumatic or ischemic damage to the anal mucosa produces a superficial tear, most frequent site for anal fissure is the midline posteriorly followed by midline anteriorly. An anal fissure is a common anorectal problem, first recognized as a disease in 1934<sup>4</sup> and presently affects 10% of patients visiting proctology clinics<sup>5</sup>. Treating anal fissure has remained a challenge for surgeons.

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Many options including Botox, topical sphincterotomy agents<sup>6</sup> are available; surgical sphincterotomy<sup>7</sup> remains a gold standard. Although sphincterotomy carries a significant risk of incontinence in 6-30% of cases, it is still a safe and simple procedure if done by skilled proctologic surgeons<sup>8,9</sup>. To avoid this complication, the concept of tailored sphincterotomy has been evolved having its own merits and demerits<sup>10</sup>. However the classical method of dividing the sphincter to an optimum length remains a gold standard. Both open and closed methods of lateral internal anal sphincterotomy have been compared in a number of studies internationally<sup>11-15</sup> and are found to be almost equally good but close method seems to have an extra advantage of a smaller incision, less tissue insult, minimal bleeding and less post-operative complications than open method<sup>16</sup>.

We hypothesized that closed lateral internal anal sphincterotomy has less early postoperative complications than open internal anal sphincterotomy. This study was performed to compare the outcome of open and closed lateral internal sphincterotomy in terms of early postoperative complications.

## MATERIALS AND METHODS

This quasi-experimental study was done at the department of surgery, Liaquat University of Medical & Health Sciences Jamshoro from June 2017 to May 2018. In total 100 patients irrespective of age and gender diagnosed with chronic anal fissure by the presence of pain on defecation for more than six weeks, presence of sentinel pile and exposure of fibres of internal anal sphincter were included. Those patients who had chronic anal fissure secondary to some organic reason were excluded. Also, patients with recurrent fissure in ano were excluded. Written informed consent was taken, and subjects were given the liberty to withdraw from the study at any point without stating a reason. After seeking consent, patients were divided into two groups and were assigned group A or B through the slip method. Group A patients underwent open sphincterotomy under spinal or general anaesthesia. At the same time, patients in group B underwent closed sphincterotomy. After the discharge, patients were followed for the first visit at two weeks, the second visit at six weeks and the last visit at three months. Study variables were recorded on a predesigned Performa. Statistical analysis was done and p values were calculated with level of significance below 5% using independent t-test and/or chi-square test.

## RESULTS

In group A patients mean age was  $33.57 \pm 7.24$  years, and in group B, it was  $28.68 \pm 7.64$  years. The gender distribution showed female preponderance in both groups. In group A 35 (70%) were females and 15 (30%) were males while in group B 33 (66%) patients were females and 17 (34%) were males. (Table 1)

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

Variables	Group A	Group B	P-value
Mean age	$33.57 \pm 7.2$	$28.68 \pm 7.64$	0.01
Gender			N/S
Male	15 (30%)	17 (34%)	
Female	35 (70%)	33 (66%)	

The infection rate was statistically significant in patients who underwent closed sphincterotomy technique, and this is depicted in detail in table 2.

**Table No. 2: Comparison of Infection Rate between Open and Closed Techniques**

	Operative Techniques			
	Open Group A		Closed Group B	
Infection	n	%	n	%
Yes	3	6	7	14
No	47	94	43	86
Pearson Chi-Square = 6.17; P- value = 0.013				

The perception of postoperative pain was not statistically significant ( $p=0.145$ ) in both groups. However, the number of patients in group A was more (18) than patients in group B (13) who required postoperative analgesia. Amongst 50 patients in group A, 06 (12%) in open anal sphincterotomy observed post-operative bleeding while in close anal sphincterotomy (group B) only 4 (8%) experienced post-operative bleeding. This difference was statistically insignificant ( $p\text{-value} = 3.20$ ). Post-operative soiling was not seen in any group; however, two patients in group A complained of incontinence to flatus which resolved spontaneously within fifteen days. ( $p=4.35$ ). Hospital stay was longer in group A as compared to group B, a statistically significant difference was observed between both groups with  $p\text{-value} < 0.05$ . (Table 3)

**Table No. 3: Comparison of outcomes between both groups**

Variables	Group A	Group B	P-value
PO Analgesia	18 (36%)	13 (26%)	2.42
Bleeding	6 (12%)	4 (8%)	3.2
PO Soiling	0	0	-
Hospital Stay	$2.8 \pm 0.889$	$1.7 \pm 0.824$	0.0001

## DISCUSSION

One of two commonly known methods can be used for lateral internal sphincterotomy. Both approaches can reliably achieve a sphincterotomy that decreases anal canal pressure substantially. In 90-98% of patients, fissure healing has been shown, regardless of the procedure used. The mean submission age was  $31.12 \pm 7.82$ . A majority of patients between the ages of 26 and 30 were about 28.8 percent. The average age recorded in numerous surveys is 30-45 years. Of 100 patients, 77 percent were female and 33 percent were male and 2.33:1 was female-to-male. Contrary to a report by Gupta V et al<sup>17</sup>, in which the ratio of men and women was 1.47:115. In another study by Shafiq-Ullah et al.<sup>18</sup>, 84% of patients were male and 16% were female and the ratio between men and women was 5.1:116. We observed that both approaches in the fissure procedure were successful by comparing the complication rates of open and closed sphincterotomy techniques. There were no cases of incontinence or soiling, and most patients were easily healed and their symptoms fixed. Pernkoff et al.<sup>19</sup> reported that they had a relatively higher complication risk in the open than closed sphincterotomy. Kortbeek et al. have also documented the use of closed sphincterotomy to treat CAFs with decreased postoperative complications<sup>14</sup>. We observed that patients with closed sphincterotomy procedures were more affected by postoperative wound infection.



This result is more than what Sanniyasi et al stated. There have been no reports of incontinence or soiling, and most patients have undergone fast recovery and symptoms resolution<sup>20</sup>. In the current research, medium hospital stay in patients with closed sphincterotomy was shorter, according to results from Bano et al. and Pernikoff et al. the complication risk in open sphincterotomy was comparatively higher<sup>19,21</sup>.

## CONCLUSION

It is concluded that open and closed lateral internal sphincterotomy are both equally effective in treating chronic anal fissure. However, early postoperative complications are fewer with closed technique; also, the hospital stay is minimal.

### 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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# Frequency of Chronic Obstructive Pulmonary Disease in Sugarcane Mills Worker

COPD in Sugarcane Mills Worker

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## ABSTRACT

**Objective:** To determine the frequency of COPD among workers of sugar mills in Pakistan.

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

**Place and Duration of Study:** This study was conducted at the Avicenna Medical and Dental College Lahore from March to August, 2020.

**Materials and Methods:** One hundred and twenty workers of any age were enrolled in this study. Detailed demographics including age, sex, residence, socio-economic status, education, smoking status and family history of respiratory diseases were recorded after taking informed written consent. COPD was diagnosed by spirometry using the GOLD criteria. Data was analyzed by SPSS 27.0.

**Results:** There were 100 (83.33%) males and 20 (16.67%) were females. Mean age of workers was 42.24±15.36 years. COPD was found in 32 (26.67%) workers. Smokers, low socio-economic status, rural residency, family history of respiratory disease and male gender were the significant risk factors associated with COPD with p-value <0.05.

**Conclusion:** Chronic obstructive pulmonary disease (COPD) was highly prevalent in workers of sugarcane mills.

**Key Words:** COPD, Sugarcane Workers, Socio-economic status, Residence, Smokers

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## INTRODUCTION

Employment health should concentrate on the promotion and maintaining of the highest degree of physical, mental and social wellbeing of employees in all professions; shielding workers from risk factors adverse to health in employment; placing and maintaining the worker; and adapting their physiological and psychological facilities to their employment environment and summing up adaptation measures. An industrial worker can be exposed to workplace hazards; physical, environmental, biological, mechanical and psychological hazards are hazards. Work-related diseases are diseases resulting from or during work. Job diseases may include dermatitis, cancer, liver, heart and psychological problems<sup>1</sup>.

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The recurrent restriction of airflow assessed by pulmonary obstructive disease (COPD) is determined by lung function testing and a chronic bronchitis is a reference to a development of productive cough for at least 3 consecutive months each year for a minimum of 2 years[2]. Since they are two distinct disease entities and the existence of one does not exclude other entities, it is important to classify both separately<sup>2</sup> the burden of these diseases. COPD affects nearly 65 million people around the world and makes up 5% of the world's total deaths<sup>3</sup>. The prevalence of COPD continues to grow globally. By 2030, following ischemic heart and cerebrovascular disease, it is expected to become the third leading cause of death. Although assessment constraints are restricted by the implementation of variable methods and COPD definitions, a comprehensive evaluation based on data from 28 developed and developing countries has shown a combined global prevalence of 7.6%<sup>4</sup>. Outdoor predisposition, tobacco smoking, occupational dusts and fumes, indoor (use of bio-mass fuel, particularly for developing countries) and outdoor air pollutants, ageing, diseases, asymmetry and low socioeconomic status<sup>5,6</sup> are stated to be risk factors of COPD.

A number of harmful exposures, particularly bagassosis, are known to occur in the sugarcane industry which may lead to respiratory symptoms and disease, such as chronic bronchitis, byssinosis and impairment of the lung function<sup>7-8</sup>. Sugarcane is

Pakistan's fourth largest cash crop that contributes Rs. 48.292 million in the agricultural economy. The contribution to the broad industry is 18% and 1.9% of GDP. The contribution of the sugar industry to the federal excise tax exchange is 11.2 percent. The sugar cane average yield is 44 tonnes, compared to 60 tonnes per hectare on the world average.

Bagassosis, an extrinsic allergic alveolitis due to inhalation of high bagasse concentrations infected with actinomycetes is one of the most deleterious effects in sugar cane workers. The disorder is acute and persistent<sup>9-10</sup> in distinct phases. Ocular irritations and increased risk of eye infection were also associated with bagasse exposure<sup>11</sup>. The studying and evaluation of health effects in sugar cane workers, including quantitative exposure assessment, are usually restricted to tropical countries<sup>12-13</sup>.

## MATERIALS AND METHODS

This cross-sectional study was conducted at Avicenna Medical and Dental College Lahore for the duration of six months from 1<sup>st</sup> March to 31<sup>st</sup> August, 2020. Total 120 asymptomatic sugarcane mills workers of any age were enrolled in this study. Detailed demographics including age, sex, residence, socio-economic status, education, smoking status and family history of respiratory diseases were recorded after taking informed written consent. The workers who were found to be clinically positive for symptoms, were further subjected to laboratory investigations such as Haemoglobin estimation using Sahli's haemoglobinometer, Blood sugar estimation using Glucometer, Audiometry in a reasonably sound proof room using a pure tone audiometer (Advanced digital audiometer AD2100) and assessment of pulmonary function using computerised Spirometry (niddMedizintechnik AG Spirometer). A walk-through survey of the factory was done and possible hazards the workers were exposed to in the different sections was noted.

All the data was analyzed by SPSS 27.0. Chi square test was done to analyzed the risk factors such as age, gender, residence, socio-economic status, education and smoking status. P-value <0.05 was taken as significant.

## RESULTS

Out of 120 patients, 100 (83.33%) were male while 20 (16.67%) were females. 35 (29.17%) patients were in between 18 to 30 years of age, 40 (33.33%) patients were in between 31 to 40 years, 28 (23.33%) patients were in between 41 to 50 years, 17 (14.17%) patients

were between 51-60 years of age. Mean age of patients was 42.24±15.36 years. 70 (58.33%) patients were married while 50 (41.67%) were unmarried. 55 (45.83%) patients had low socio-economic status and 65 (54.17%) had middle socio-economic status. 60 (50%) patients had primary level education, 40 (33.33%) had high school and 20 (16.67%) had intermediate. Family history of respiratory disease was found in 25 (20.83%) patients. Disease due to smoking was found in 45 (37.5%). COPD was found in 32 (26.67%) workers. (table 1)

**Table No.1: Baseline detailed demographics of patients**

Characteristic	frequency n	%
Mean age (SD)	42.24±15.36	-
Age:		
18-30	35	29.17
31-40	40	33.33
41-50	28	23.33
51-60	17	14.7
Marital Status		
Married	70	58.33
Unmarried	50	41.67
Gender		
Male	100	83.33
Female	20	16.67
Socio-economic Status		
Low	55	45.83
Middle	65	54.17
Education		
Literate primary	60	50
High school	40	33.33
Intermediate	20	16.67
Family History of respiratory		
Yes	25	20.83
No	95	79.67
Smoking status		
Yes	45	37.5
No	75	62.5
Status of COPD		
Yes	32	26.67
No	88	73.33

After the detailed examination of the enrolled patients we found that, smokers, low socio-economic status, rural residency, family history of respiratory disease and male gender were the significant risk factors associated with COPD with p-value <0.05. (table 2).

Table No.2: Factors associated with COPD

Characteristic	Frequency	COPD Yes	COPD No	P-value
<b>Gender</b>				0.026
Male	100	30 (30%)	70 (70%)	
Female	20	2 (10%)	18 (90%)	
<b>Socio-economic Status</b>				0.001
Low	55	27 (49.09%)	28 (50.91)	
Middle	65	5 (7.7)	60 (92.3)	
<b>Education</b>				0.01
Literate primary	60	20 (33.33)	40 (66.67)	
High school	40	10 (25)	30 (75)	
Intermediate	20	2 (10)	13 (65)	
<b>Family History respiratory Disease</b>				0.001
Yes	25	20 (80)	5 (20)	
No	95	5 (5.3)	90 (94.7)	
<b>Smoking Status</b>				0.0001
Yes	45	28 (62.22)	17 (37.78)	
No	75	4 (5.33)	71(94.67)	

## DISCUSSION

The PFT test is a fundamental test for diagnosis, evaluation of pulmonary dysfunction, pulmonary disorders and treatment results. Pulmonary function is an important test. It is understood that the physical characteristics of the lung functions differ, including age, height, body weight and height (hypoxia or low ambient pressure). Bagasse is an organic powder that contains high concentrations of bioaerosols such as bacteria, actinomyces, and plant and animal fungi. Bagasse is a byproduct of sugarcane crushing. The dimensions range from 0.5 to 3 microns, known as respirable dust, which is exposed by sugar workers because of their occupations.<sup>14</sup>

In this study we concluded that chronic obstructive pulmonary disease (COPD) was highly prevalent in workers of sugarcane mills. Total 120 patients of both genders were included in this study and mostly were males. Mean age of the patients were  $42.24 \pm 15.36$  years. COPD was found in 32 (26.67%) workers. Smokers, low socio-economic status, rural residency, family history of respiratory disease and male gender were the significant risk factors associated with COPD with p-value <0.05. These results were comparable to the previous studies conducted by Khade YS et al and Gascon M et al.<sup>15,16</sup>

In sub-professional classes, especially bagasse staff (26.19 percent) and manufacturing employees (22.55percent)<sup>17</sup>, the bronchial obstruction was the main cause of pulmonary abnormalities. Spirometric analysis<sup>18</sup> found that obstructive ventilatory defects prevailed in some 28,5 percent of the workforce surveyed, followed by limitative defects of approximately 19,6 percent of workers during particle-board manufacture, while a combined defect affected approximately 6 percent of the workforce. Symptoms

and symptoms include cough, sputum expectoration, hemoptysis, fever, dyspnea, wheeze, chest pain, speech heartbeat and weight loss.<sup>19</sup>

The management of COPD is controlled by trained facilities workers by the BODE index before and after the intervention (Body mass index, airway obstruction, dyspnea, and ability for exercise) after 6 months.<sup>19,21</sup> These findings have been comparable to previous studies by Manikandan S, et al in our analysis of 37,5% of patients with disease induced by habitual smoking<sup>22</sup>. Bhattacharjee A, et al presented in their study that healthcare programmes are needed for this population in order to improve the function of the lung and hence the quality of life of obese people.<sup>23</sup>

## CONCLUSION

Chronic obstructive pulmonary disease (COPD) was highly prevalent in workers of sugarcane mills.

### Author's Contribution:

Concept & Design of Study: Shamshad Ali  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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# Pattern of Antimicrobial Susceptibility Staphylococcus Aureus Isolated from Idris Teaching Hospital Sialkot & Alama Iqbal Memorial Teaching Hospital Sialkot, Pakistan

Isolation of Staphylococcus Aureus from Idris Teaching Hospital Sialkot

Madiha Mumtaz<sup>1</sup>, M Rafique<sup>4</sup>, Adul Sattar<sup>5</sup>, Saleh Mohammad<sup>2</sup> and Kamran Hamid<sup>3</sup>

## ABSTRACT

**Objective:** To study the antimicrobial susceptibility pattern of Staphylococcus Aureus in a Alama Iqbal Memorial Hospital Sialkot & Idris Teaching Hospital Sialkot.

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

**Place and Duration of Study:** This study was conducted at the Microbiology, Alama Iqbal Memorial Hospital Sialkot & Idris Teaching Hospital Sialkot during Jan 2019 to Jan 2020.

**Materials and Methods:** Three hundred and forty three samples were included in the study among which two hundred and ninety four samples showed the growth of different microorganisms. Pus, blood, body fluids, and sputum and wound swabs specimen were added and different biochemical reactions were done in order to identify Staphylococcus aureus specimen. The bacterial susceptibility of these specimen were conducted by disk diffusion method using cefoxitin (thirty micro grams) and different antibacterial drugs are tested against methicillin repellent and reactive staphylococcus specimen as outlined by Clinical Laboratory Standard worldwide Guidelines. Informed written was taken from each sick person before taking the sample. The permission of Ethical Committee was taken before collection of data and publishing in the medical journal. The results were assessed by SPSS version 10.

**Results:** Sensitivity pattern of Con staphylococci was Penicilin 0% , doxycyline 49%, erythromycin 16% , gentamycin 45% , amikasin 63% , Ciproflaxicin 20%, amoxiclav 41%, methycilin 41%, amoxifloxain 31%, clindamycin 73%, fusidici acid 47%, vancomycin 100%, chorophenocal 98%, septan 31%, linsolate 100%, cephradine 41%, Sensitivity Pattern of methicilin sensitive staphylococcus aureus is penicilin 1%, augmentin 100%, minocyclane 67%, doxycycline 65%, erythromycin 65%, gentamycin 95%, amikasin 97%, ciprofloxaicin 41%, amoxifloaxacin 46%, clindamycin 89%, fusidic acid 78%, vancomycin 100%, chorophenocal 84%, linsolit 100%, cefradine 100%, septan 51%, Sensitivity Pattern of methicilin resistance staphylococci aureus was penicillin 0%, amoxiclave 0%, minocycline 51%, erythromycin 8%, gentamycin 65%, amikasin 83%, ciprofloxacilin 10%, amoxifloacin 18%, clindamycin 77%, fusidic acid 75%, vancomycin 100%, chorophenocal 100%, septran 38%, levofloxaicin 100%, cefradine 00%.

**Conclusion:** The antibiotic susceptibility pattern derived from the above work showed a lot of antimicrobial chances available for staphylococcus aureus, so the use of Vancomycin and linezolid should be the last centre for treating such infections. It also draws attention towards increasing repellent between the widely used antibiotic such as ciprofloxacilin so its overuse should be discouraged.

**Key Words:** Antimicrobial susceptibility, Methicillin resistant Staphylococcus aureus, Staphylococcus aureus

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## INTRODUCTION

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Staphylococcus aureus is one of the most common and shared tiny living organism involved in human contagious a.<sup>1</sup> It causes a wide range of contagious a which includes skin and soft tissue contagious, lung inflammation, infective inflammation of heart leading to infection of blood.<sup>1</sup> It has been found as one of the most common organisms involved in after operation wound contagious.<sup>2</sup> Nose carriage among health care workers is the main source of nosocomial infections. The action by animal of establishing itself in an area rate of workers are some of the lowest paid people in the country.<sup>3</sup> In currently there has been an causing people to feel risk increase in methicillin repellent Staphylococcus aureus (MRSA) in hospital.<sup>4</sup> The

increase hospital admission for CAP (community obtain lung rawness), VAP (ventilator associated lung rawness) and surgical site communicable are linked with increased prevalence of MRSA.<sup>5</sup> Before the finding of penicillin, staphylococcal blood poisoning caused by bacteria was a major risk.<sup>1</sup> Within a short period bacteria developed repellent to penicillin and therefore Building ineffective.<sup>2,6,7,8</sup> In 1960s beta lactamase penicillin's appear as mutinying drugs, but soon they failed after the appearance of methicillin repellent Staphylococcus aureus (MRSA). Against MRSA vancomycin is the acceptable substance able to inhibit or kill microorganisms and the best medicine to be used.<sup>9,10</sup> The present state is the appearance of vancomycin repellent strains of staphylococcus aureus, and thus the treatment choice are also present for such repellent strains.<sup>11,12</sup> The grounds of our work is to search the antimicrobial susceptibility pattern of Staphylococcus aureus both methicillin repellent and delicate isolated in a Allama Iqbal Memorial Teaching Hospital Sialkot and Idris Teaching Hospital Sialkot limit the unnecessary usage of broad spectrum antibiotics.

**MATERIALS AND METHODS**

Three hundred and forty three samples were included in the study among which two hundred and ninety four samples showed the growth of different microorganisms. Pus, blood, body fluids, and sputum and wound swabs specimen were added and different

biochemical reactions were done in order to identify Staphylococcus aureus specimen. The bacterial susceptibility of these specimen were conducted by disk diffusion method using cefoxitin (thirty micro grams) and different antibacterial drugs are tested against methicillin repellent and reactive staphylococcus specimen as outlined by Clinical Laboratory Standard worldwide Guidelines. Informed written was taken from each sick person before taking the sample. The permission of Ethical Committee was taken before collection of data and publishing in the medical journal. The results were assessed by SPSS version 10.

**RESULTS**

Sensitivity pattern of Con stayplyococci was Pencilin 0%, doxycyaline 49%, erthromycin 16%, gentamycin 45%, amikasin 63%, Ciproflaixicin 20%, amoxiclav 41%, methycilin 41%, amoxifloxain 31 %, clindamycin 73%, fusidici acid 47%, vancomycin 100%, chorophenocal 98%, septan 31%, linsolate 100%, cephradine 41%, as shown in table 1.

Sensitivity Pattern of methicilin sensitive staphylococcus aureus is pencilin 1%, augmentin 100%, minocyclane 67%, doxycycline 65%, erythromycin 65%, gentamycin 95%, amikasin 97%, ciprofloxaicin 41%, amoxifloaxacin 46%, clindamycin 89%, fusidic acid 78%, vancomycin 100%, chorophenocal 84%, linsolit 100%, cefradine 100%, septan 51%, as shown in table 2.

**Table No.1: Sensitivity Pattern of CoN Staphylococci N=49**

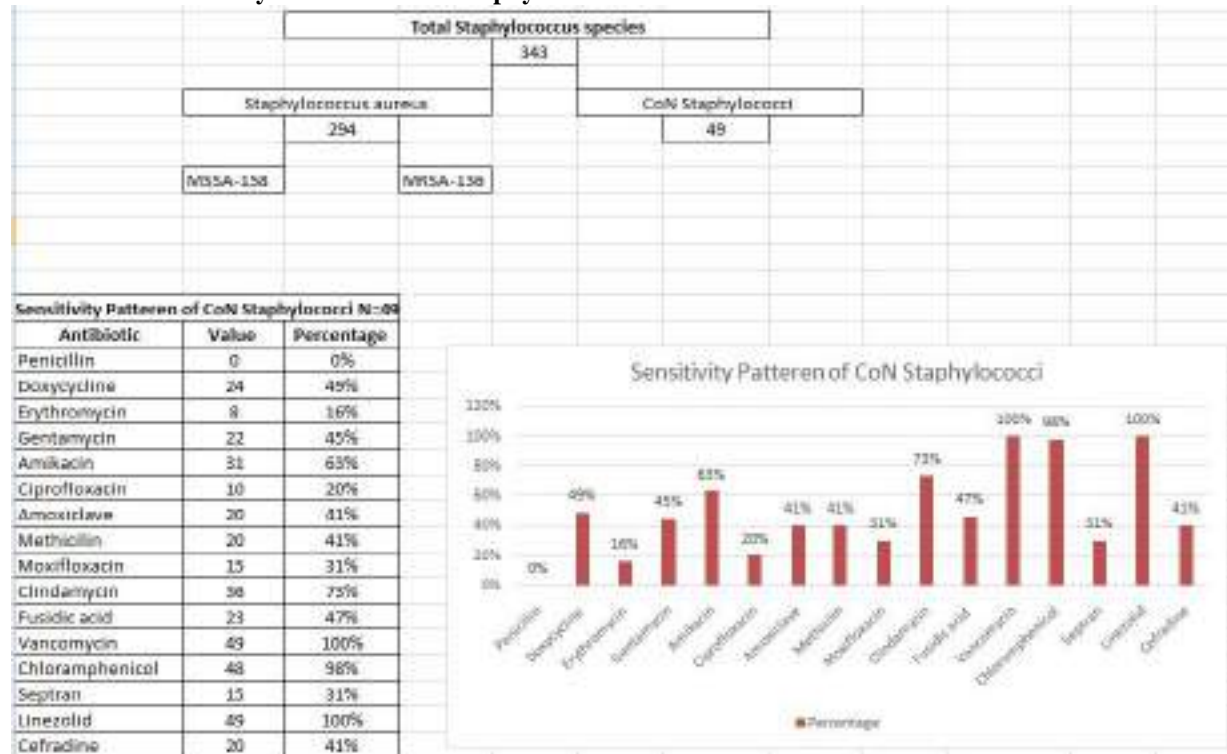




Table No. 2: Sensitivity Pattern of Methicillin sensitive Staphylococcus aureus N=158

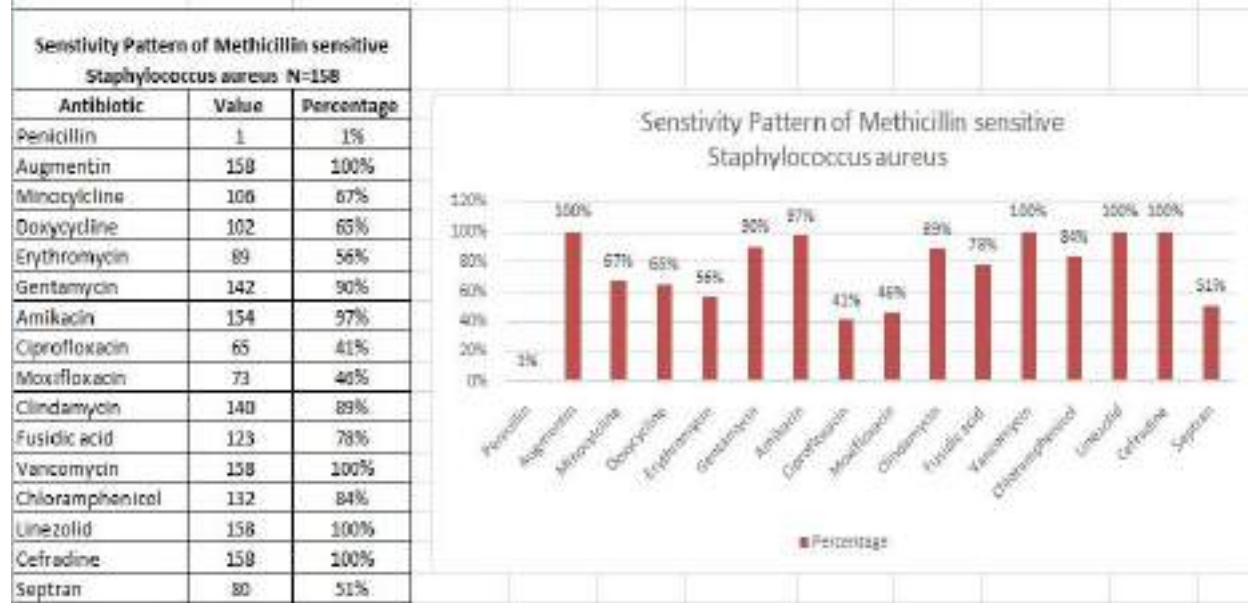
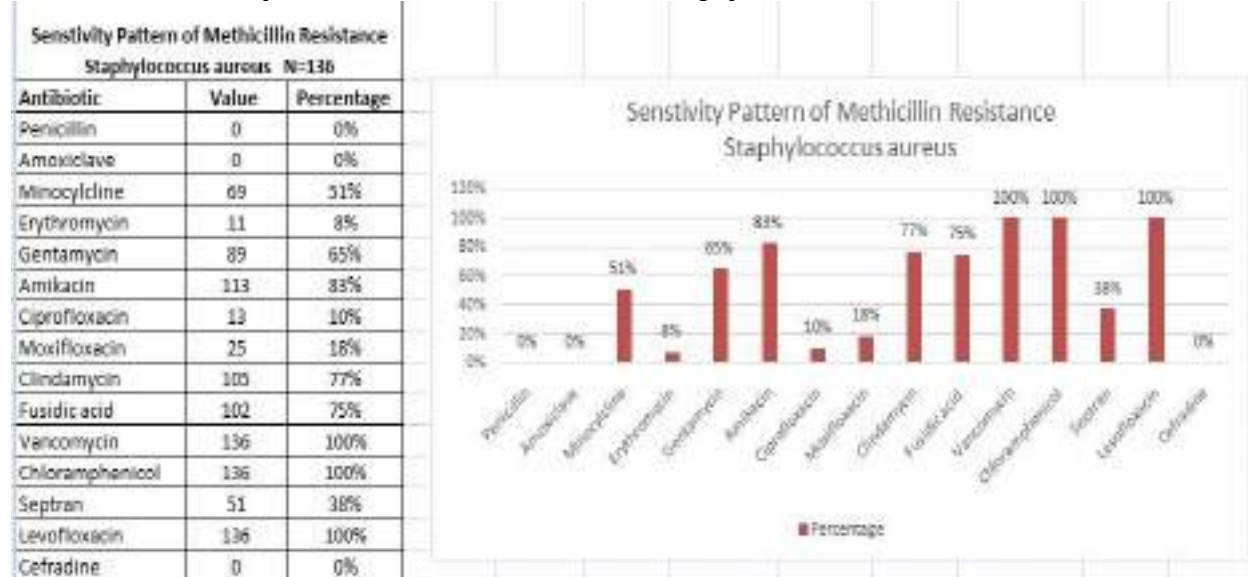


Table No. 3: Sensitivity Pattern of Methicillin Resistance Staphylococcus aureus N=158



Sensitivity Pattern of methicillin resistance staphylococci aureus was penicillin 0%, amoxiclave 0%, minocycline 51%, erythromycin 8%, gentamycin 65%, amikacin 83%, ciprofloxacin 10%, amoxifloacin 18%, clindamycin 77%, fusidic acid 75%, vancomycin 100%, chlorophenacal 100%, septran 38%, levofloxaicin 100%, cefradine 00%, as shown in table 3.

The incidence of sensitivity pattern of Con staphylococci aureus was maximum in antibiotic linezolid 49 (100%) and minimum in penicillin 00 (0.0%) as shown in table 1.

The incidence of sensitivity pattern was the highest linezolid, cefradine, augmentin & vancomycin 158 (100%) respectively and the lowest in penicillin 1(1%) as shown in table 2.

## DISCUSSION

One of the most common causes of disease originating in a hospital contamination in the recent work setting is methicillin repellent Staphylococcus aureus (MRSA). Its increasing incidence is a major risk to our medical care system as it not only increases the hospital admissions but also connect with increased death rates.<sup>14</sup> The incidence of MRSA and its antibiotic susceptibility pattern is a substantial assistance for a medical expert to treat such ailments.<sup>15</sup> The incidence of MRSA found in the above work is sixty three point thirty eight percent, which is in considers with the Iranian work showing the incidence about sixty percent.<sup>12</sup> The incidence of MRSA in a present work



done in Peshawar, Pakistan was thirty six percent, which is less than found in our work.<sup>16</sup> This difference is due to the change in the conditions environment, variations season, difference in blood culture system, and type of sick person people.<sup>16</sup> The steady rise in the appearance of methicillin repellent *Staphylococcus aureus* (MRSA) and its relationship with misuse of antibiotics is a cause of apprehension not only for doctors but also for expert of microbiology and constitute a major international danger. The frequency of MRSA in our work was highest in pus (seventy nine percent), followed by blood (fifteen percent), while the frequency of MSSA is eighty two percent in pus and ten percent in wound swab. This was coincidence to a work done Ethiopia, where prevalence of staphylococcus aureus both methicillin repellent and reactive is highest in pus (fifty five percent).<sup>17,18</sup> The result was also in coincides with Indian works reporting highest incidence of MRSA in pus after blood.<sup>19,20</sup> Between antibiotics, majority of staphylococcus aureus, both methicillin repellent and methicillin reactive was susceptible to chloramphenicol, (seventy two percent for MRSA) and (seventy one percent for MSSA). Antibiotic reactivity against doxycycline is also high as compared to other antibiotics. All isolates are hundred percent reactive to Vancomycin and linezolid. Similar findings are also found in a work carried out in Northern areas of Jordan in 2015.<sup>18</sup> Vancomycin and linezolid are the only antibiotics showing hundred percent reactivity to all staphylococcus isolates, which is also found in works done in different areas of Asia.<sup>1,2</sup> Same pattern of reactivity against Vancomycin was also found in a present work done in Namibia.<sup>23</sup> One of the most important point taken from the above data is the increasing repellent of ciprofloxacin (seventeen percent reactive) for MRSA. The emergence of repellent of ciprofloxacin (seventeen percent reactive) is a characteristic feature of the present work. This may assumable linked to the inappropriate antibiotic use in hospital setup and outpatient departments.<sup>22,23</sup>

## CONCLUSION

The antibiotic susceptibility pattern derived from the above work showed a lot of antimicrobial chances available for staphylococcus aureus, so the use of Vancomycin and linezolid should be the last centre for treating such infections. It also draws attention towards increasing repellent between the widely used antibiotic such as ciprofloxacin so its overuse should be discouraged.

### 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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