

## **EDITORIAL**

### **ONLINE LEARNING ERA**

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The world has changed after the havoc caused by Coronavirus Disease 2019 (COVID-19). It has deeply impacted the economy, schools, colleges students and universities worldwide with disrupted medical education and healthcare systems. Pakistan's education system is in the struggling phase where the majority of students live in rural areas. The literacy rate is not going up from 60 percent as mentioned in a district-level survey 2019-20 (Pakistan Social and Living Standards Measurement (PSLSM)).<sup>1</sup> The drastic consequences of the horrible COVID-19 menace on one side, damaged the economy and health of the Pakistani population, and on the other hand, decreased the intellectual and mental capacities of students gaining education. The e-learning was promoted under the "HEC COVID-19 Guidance" as all educational institutions were forcefully closed amid coronavirus catastrophe. The budding online trends of delivering education to the students got into the limelight. Later on, to bridge the learning losses of the student's government forced Higher Education Information (HEI) system toward online learning systems.<sup>2</sup> Therefore, universities were directed to carry out online learning classes. Later on, when the feedback was taken, some technological issues, pedagogical, infrastructural, content-based, as well as health-related issues, were observed during the first year of online learning.<sup>3</sup> As no one was mentally prepared to welcome the COVID leading to educational devastation.

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Considering the undergraduate medical teaching in the first year of pandemic 2020 all institutions struggled hard to complete the course and deliver the content to the students. Teachers did more hard work than the students. It was a whole new thing for the teachers and the students, nobody was fully familiar with it. As for virtual learning or online learning previously 2-to 3 institutes were working on this pattern namely Allama Iqbal Open University (since 1974) and the Virtual University of Pakistan (2002).<sup>4</sup> These higher education institutions were working earnestly to provide education to the working class or the people living in remote areas. The undergraduate institutes never experienced this newer teaching-learning and learning method (online teaching) until COVID arrived. It was easier to transfer the theoretical knowledge to students however the practical teaching deficiency lacked the students behind.

The students became very relaxed during this tricky era. Taking lectures online by sitting in their comfort zone initially got popular among elderly students. The younger kids and their parents had to struggle a lot in terms of economic burden, but in the end, the beneficiaries of this trend were the students who got promoted without assessments (or lenient checking). Later on, depression and sadness prevailed among the students due to longer stay at home under the dreadful situation outside. Maintaining SOPs created COVID terror.<sup>5</sup> In a country where the literacy rate is already below the desired level, we are in a process of producing the students having less grasp on the actual knowledge and lack clinical training too. Different researches were done in 2021 in the educational sector and it highlighted that

virtual education has still not been grappled happily by students.<sup>6</sup> They are confused regarding the completion of the syllabus. They are still more in the favor of face-to-face classroom teaching.<sup>7</sup>

It should be kept in mind that COVID-19 and off and on lockdown, unpredictable waves of the pandemic are driving the educational system for conversion to online academics and developing countries like Pakistan are trying hard to develop reliable, cost-effective, and secure online academic systems to provide uninterrupted conceptual learning.<sup>8-9</sup> However it could also be stated that the online COVID era made many teachers capable and well oriented with the technology and latest communication tools, but still online learning in Pakistan is at a nascent stage. In 2022 all the institutes are trying hard to overcome the deficient knowledge of students with more and more face-to-face teaching with interactive lectures, assessments, assignments, and providing students boredom-free education and enhancing their communication skills which were ruined during Online teaching.

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## Original Article

# **CORRELATION OF UMBILICAL CORD BLOOD PH IMMEDIATELY AFTER BIRTH IN PATIENTS WITH PRESUMED FETAL DISTRESS TO APGAR SCORE.**

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### **ABSTRACT**

**Background:** The best parameter to diagnose neonatal distress is an academic assessment of cord blood pH immediately after birth. The detection of pH in the immediate postpartum period can predict neonatal outcomes and will be helpful in the planning of further plans of care. The study aimed to establish co-relation between umbilical cord blood pH immediately after delivery with APGAR score.

**Material and Methods:** This cross-sectional study was conducted in the Department of Obstetrics & Gynecology, Mumtaz Bakhtawer Hospital, Lahore. This study randomly included 68 full-term pregnant women who presented to the labor room with labor pains. After delivery cord blood was taken in a pre heparinized insulin syringe within one minute of delivery. Maternal demographic features along with gestational age and fetal pH, base deficit, and HCO<sub>3</sub> levels were noted. The correlation coefficient of pH and APGAR score was also calculated, p-value ≤0.05 was considered statistically significant.

**Results:** Eighty patients were enrolled in the study, but 70 were confirmed and became part of the research. Later on, 2 patients withdrew their consent for the study. Among 68 patient, 48(70.5%) patient had non-reactive CTG (pathological CTG) and 20(29.4%) patients had meconium-stained liquor with normal CTG. LSCS was done in 56(82.35%) mothers while 12(17.6%) underwent spontaneous vaginal delivery (SVD). Among these 56 females 14 (25%) have grade 2 meconium and 42(75%) have non-reactive CTG. Among 12 patients 6(50%) had non-reactive CTG and 6(50%) had Grade 2 meconium. Four 4(5.8%), neonates had acidosis along with an APGAR score < 7. The mean cord blood pH was 7.24±0.15. Only two needed neonatal intensive care unit (NICU) admission. Among Sixty-four (94.11%) with APGAR >7 two neonates with meconium needed observation for 24 hours and the remaining babies after 6 hrs of observation were handed over to the mother and cared for by the mother. There was a positively weak relationship observed between cord blood pH and APGAR score (r=0.645), however, it was statistically non-significant P > 0.05.

**Conclusion:** Acidic pH leads to poor APGAR score and birth asphyxia. Early assessment and diagnosis can improve fetal outcomes. Meconium-stained liquor and non-reactive pathological CTG had no significant correlation with neonatal outcomes. These two parameters result in unnecessary cesarean section.

**Key Words:** Fetal Distress, Hypoxia, APGAR score

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## **INTRODUCTION**

The most common indication for cesarean section, routinely, is meconium-stained liquor and non-reactive CTG (pathological) for many decades. Fetal distress may be defined as fetal tachycardia followed by fetal bradycardia manifested by non-reactive

CTG and passage of meconium. With the invention of CTG in 1970, it was thought that this will decrease the risk of cerebral palsy and mental retardation by 50%. CTG is used for the past few decades as a monitoring tool, however, unfortunately, randomized controlled trial results are not encouraging in terms of long-term neonatal outcomes and a fourfold increase in cesarean section rate.<sup>1</sup> There is inconsistency in the interpretation of CTG, sometimes due to inaccurate interpretation doctor is unable to predict neonatal morbidity. Nowadays it is a matter of medico-legal concern.<sup>2,3</sup> Meconium-stained liquor is a subject of discussion as a sign of impending fetal compromise, however, some researchers believe that passage of meconium is not an absolute sign of fetal compromise.<sup>4</sup> Many babies delivered with the passage of meconium-stained liquor have normal umbilical artery pH. Clear liquor is a healthy sign of fetal outcome.<sup>4,5</sup> The assessment of cord pH at the time of birth results inappropriate decision of care after birth.<sup>6</sup> To differentiate between hypoxia and normal infant lactate and pH value are definitive indicators. Arterial and venous blood gases are indicators of placental and fetal oxygenation.<sup>6-8</sup>

To assess fetal pH, a cord blood sample venous should be taken within one minute of delivery after applying a double clamp. When we disrupt the umbilical cord continuity to the placenta and environment, the acid-base status of the cord will remain the relatively same as before birth for an hour. Subtle changes in acid-base status can occur within one minute.<sup>9</sup> This possibility can be ruled out by double clamping the cord. Placental metabolism and gas exchange processes may lead to changes in pH if the umbilical cord remains in continuity with the placenta.<sup>10-12</sup> According to SOGC (society of obstetrician and Gynaecology Canada) Attendance at Labor and Delivery Guideline, there is a recommendation for routine arterial and venous blood gases of all delivered babies which leads to immediate care and plan

further management.<sup>13</sup> The pH and APGAR score has an important correlation in terms of neonatal outcomes like the need for a neonatal intensive care unit(NICU), and advanced resuscitation. The normal neonatal umbilical cord pH is  $7.40 \pm 0.20$ . There is an increased incidence of morbidity in terms of fits, advanced resuscitation, and NICU admission and mortality. Metabolic acidosis is defined as if pH is less than  $<7$  and base deficit  $>12$ mmol/L. There is an increasing trend in neonatal cord blood gases analysis among all deliveries to assess the status of the fetus in an intrauterine hypoxic environment.<sup>3,14-17</sup> The main aim of obstetrics is to reduce fetal morbidity and mortality. To keep this aim in mind, we have conducted the study to evaluate all the deliveries and emergency cesarean sections performed for pathological CTG and meconium-stained liquor and its relationship with neonatal outcome using cord blood pH to APGAR score. The main aim of this research was to find the pH value of umbilical cord blood immediately after birth to detect true fetal distress in patients undergoing delivery for meconium and non-reactive CTG. This will help us to design interventions/protocols for patients in labor such as fetal scalp blood sampling and neonatal cord blood sampling to detect acidemia of fetus or neonate rather than relying only on meconium and non-reactive CTG.

## MATERIAL AND METHODS

This descriptive observational cross-sectional study was conducted in Obstetrics and Gynaecology department, Mumtaz Bakhtawer Hospital, Lahore, from January to June 2020. The sampling technique was nonprobability consecutive sampling. It included 68 full-term pregnant women who presented to the labor room of the department of Obstetrics and Gynaecology with labor pains. All women included in the study were having signs of fetal distress (non-reactive CTG (pathological) and passage of meconium-stained liquor on

artificial and spontaneous rupture of membrane) inactive or latent phase of labor. All full-term pregnant mothers having signs of fetal distress with pathological CTG and grade 2 meconium-stained liquor included in the study

The following exclusion criteria was used

- Grade 3 meconium-stained liquor
- Women with preterm labor <37weeks
- Women with anomalous baby
- Women with intrauterine fetal demise

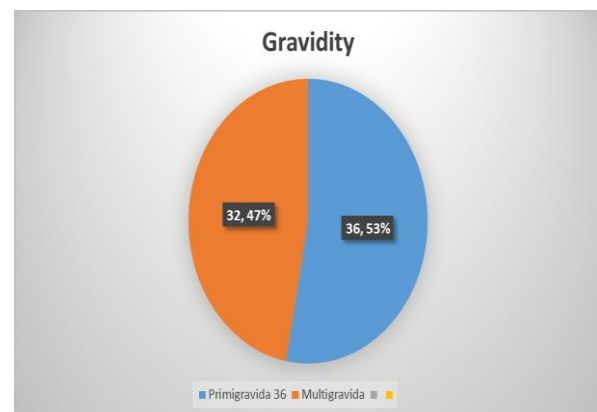
Maternal history, demographic and examination findings were recorded. Monitoring of these term pregnancies was done by the maintenance of a Partogram. After delivery of fetus and cord is clamped and a blood sample (arterial and venous) was taken in pre-heparinized insulin syringes within one minute of delivery. In the blood gas analyzer pH, base excess, carbon dioxide pressure (PCO<sub>2</sub>) and HCO<sub>3</sub><sup>-</sup> were measured within 30 minutes after sample collection. All this information along with gestational age, parity, mode of delivery, gender of baby, APGAR score and NICU admission were recorded in a computer database. APGAR score was calculated by a pediatrician at 1 and 5 minutes intervals. The baby who was resuscitated was shifted to NICU. pH < 7.20 was labeled as fetal distress.

All data were collected and analysis was done by SPSS 22. Mean and standard deviation was calculated for quantitative variables. For qualitative variables, percentages and frequencies were calculated. The correlation coefficient and Chi-square test were used to assess the significance of the findings. p-value <.05 was considered significant.

## RESULTS

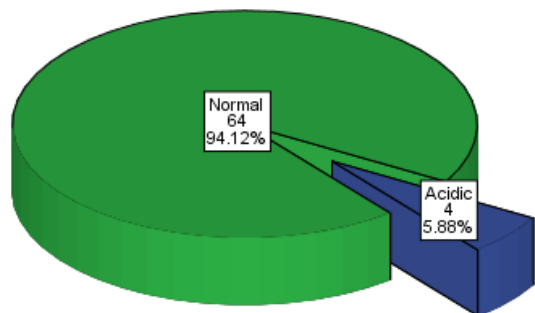
A total of 80 patients were enrolled for the study, 70 were confirmed and included in the study and 2 patients withdraw their consent for the study later hence several pregnant women at term who completed the analysis were 68. The mean age of women was 26.00±2.39 years. The mean duration of pregnancy of women was 38.20±2weeks.

Thirty-two 32(47.1%) were Multigravida and 36 (52.9%) females were primigravida. Out of a total of 68 patients, 48(70.5%) patients had non-reactive CTG (pathological CTG) and 20(29.4%) patients had meconium-stained liquor. Lower segment caesarean section (LSCS) was done in 56(82.35%) mothers while 12(17.6%) underwent SVD. Among 68 babies 48(70.6%) were male and 20 (29.4%) were female. Among these 56 females 14 (25%) had grade 2 meconium and 42(75%) had non-reactive CTG. Among 12 patients 6(50%) had non-reactive CTG and 6(50%) had Grade 2 meconium. Among 48 newborns with non-reactive CTG 2(4.1%) had severe bradycardia. Out of these 68 patients, 4(5.8%) had acidosis. Only two needed NICU admission (1 with severe bradycardia and one with thick meconium). Among Sixty four (94.11%) with APGAR >7 two neonates with meconium need observation for 24 hours and the remaining babies after 6 hrs of observation are handed over to the mother and cared for by the mother. The mean cord blood pH was 7.24±0.15. Four (4) babies had severe hypoxemia with pH 6.85 -7.00 and the remaining 64 babies had pH 7.40±20. with no sign of acidosis. During the period of stay in the NICU, one baby with a pH of 6.8 was shifted to a ventilator after 6hrs and survived. The correlation coefficient was r=0.645



**Figure-1:** Primigravida/Multigravida

The pH values of all neonate's cord blood are given in figure 2.



**Figure-2:** The pH of neonatal cord blood

**Table-1:** Comparison of Mode of delivery with indications

		Indication	
		Grade 2 Meconium	Non-reactive CTG
Mode	LSCS	14(25%)	42(75%)
	SVD	6(50%)	6(50%)
Total		20(29.4%)	48(70.5%)

Later the outcome was compared in acidic and normal pH of fetal cord blood. A summary of this can be seen in table 2.

**Table-2:** Comparison of outcomes in both pH group

	Acidic	Normal	p-value
Mode of delivery			
LSCS	2	54	0.080
SVD	2	10	
Stage of labor			
1 <sup>st</sup>	2	38	0.712
2 <sup>nd</sup>	2	26	
Grade 2 meconium	2	20	0.183
Non-reactive CTG	2	44	
Apgar score at 1min	6.50±0.58	7.88±0.55	0.191
Apgar score at 5min	7.00±0.58	7.94±0.50	0.097
Apgar score			
<7	4	0	<0.05
≥7	0	64	

A significant correlation was found between pH and APGAR score at one and 5 minutes.

## DISCUSSION

Umbilical cord pH is the gold standard to detect fetal distress. According to the literature review, pH and lactate levels in cord blood are considered definitive diagnostic parameters.<sup>6,7</sup> The results of this study also revealed that cord blood pH is the most reliable parameter of fetal distress (hypoxemia). In this study, among 68 babies, 4 babies had fetal distress based on cord blood pH and 2 needed NICU admissions. During the period of stay in the NICU, one baby with a pH of 6.8 was shifted to a ventilator after 6hrs and survived. Similar results were reported by William et al that cord pH <7.00 is an independent predictor of fits than another parameter<sup>18</sup> Goldhaber et al has studied the correlation between umbilical arterial acidosis and adverse neurological outcome in term single fetus among 3506 patients with pH<7.20. According to their results, there was a more likely chance of neonatal death at pH<7.0, fits<7.<sup>19</sup> In literature search another study concluded that pH <6.7, <6.8, <6.9, and pH<7.00 can lead to 80%,60%,33% and 12% hypoxic-ischemic encephalopathy (HIE).

In this study, it is also found that at pH <6.6 fetus is unable to survive.<sup>18,19</sup> Intensive search of the literature showed a decreasing trend of pH leads to fetal morbidity and fetal mortality. In comparison cord blood pH than fetal scalp pH is a better predictor of fetal hypoxia.<sup>20</sup> According to the present study, clear liquor is a predictor of healthy neonatal outcomes however thick meconium-stained liquor can result in fetal morbidity and mortality. Fetuses having thick meconium at the time of birth had a high probability of academia, which is 5.8 times more than fetuses having clear liquor.<sup>20,21</sup> Concentration of meconium in amniotic fluid had a direct relation to poor outcome. Another study showed the risk of academia is 12.5 times higher with thick meconium-stained liquor.<sup>22</sup> Another study found a weak relationship between academia due to meconium-stained liquor and cord blood pH.<sup>22</sup> A study concluded that mean neonatal

cord blood pH and acidemia were the same in clear and meconium-stained liquor.<sup>23</sup>

In obstetrics practice, fetal distress is the most common indication for instrumental delivery and cesarean section, 40% and 30% respectively.<sup>20,21</sup> The same trend was found in the present study which revealed non-reactive CTG had no significant association with neonatal distress and also resulted in high cesarean delivery. Out of 48 patients, who had non-reactive CTG, 42 had emergency cesarean section and 6 were delivered vaginally. Among these 48 only 2 babies had acidosis and were admitted to NICU. According to a Cochrane review, the fatal outcome had no significant association with antenatal CTG. Continuous and intermittent fetal heart rate monitoring had no difference in terms of perinatal outcome but rather an increase in cesarean section rate. Electronic Fetal Monitoring (EFM) has high sensitivity and low specificity and positive predictive value.<sup>23,24</sup> Many studies regarding EFM revealed that there is no reduction in long-term complications like cerebral palsy, infant morbidity, and mortality but has a significant effect in reducing the incidence of seizures but at cost of instrumental delivery, cesarean section, and anesthesia.<sup>24,25</sup>

Despite all these large clinical trials and research, surveillance tools had no significant role in the reduction of fetal morbidity and mortality.<sup>23</sup> Similar results were found in another study that CTG is an important monitoring tool for labor management however had no definitive impact on perinatal outcome.<sup>25</sup>

The present study signifies that diagnosis of true fetal distress depending upon pH and lactate level is very important as this will help obstetricians to select the patient who requires prompt delivery. This reveals the need for another intrapartum monitoring tool for the early detection of fetal acidemia. Umbilical cord blood analysis for early diagnosis of fetal distress and time management should be done.

## CONCLUSION

This study conclude that non-reactive CTG and grade II meconium has no significant association with fetal distress and 46(95%) cesarean sections done due to fetal distress were not having true fetal distress. This unnecessary intervention results in a burden on resources and increases maternal morbidity and mortality.

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## AUTHOR'S CONTRIBUTION

SK: Manuscript writing & data collection

MR: Discussion & data analysis

KKM: Review & statistics

HS: Data collection & analysis

RS: Supervised the research

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## Original Article

# DIFFERENCE BETWEEN PERCEIVED AND ACTUAL PAIN EXPERIENCED WITH ORTHODONTIC FIXED APPLIANCES; A CROSS-SECTIONAL STUDY CONDUCTED AT A PRIVATE DENTAL HOSPITAL IN LAHORE, PUNJAB.

Ch. Rehan Qamar<sup>1</sup>, Muhammad Kamran<sup>2</sup>, Hassaan Saeed<sup>3</sup>

### ABSTRACT

**Background:** The current study aimed to find the difference between perceived pain and actual pain experienced with orthodontic fixed appliances.

**Material and Methods:** This cross-sectional study was carried out from June to November 2021, on 33 patients, out of which males were 19 (57.58%) and females were 14 (42.42%) in number, with a mean age of  $16.12 \pm 4.18$  years visiting University Hospital of Dentistry, Lahore. Pain, perceived by patients before the fixture was recorded by visual analog scale (VAS), and the onset and severity of actually experienced pain were also recorded with VAS after fixing the appliance.

**Results:** The onset of actual pain was after 4 hours of the procedure and paired t-test showed a statistically significant difference between perceived and actual pain.

**Conclusion:** The patient's perception of pain before the fixture is much greater than the intensity of actual pain experienced during the orthodontic fixed appliance treatment.

**Key Words:** Pain, Periodontal Ligament, Hyperalgesia

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## INTRODUCTION

Pain is defined as a distressing feeling often caused by intense or damaging stimuli.<sup>1</sup> The routine orthodontic procedure like separator placement, banding, debonding, and activation of the fixed appliance might cause transient pain. Fixed appliance causes more pain than other orthodontic appliances.<sup>2</sup> Moreover, pain is also one of the most commonly encountered negative effects of orthodontic treatment and the main reason for discontinuation of treatment.<sup>3</sup>

The pain signals are conducted from primary sensory neurons to second-order neurons in the spinal cord and finally relayed to the cortex through the thalamus.<sup>4</sup> Orthodontic pain is often due to pressure, ischemia, and inflammation.<sup>5</sup> Pain is often stimulated due to immediate and delayed response of periodontal ligament (PDL) to orthodontic force due to compression and hyperalgesia during application of a fixed appliance, that is initiated by the release of inflammatory mediators as a result of blood flow changes in the PDL.<sup>6</sup>

The routine orthodontic procedures are related to mild pain. In certain situations, the intensity of pain has shown to be greater than the dental extraction pain after placement of orthodontic appliances.<sup>7,8</sup> Dental pain is usually described in terms of soreness, ache, pressure and tension. The rigorosity of pain varies from patient to

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patient while age, gender, race, emotional state, and even the cultural background work as influential factors.<sup>9,10</sup>

Various scales for the assessment of pain have been used, among which the most commonly used scale is the visual analog scale (VAS).<sup>11-14</sup>

Patients mostly consider orthodontic treatment as a painful procedure even before the commencement of treatment. The objective of this study was therefore to find out if any difference existed between the perceived and actual pain with the orthodontic fixed appliance in both genders. This would help in counseling patients before proceeding with fixed appliance therapy regarding their perception of the pain associated with fixed appliance procedures.

## MATERIAL AND METHODS

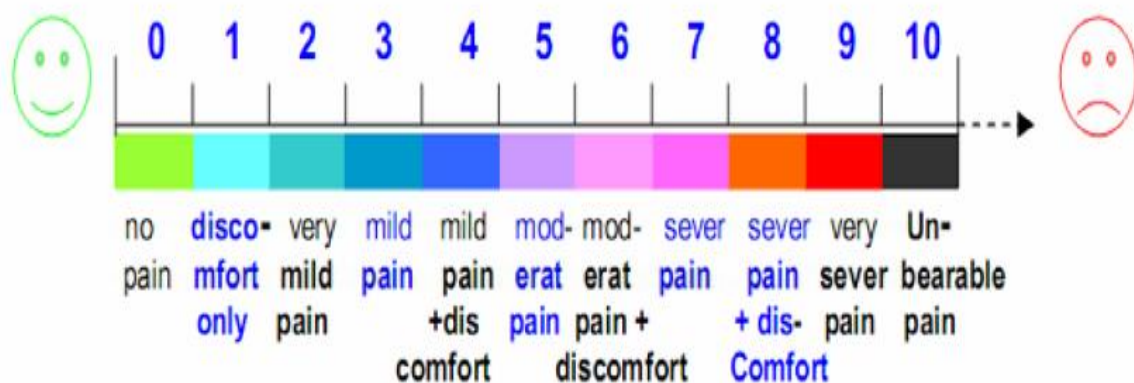
This cross-sectional study was conducted between June to November 2021, after gaining approval from the ethical committee of the University College of Dentistry, on data collected from 33 patients visiting the Department of Orthodontics for fixed Orthodontic appliance treatment at the hospital affiliated with the University College of Dentistry, Lahore. Patients in the age range of 12- 30 years with no previous history of fixed Orthodontic treatment and no active oral disease were included in this study. The sample size was calculated by a WHO calculator, with the level of significance  $\alpha = 5\%$ . A total of 33

participants (19 male and 14 female patients) were included in the study. Patients suffering from any syndrome, with a history of trauma to the dentofacial region or exhibiting missing teeth were excluded from this study. Informed written consent was taken and VAS (figure 1) was explained to the patients. Patients were also sensitized regarding how to denote the onset and severity of actual and perceived pain after taking consent on the provided proforma. Before the application of the fixed appliance (Roth prescription 0.022" slot), the patients were asked to score the severity of pain on VAS in the way they perceived it. After fixing 0.016-inch nickel-titanium (0.016" NiTi) patients were instructed to note the time of onset of pain and to again mark the severity of pain actually and when experienced.

The data collected were analyzed by SPSS version 23. Mean and standard deviation was calculated for descriptive variables like age and gender. Paired sample t-test was used to compare the data with a p-value of 0.05 for statistical significance.

## RESULTS

The onset of pain after bonding was about 4 hours for both genders. The paired t-test showed a statistically significant difference between perceived and actual pain experienced ( $p < 0.05$ ) (Table 1) in both genders, but the mean difference between males and females was only 0.05, which was not significant.



**Figure 1:** Visual Analogue Scoring Scale<sup>15</sup>

**Table 1:** Mean readings of VAS severity of perceived and actual pain in both genders

Total patients (33)	Male (19)	Female (14)
Mean of perceived pain on the VAS scale (0 - 10)	6.48	7.20
Mean of actual pain on the VAS scale (0 - 10)	4.00	4.52
Mean difference in actual and perceived pain	2.48	2.68
SD	1.14	1.19
P value	p < 0.05	p < 0.05

## DISCUSSION

The orthodontic procedures are usually perceived as painful. This fear of pain discourages many patients from receiving orthodontic treatment. The VAS was used in the current study for recording the severity of pain perceived by the patient and actual pain experienced. The VAS is considered the most commonly used scale for measuring the perceived distress during orthodontic treatment because of its simple application, and reliability, and also for being user-friendly as it is readily understood by most patients.

The mean age of our study sample was  $16.12 \pm 4.18$  which is closely related to a similar study conducted by Abdel Rahman et al in 2015 had a mean age of  $18.6 \pm 4.6$  years.<sup>16</sup> Pain experience shows wide variations among individuals and is affected by several factors including age. Varying results have been reported in the literature regarding the onset of pain after orthodontic fixed appliance bonding. A clinical assessment carried out by Sandhu et al in 2013 indicated that orthodontic pain usually started 1 hour after the placement of the initial archwire, then reached a peak after approximately 2 hours, and thereafter it decreased steadily.<sup>17</sup> However, the mean VAS score did not reach zero even after 14 days. In the current study, the difference in pain between both genders was not significant ( $p > 0.05$ )

Poudel et al conducted a study to assess pain and oral health-related quality of life among patients undergoing orthodontic treatment.<sup>18</sup> He concluded that most participants had

moderate pain but few patients perceived no pain at all. The participants had at least one or other oral health impacts due to fixed orthodontic treatment. In another study by Kafle and Rajbhandari in 2012, 97% of the orthodontic patients expressed some fear of pain and the approximately same percentage of patients experienced pain after orthodontic treatment.<sup>19</sup> Among these, 11% of the patients reported a VAS score of 8-10 for anticipated pain that was indicative of severe pain. In our study, the outcome by applying paired sample t-test shows there was a significant difference in anticipated pain and experienced pain ( $p < 0.05$ ) with fixed orthodontic treatment. Measurement of pain levels by VAS depicted a mean difference in score of 2.48 in males and 2.68 in females respectively which is significant. This difference between perceived pain and actual orthodontic pain might be linked with fear of orthodontic appliances, which is common among people the world over, regardless of gender.

## CONCLUSION

The patient's perceived pain about orthodontic fixed appliances was significantly higher than the actual pain experienced in both genders. This study might help us in counseling patients regarding pain and its perception of severity, before orthodontic fixed appliance placement, so that they do not exaggerate the intensity of pain.

## AUTHOR'S CONTRIBUTION

CRQ: Principal Author and Investigator/Manuscript writeup  
 MK: Manuscript write up-co-helper and organizer  
 HS: Data collection and result ompilation

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## Original Article

# PERCEPTION OF GENERAL POPULATION ABOUT SMOG IN LAHORE AND ITS IMPACT ON HUMAN HEALTH.

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### ABSTRACT

**Background:** Smog has become a public environmental crisis in most areas of Pakistan. The purpose of this research was to study the effects of smog on the health of the population in Lahore.

**Material and Methods:** This descriptive cross sectional study was conducted from Nov. 2021 to Feb. 2022. A questionnaire survey was employed to collect data which included demographic, socioeconomic and health-related information. Descriptive statistics were used to study the impact of smog on groups of people who were exposed to smog and later contacted symptoms such as cough and eye irritation etc.

**Results:** The results showed that the perception of people about smog was significantly different from the actual circumstances, demonstrating that public view tends to diverge when challenged with a public disaster.

**Conclusion:** Most of the people in the study area knew about smog. They followed the precautions to prevent themselves from the harmful effects of smog (96% used face masks).

**Key Words:** Smog, Health, Cough

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## INTRODUCTION

Smog is a form of intense air pollution. The word "smog" was devised at the beginning of the 20th century. The reduction of the words smokes and fog point toward the smoky fog because of its opaqueness and odor.

Smog formation depends on primary and secondary pollutants. Sources of primary pollutants include coal-burning which releases sulfur dioxide (SO<sub>2</sub>). Secondary pollutants, for instance, ozone (O<sub>3</sub>), are released when primary pollutants undergo chemical reactions in the air.<sup>1</sup> Although there has been a surge in research in the field of community observation of ecological trials, recent research on air pollution has primarily focused on chemical methods. Research based on behavior in response to smog is limited.<sup>2</sup>

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Lahore suffers from an advanced level of air pollution and the city frequently stands at top of the Index Quality Air of Visual live pollution standings of major worldwide cities.<sup>3</sup> However, pollution received its fair share of attention from the public in the early 2017 when unlawful air quality statistics were available in Pakistan. Air pollution in Lahore results from automobile and commercial emissions, burn after block forges, burning of harvest deposits and overall waste, and dirt from building places. What further worsens the quality of air is the large-scale cutting down of trees to build new transportation and infrastructure.<sup>4</sup> Due to the drop in temperature air pollution is worse during winters and leads to a sheet of warm air that is used or trapped with increasing air pollutants.<sup>5</sup>

Lahore is the capital of the Punjab province. Latitude of Lahore, Pakistan 31.582045 and population of Lahore is 13 million which has doubled in the last sixteen years with a growth rate of 3.58%. Smog weather has occurred frequently in Lahore City since 2014. The sudden surge in the number of automobiles on roads and industrialization has contributed to the worsening of the air pollution in Lahore city.<sup>6-8</sup> This evidence frames the basis intended for our study of public awareness of smog in Lahore.

The goal of this study was to investigate the perception of the public about smog by surveying residents of different areas within Lahore city.

The objective of the study was to evaluate the knowledge and attitude of the people of Lahore regarding smog.

## MATERIAL AND METHODS

This descriptive cross-sectional study was conducted from Nov. 2021 to Feb. 2022 among people living in different areas of Lahore city. Most of the subjects included were from lesser developed areas of Lahore. Convenience sampling technique was used to recruit sample of 50 participants. Respondents from both gender and aged more than 18 years were included in the study. Those who did not give consent were excluded.

Data was entered and analysed in SPSS version 23. Frequency and percentages were used for categorical variables. Mean and standard deviation was calculated for continuous variables.

## RESULTS

In this study a total of 50 respondents were recruited, out of which 26 (52%) belonged to the age group 18-30 years, 12 (24%) belonged to 31-50 years and 12 (24%) belonged to more than 51 years. Male respondents were 22 (44%), female respondents were 25 (50%) and 3 (6%) were transgender. Matric qualified respondents were 4 (8%), intermediate qualified respondents were 19 (38%) and masters above qualified were 27 (54%). 3 (6%) respondents belonged to the

longitude 74.329376 with directs of 31° 34' 55.3620" N and 74° 19' 45.7536" E. The lower class, 35 (70%) belonged to the middle class and 12 (24%) belonged to the upper class.

Descriptive analysis of participants is depicted in **Table 1**.

**Table 1:** Demographic characteristics of respondents

Variable	Description	Frequency	Age%
Age	18-30 Years	26	52%
	31-50 Years	12	24%
	≥ 51 Years	12	24%
Gender	Male	22	44%
	Female	25	50%
	Transgender	3	6%
Education	Matric	4	8%
	Intermediate	19	38%
	Masters and above	27	54%
Socioeconomic status	Lower Class	3	6%
	Middle class	35	70%
	Upper Class	12	24%

Overall, 98% of people said they understood the smog, and 2% said they did not. 90% understood the sources of smog and 10% said no. From our group, 78% said smog is caused by burning crops and 22% said no. Out of the group, 72% said yes, they had known about the other cities affected by smog and 92% said yes about the season of the smog.

**Table 2:** Knowledge of respondents about smog

Statement	Yes	No	Don't know
Do you know about smog?	49 (98%)	1 (2%)	0
Do you know the sources of smog?	45 (90%)	2 (4%)	3 (6%)
Do you think smog is caused by burning crops?	39 (78%)	2 (4%)	9 (18%)
Do you know any other city which is affected by smog?	36 (72%)	4 (8%)	10 (20%)
Do you know about the season of smog?	46 (92%)	4 (8%)	0

Overall, about 70% of respondents knew about the smog. According to this study, 42% of respondents suffered from cough, 39%

suffered from eye problems, 27% suffered with wheeze, 2% suffered from asthma, 0% suffered from Chronic Obstructive Pulmonary Disease and 7% suffered from breathing problems and 2% suffered from Emphysema.

**Table 3:** Harmful impacts of smog on respondent's health

Symptoms/Diseases	Yes	No	Don't Know
Cough	42 (84%)	7 (14%)	1 (2%)
Eye Irritation	39 (78%)	10 (20%)	1 (2%)
Wheeze	27 (54%)	18 (36%)	5 (10%)
Fever	0	31 (62%)	19 (38%)
Asthma	1 (2%)	25 (50%)	24 (48%)
Chronic Obstructive Pulmonary Disease (COPD)	0	31 (62%)	19 (38%)
Headache	16 (32%)	18 (36%)	16 (32%)
Shortness of Breath	7 (14%)	24 (48%)	19 (38%)
Allergy	0	32 (64%)	18 (36%)
Emphysema	1 (2%)	34 (68%)	15 (30%)

The majority (54%) of participants reported that they were afraid of smog because they suffered respiratory diseases and irritation of the eyes and 20-40% weren't afraid of smog. 84% also reported some eatables prevented them from smog-related health problems, 54% believed that media is over-estimating smog, and 94% believed that traffic smoke is an important source of smog. Table 3 summarizes the perception of respondents towards smog.

**Table 4:** Perception of respondents about smog

Statement	Yes	No	Don't Know
Are you afraid of smog?	27 (54%)	10 (20%)	13 (26%)
If yes then why are you afraid? Due to respiratory diseases and Eyes Irritating problems etc.	28 (56%)	6 (12%)	16 (32%)
Do you believe the media is over-estimating smog?	27 (54%)	4 (8%)	19 (38%)

Do you believe some eatables prevent smog-related diseases?	42 (84%)	2 (4%)	6 (12%)
Do you believe traffic smoke in Lahore is the source of smog?	47 (94%)	1 (2%)	2 (4%)

**Table 5:** Preventative measures followed by respondents

Statements	Yes	No	Don't know
I use a facemask when going outside.	48 (96%)	2 (4%)	0
I avoid eye massage after exposure to smog.	46 (92%)	1 (2%)	3 (6%)
I use specific foods and other eatables the prevention diseases caused by smog.	34 (68%)	10 (20%)	6 (12%)
I use an air filter at home to protect me from city smog.	27 (54%)	13 (26%)	10 (20%)
I usually stay at home when there is massive smog outside.	37 (74%)	7 (14%)	6 (12%)

In this study, 96% of people used face masks when going outside and 4% didn't use them. 92% avoided eye rubbing after exposure to smog and 8% did it. 68% said they used those eatables that prevent smog-related problems. 54% used air filters in their houses and 74% stayed at home during severe smog in Lahore.

## DISCUSSION

The result of this research shows that the increase in the concentration of smog in wintertime harmfully impacted the health of people in the study area and comparable in other urban areas. The complex occurrence of smog specifically in October, November, and December forced the citizens to limit their activities because of its adverse effects on human health and limited movement due to poor visibility. Dominant health problems reported were associated with lung disease symptoms such as coughing, mucus, breathlessness, and shortness of breath. Comparable outcomes were described by Saleem et al.<sup>9,10</sup> in their study in Rawalpindi, Pakistan. There were significant changes



detected in the existence of numerous health problems by healthcare professionals. It challenges our hypothesis that people working outdoors with continuous exposure to ambient air pollution are affected differently than those who are working indoors. This observation shows that, regardless of activities inside or outside, atmospheric midair contamination throughout the most polluted time of year practically disturbs everybody alike.<sup>11,12</sup> Although the logistic analysis underlined that the professions indoors and outdoors were equally vulnerable to air pollution, self-reported health problems revealed dissimilarity amongst various professional sets. For instance, the employees who majorly worked outdoor were established to be most affected by lung diseases, while domestic employees and other employees who were required to work indoors were more susceptible to allergies.<sup>13,14</sup> Moreover, research showed that workers such as office employees and domestic employees were mostly expected to wear a mask when they went outside as compared to the other professional groups possibly more exposed to air pollution.<sup>15,16</sup>

## CONCLUSION

This study attempted to understand the public's perception of smog. This study concludes that most of the people in the study area knew about smog. They followed the precautions to prevent themselves from the harmful effects of smog (96% used face masks). Still, most of them suffered from cough, eye infections, sneezing, etc. Most of them believed in religious factors contributing to the formation of smog. Moreover, the educated people included in this study area followed the precautions and played their role in spreading the message to protect everyone from smog. Most of the subjects included were from lesser developed areas of Lahore. Upcoming studies would contain a broader study area and design a more targeted questionnaire to obtain substantial data.

## AUTHOR'S CONTRIBUTION

AN: Data collection and Writing

HA: Drafting and review

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## Original Article

# SUCCESS RATE OF B-LYNCH SUTURE IN THE TREATMENT OF POSTPARTUM HEMORRHAGE IN WOMEN UNDERGOING EMERGENCY CAESAREAN SECTION

Farzana Latif<sup>1</sup>, Sadia Qadir<sup>2</sup>, Summera Aslam<sup>3</sup>, Mehnaz Gondal<sup>4</sup>, Rai Muhammad Hammad Arif<sup>5</sup>

### ABSTRACT

**Background:** Postpartum hemorrhage is one of the five main causes of maternal mortality with an estimated prevalence of 34% in Pakistan. Uterine atony has been described as the most common underlying cause. Application of B-Lynch suture to prevent atony has been shown to successfully control postpartum hemorrhage in the previous literature. However, all of the existing studies were conducted with a very small sample size and the results were conflicting. So the purpose of this study was to repeat this trial over a larger sample size to confirm the control of PPH with B-Lynch suture in women undergoing emergency cesarean section. The objective of the study was to calculate the frequency of successful control of PPH with B-Lynch sutures in women during emergency cesarean section.

**Material and Methods:** This cross-sectional study was conducted in Obstetrics and Gynecology Department, Sir Ganga Ram Hospital, Lahore from 25/11/2020 to 24/05/2021. This study involved 314 patients who underwent emergency cesarean section and developed PPH which was managed by B-Lynch suture. Informed consent was taken.

**Results:** The patient's mean age was 27.46±5.61 years. Most of the patients (n=125, 39.8%) were para 2, then para 3 (30.9%) and para 1 (24.2%) while only 5.1% patients were para 4. Following the application of the B-Lynch suture, PPH was successfully controlled in 301 (95.9%) patients while 13 (4.1%) patients didn't respond well and were managed by hysterectomy. When data was stratified for age groups, the frequency of successful control of PPH was 96.9% between 20-25 years, 96.0% between 26-30 years, 95.9% between 31-35 years, and 91.9% between 36-40 years of patients age, and it was a statistically insignificant difference (p=.617). When data was stratified for parity, the frequency of successful control of PPH was 94.7% among para 1, 96.0% among para 2, 96.9% among para 3 and 93.8% among para 4, however again the observed difference was statistically insignificant (p=.874).

**Conclusion:** B-Lynch suture was found to successfully control postpartum hemorrhage in 95.9% of patients undergoing emergency cesarean section.

**Key Words:** Postpartum Hemorrhage, Cesarean Section, Suture

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## INTRODUCTION

Postpartum hemorrhage (PPH) is one out of the five crucial causes of maternal deaths throughout the world.<sup>1,2</sup> About 25% of deaths in underdeveloped countries are because of PPH. Its prevalence in Pakistan is about 34%. Among the main causes, uterine atony is the commonest, in about 75-90% of patients. The

remaining include placental abruption, placenta previa, abnormally adherent placenta, lower genital tract injuries, coagulopathy, uterine inversion, and ruptured uterus.<sup>3-5</sup> Following delivery, Loss of 500 ml or more blood in the 24 hours after delivery is physiologically normal, and the loss of more than that is considered PPH. Clinical deterioration does not occur usually till the blood loss is > 1000 - 1500 ml. "Massive" primary PPH occurs when there is an estimated blood loss of > 1500 ml, drop in hemoglobin concentration > 4 g/dl, or transfusion of 4 units of blood urgently required. In one of the tertiary care hospitals in Pakistan, 0.5% of cases had massive PPH out of a total of 4881 deliveries.<sup>6,7</sup> The b-lynch suture is described during cesarean section to prevent atony of the uterus. It is a safe, simple, and effective method for the control of primary postpartum hemorrhage.<sup>8,9</sup> This technique may particularly be useful because of its simple application, and life-saving potential. It is relatively safe, and preserves the uterus and hence fertility. So it should be applied as a first-line treatment, before proceeding to hysterectomy: The b-lynch technique was first invented in 1997 by Christopher B-Lynch.<sup>10</sup> Smith JR et al. reported successful control of PPH with B-Lynch suture in 71.4% of the cases for primary postpartum hemorrhage.<sup>11-13</sup> Another recent trial<sup>4</sup> showed it was successful in 97.33% of cases, while another study by Ayesha Khatoon and colleagues in Pakistan applied B-Lynch sutures in 15 patients, and 14 (93.3%) patients had effective c bleeding control. One patient (6.6%) failed to respond to suture application.<sup>14-16</sup> The limitation of the above studies was that these studies had a smaller sample size and had some discrepancies with Smith JR and colleagues. However, this study was conducted to determine its efficacy in PPH in women during the emergency cesarean section on a larger sample size so that if this technique is found to be highly effective then this technique will be pursued in the future for the treatment of PPH.

## OPERATIONAL DEFINITION

Postpartum Haemorrhage: Blood loss more than 1000ml after delivery during emergency cesarean section. Blood loss was measured as an observational method: Capacity of one kidney tray equals 500ml + Single sponge soaked with blood equal is 150 ml of blood + Measured in a suction jar Successful Control of PPH: It was established by blood loss decreased to <1000ml and contracted uterus within 15 minutes of application of B-Lynch Suture.

## MATERIAL AND METHODS

It was a descriptive case series, conducted at the Department of Obstetrics and Gynecology, Sir Ganga Ram Hospital, Lahore 6 months period after the approval of the synopsis from 25/11/2020 to 24/05/2021. With a 5% margin of error and 95% confidence level, a sample size of 314 cases was calculated and an expected percentage of successful control of PPH to be 71.4% in patients managed with B-Lynch suture in emergency cesarean section.

Patients were selected by non-probability consecutive sampling. Inclusion criteria was age from 20 to 45 years, any parity, singleton pregnancy (assess on USG) and patients with PPH (as per operational definition).

Exclusion criteria was spontaneous vaginal delivery and patients who develop PPH due to coagulation disorders i-e prolonged PT >13sec and APTT >34sec and platelet count less than normal (i-e. <150,000 per microliter).

## DATA COLLECTION PROCEDURE

A total of 314 patients fulfilling the inclusion/exclusion criteria admitted from the Labour Room of Sir Ganga Ram Hospital, Lahore were included in this study. Informed consent was taken to include their data in the study. In patients having findings of Postpartum Haemorrhage, a B-Lynch suture was applied under general anesthesia following departmental protocols. A 70 mm

round body needle on a No.2 chromic catgut suture was used to puncture the uterus. B-Lynch suture applied as per technique. Successful control of PPH was observed as per operational definition. In case of failure, the case was managed according to the standard protocol for hysterectomy. All information was collected on a designed Proforma by the researcher herself.

**DATA ANALYSIS PROCEDURE**

Data were entered into SPSS version 16. Numerical variables like age have been presented by mean ± SD. Categorical variables i-e successful control of PPH has been presented by frequency and percentage. Frequency has been calculated for parity. Data stratified for age and parity to control the effect modifiers. Post-stratification chi-square test has been applied to take p≤0.05 as significant.

**RESULTS**

This study included 314 patients who underwent emergency cesarean section and developed PPH which was managed by B-Lynch suture. The age ranged from 20-38 years with a mean of 27.46±5.61 years as shown in Table 1. Most patients (n=125, 39.8%) were of parity 2, followed by parity 3 (30.9%) and parity 1 (24.2%) while only 5.1% patients were para 4 as shown in Table 2. Following the application of B-Lynch suture, PPH was successfully controlled (as per operational definition) in 301 (95.9%) patients while 13 (4.1%) patients didn't respond well and were managed by hysterectomy as shown in Table 3. When the data were stratified for age groups, the frequency of successful control of PPH was 96.9% between 20-25 years, 96.0% between 26-30 years, 95.9% between 31-35 years and 91.9% between 36-40 years of patients age, however, the difference was statistically insignificant (p=.617) as shown in Table 4. When the data for parity was stratified, the frequency of successful control of PPH was 94.7% among para 1, 96.0% among para 2, 96.9% among para 3, and 93.8% among para 4, however, the observed difference was

insignificant statistically (p=0.874) as shown in Table 5.

**Table-1. Descriptive Statistics for Age**

Age	N	Minimum	Maximum	Mean	Std. Deviation
	314	20	38	27.46	5.610

**Table-2. Frequency Table for Parity**

Parity	Frequency	Percent	Valid percent	Cumulative percent
1	76	24.2	24.2	24.2
2	125	39.8	39.8	64.0
3	97	30.9	30.9	94.9
4	16	5.1	5.1	100.0
Total	314	100.0	100.0	

**Table-3. Frequency Table for Successful Control of PPH**

PPH controlled	Frequency	Percent	Valid percent	Cumulative percent
Yes	301	95.9	95.9	95.9
No	13	4.1	4.1	100.0
Total	314	100.0	100.0	

**Table-4. Age Groups and Successful Control of PPH Crosstabulation**

Age groups		Successful control of PPH		Total	p-value
		Yes	No		
20-25 years	Count	123	4	127	.617
	% with in age groups	96.9%	3.1%	100.0%	
26-30 years	Count	97	4	101	
	% with in age groups	96.0%	4.0%	100.0%	
31-35 years	Count	47	2	49	
	% with in age groups	95.9%	4.1%	100.0%	
36-40 years	Count	34	3	37	
	% with in age groups	91.9%	8.1%	100.0%	
Total		301	13	314	
		95.9%	4.1%	100.0%	

**Table-5.** Parity and Successful Control of PPH Crosstabulation

Parity		Successful control of PPH		Total	p-value
		Yes	No		
1	Count	72	4	76	.874
	% with in age groups	94.7%	5.3%	100.0%	
2	Count	120	5	125	
	% with in age groups	96.0%	4.0%	100.0%	
3	Count	94	3	97	
	% with in age groups	96.9%	3.1%	100.0%	
4	Count	15	1	16	
	% with in age groups	93.8%	6.3%	100.0%	
Total		301	13	314	
		95.9%	4.1%	100.0%	

## DISCUSSION

Despite advanced management, postpartum hemorrhage is one of the major causes of maternal morbidity and mortality in developing countries and hospitals equipped with all modern medicine. Postpartum hemorrhage is the third major reason of maternal mortality next to pregnancy-induced hypertension (preeclampsia) and infection.<sup>8,17</sup> Primary postpartum hemorrhage is the loss of blood in excess during the first 24 hours after the birth of the infant. Uterine atony is the most common underlying cause. Identifying its risk factors and anticipation, early diagnosis and prompt intervention are keys to success to minimize its impact.<sup>3,18,19</sup> B-lynch suture applied during cesarean section to prevent atony of the uterus is an efficient, safe, and simple method for the control of primary postpartum hemorrhage.<sup>8,20,21</sup> This technique may particularly be useful because of its simple technique, lifesaving method, relative safety, and capacity to save the uterus and hence fertility. Smith JR and colleagues recorded successful control of PPH in 71.4% of the cases with B-Lynch sutures for the

management of primary postpartum hemorrhage.<sup>11,22,23</sup> Another recent trial 4 showed it to be successful in 97.33% of cases, while in another study Ayesha Khatoon and colleagues in Pakistan applied B-Lynch sutures in 15 patients, and 14 (93.3%) had effective bleeding control. One patient (6.6%) had failure of this technique.<sup>14,24,25</sup> However, a very important limitation of all these studies was their limited sample size and there was a need to repeat this trial over a larger sample to confirm the frequency of successful control of PPH with B-lynch suture.<sup>26,27</sup> This study involved 314 patients who underwent emergency cesarean section and developed PPH which was managed by B-Lynch suture. The mean age was  $27.46 \pm 5.61$  years. Most of the patients (n=125, 39.8%) were para 2, then para 3 (30.9%) and para 1 (24.2%) while only 5.1% patients were para 4. Following the application of B-Lynch suture, PPH was successfully controlled in 301 (95.9%) patients while 13 (4.1%) patients didn't respond well and were managed by hysterectomy. Our results match those of Neelam and Kumar in 2010 (97.33%)<sup>8</sup> and Khatoon et al. in 2011 (93.3%)<sup>11</sup> who also observed a similar success rate of B-Lynch Suture. When data was stratified for age groups, the frequency of successful control of PPH was 96.9% between 20-25 years, 96.0% between 26-30 years, 95.9% between 31-35 years and 91.9% between 36-40 years of patients age, the observed difference was insignificant (p=.617) statistically. When the data were stratified for parity, the frequency of successful control of PPH was 94.7% among para 1, 96.0% among para 2, 96.9% among para 3 and 93.8% among para 4, however again the observed difference was statistically insignificant (p=.874). Thus B-lynch suture is an effective treatment in the control of PPH in patients undergoing emergency cesarean section with a success rate of 95.9%. This efficacy of B-Lynch suture is not affected by age (p=.617) and parity (p=.874) of the patient, making it an ideal choice for PPH control at any age and parity. The strength of our study is that it is

the only study performed over such a large sample size of 314 patients which has never been done before. By carefully excluding the confounders and stratifying the results for age and parity, the element of bias was minimized. The results of this study are therefore reliable and advocate routine B-Lynch suture use in the PPH management in patients undergoing emergency cesarean section.

## CONCLUSION

The B-Lynch suture was found to successfully control postpartum hemorrhage in 95.9% of patients undergoing emergency cesarean section.

## AUTHOR'S CONTRIBUTION

FL: Analysis & interpretation of results

SQ: Data collection

SA: Literature review & discussion

MG: Data collection

RMH: Review of article

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## Original Article

# THE FREQUENCY OF SUICIDAL IDEATION AND ITS RISK FACTORS AMONG MEDICAL STUDENTS OF LAHORE.

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### ABSTRACT

**Background:** Suicide is an important public health problem and medical students constitute a vulnerable group to suicide. It is important to estimate the magnitude of suicidal ideation and its various predictors, as it is often a precursor warning leading ultimately to the act of actually taking one's own life. This study was conducted to determine the frequency of suicidal ideation and various factors among medical students.

**Material and Methods:** This cross-sectional study was conducted among 250 medical students of Allama Iqbal Medical College, Lahore. An equal number of male and female medical students from the first to the final year were recruited using the nonprobability purposive sampling technique. A structured, self-administered, pre-validated questionnaire was used for data collection. After obtaining informed consent from the participants, information was collected from study participants regarding gender, marital status, residential status, and family status along with recent suicidal ideation, self-harm, and related risk factors. SPSS version 21 was used for data entry and analysis.

**Results:** The mean age of respondents was  $20.8 \pm 1.8$  years. Regarding residential status, 81.6% of respondents were hostelling and 18.4% were day scholars. Around 69.6% of students had self-reported anxiety/depression as well. The frequency of lifetime and recent suicidal ideation among medical students was found to be 17% and 23.6% respectively. Around 16% of students had a history of deliberate self-harm attempts.

**Conclusion:** A high frequency of suicidal ideation, self-harm attempts, and self-reported anxiety/depression among medical students was observed in the study which is an alarming situation and reflects that effective suicide prevention programs must be urgently developed for medical students to tackle the issue.

**Key Words:** Suicidal Ideation, Medical students, Self-Destructive Behavior

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## INTRODUCTION

Suicidal ideation refers to suicidal thoughts or ideas, it ranges from passive contemplations of death or actively thinking about taking one's own life.<sup>1</sup> Suicidal behavior is a broader term ranging from suicidal ideation, to the planning of suicide,

making attempts of suicide and in the worst scenario, suicide.<sup>2</sup> It is estimated that 60% of the people who have suicide ideation plan their first suicidal attempt within one year of suicide ideation onset.<sup>3</sup>

Every year about one million people take their own life worldwide.<sup>2,4</sup> The reduction of suicidal mortality has been addressed as a priority global target and included in "United Nations Sustainable Development Goals" as an indicator under target 3.4.<sup>5</sup> Around 79 % of suicides occur in middle and low-income countries.<sup>4</sup> Suicides are the second most common cause of premature deaths in 15 to

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29 years age group, and the third leading cause of death in 15–44 years of age worldwide. While among medical students, after accidents, suicide is the second leading cause of death.<sup>6</sup> Suicidal ideation is one of the major predictors of suicidal attempts among medical students. Both suicidal thoughts and attempts are more common among them as compared to the general public.<sup>7</sup> This issue appears to arise during medical school studies. First-year medical students have psychological illness rates similar to the general population of the same age group, but they face deterioration of their mental health with the passing years of their medical studies.<sup>8</sup> The medical students are over-burdened due to the tough, lengthy syllabus and hectic academic routine, so they get less time and chance to relax and for leisure activities which may result in stress, anxiety, hopelessness, and other mental health issues. These factors may lead to suicidal ideation among medical undergraduates.<sup>6</sup>

Recent research conducted in the United States depicted that 11% of medical students committed suicide.<sup>9</sup> A similar study carried out in Canada reported that 11% of the participants (medical students) had suicidal ideation.<sup>10</sup> In Pakistan, research conducted in different medical and non-medical colleges in Abbottabad revealed that medical students have a higher level of academic stress as compared to non-medical students.<sup>11</sup> Another cross-sectional study conducted at Lahore medical and dental college reported that depression and suicidal ideation is more prevalent among female medical students as compared to male students.<sup>12</sup> Number of suicides among medical students has been rising in recent years in Pakistan due to various factors including failure to cope with hectic studies, academic pressure, contact with suffering, and other health and psychosocial issues exacerbating stress.<sup>6</sup> Worldwide data about suicide and suicide attempts is limited and of poor quality.<sup>5</sup>

Several studies have been conducted about suicidal ideation in developed countries but only a few studies have been done in

Pakistan. The reason may be Pakistan is a conservative Islamic country where this topic is considered taboo. The current study's aim was to determine the frequency of suicidal ideation among medical students of Allama Iqbal Medical College Lahore and to determine the frequency of different factors related to suicidal ideation among students studying medicine. This is important as suicidal ideation frequently culminates in suicidal attempts and actual suicide. Furthermore, Medical professionals are an asset to a country and have a vital role in the health system, so their mental health issues should be emphasized and solutions to these problems should be searched. All these measures are based on an assessment of suicidal behavior and related factors among medical students.

## **MATERIAL AND METHODS**

This cross-sectional study of 3 months duration was conducted among 250 medical students studying at Allama Iqbal Medical College Lahore. The sample size was calculated manually using the formula for sample size estimation for a single population proportion, taking the prevalence of lifetime suicidal ideation as 15.7, 5% margin of error, and 95% level of confidence. After adding 15 % to compensate for non-response, the sample size was rounded off to 250. Following ethical approval of the study, a non-probability purposive sampling technique was used to collect an equal number of male and female students from all five years of MBBS. Students belonging from either gender, from first to final year who were willing to participate were included in the study. Those who did not give consent were not included in the study. After explaining the aims and objectives of the study, oral informed consent was obtained from all participants, and confidentiality was assured. A pre-tested, structured, self-administered questionnaire was used. It was comprised of 3 sections. The first section included basic demographic details of participants the second section assessed factors related to suicidal behavior & the

third section inquired about lifetime and recent suicidal ideation during medical school and suicidal attempts: These were assessed by two self-reported yes/no questions developed from suicide module of WHO Composite International Diagnostic Interview (CIDI) questionnaire which is a standard tool having good validity and reliability and has been used extensively. The analysis was done using SPSS version 21. The quantitative variables were summarized as mean and standard deviation. Whereas the qualitative variables were expressed as frequency/percentage.

### RESULTS

The mean age of the respondents was 20.8±1.8. Table 1 shows the demographic characteristics of the respondents. Out of 250 respondents, 96.4 % were single whereas only 3.6% were married. It was found that 86% of the students were living in a hostel as compared to 18.4% of day scholars. Around 7.2 % of students were living with single parents whereas 90% had both parents living together. (Table 1)

**Table-1:** Demographic characteristics of study respondents (n = 250)

No.	variable	Frequency	Percent
1	Gender	Male	125 50%
		Female	125 50%
2	Marital status of respondents	Single	241 96.4%
		Married	9 3.6%
3	Residence status	Day scholar	46 18.4%
		Living in Hostel	204 81.6%
4	Family status	Both parents together	225 90%
		Having single parent	25 10%

The frequency distribution of various factors related to suicidal ideation is shown in table 2. Around 96% of students enjoyed a good relationship with their family while 4% did not. The majority of students (91.2%) had a

close friend network and 8.8% did not have it. Regarding medical studies, 56.4% of students found the medical study burden hard to cope with and 31.2% wanted to quit medical studies due to excessive burden. When information regarding general health was taken it was found that 25.2% of students were suffering from serious chronic health problems and 51.2 % suffered from poor sleep/appetite. The majority of students (69.6%) had a self-reported history of anxiety/depression. Around 54.8% of students confessed to facing problems in social interaction.

**Table-2:** Frequency distribution of various risk factors of suicidal ideation among medical students (n = 250)

No	Variable	Yes Frequency (%)	No Frequency (%)
1	Enjoy good relationship with family	240 (96%)	10 (4%)
2	Have some close friends	228 (91.2%)	22 (8.8%)
3	Feel medical studies burden hard to cope with	141 (56.4%)	109 (43.6%)
4	Want to quit medical studies due to excessive burden	78 (31.2%)	172 (68.8%)
5	Suffering from any serious chronic health problem	63 (25.2%)	187 (74.8%)
6	History of anxiety/Depression	174 (69.6%)	76 (30.4%)
7	Suffering from poor appetite or disturbed sleep	128 (51.2%)	122 (48.8%)
8	Face problem in social interaction	137 (54.8%)	113 (45.2%)

Table 3 shows that 23.6% of medical students had suicidal ideation while 76.4 % had no suicidal ideation. Around 16 % of medical students had a history of attempting suicide.

**Table 3:** Frequency distribution of suicidal ideation and suicidal attempts among medical students (n= 250)

No	Questions	Yes	No
1	Have you ever seriously thought of committing suicide during the past six months of medical school?	59 (23.6%)	191 (76.4%)
2	Have you ever attempted to kill yourself / attempt suicide?	40 (16%)	210 (84%)

## DISCUSSION

This cross-sectional study was designed to estimate suicidal ideation among medical students of Allama Iqbal medical college, Lahore. The frequency of lifetime and recent suicidal ideation among medical students was found to be 17% and 23.6% respectively. Around 16% of students had a history of deliberate self-harm attempts. In our society, suicide is religiously and socially condemned. That's why suicide is considered a taboo topic and suicidal behavior and self-harm are not discussed openly. Moreover, people having mental health problems are often stigmatized and often people do not seek help for these problems which further worsens the situation.

Medical students are especially prone to stress and anxiety as their studies are exceptionally demanding. One major outcome of chronic stress and anxiety is suicidal ideation which may be passive where the person only thinks about ending his/her own life or it may be active where an actual plan to commit suicide is made.

In this study, suicidal ideation and self-harm attempts were found in 23.6% and 16% of medical students respectively. In a similar study conducted in Karachi in 2013, it was found that during the past year 118 (35.6%) medical students had suicidal ideation, whereas 16 (4.8%) out of 331 students tried to commit suicide at some point in their life.<sup>13</sup> Another study conducted in eight medical colleges across Pakistan, reported a

lower percentage of suicidal ideation than the current study and reported that approximately 6.8% of the medical students had suicidal thoughts and 9.5% had the desire for self-harm.<sup>14</sup> In a study conducted in the United States around 11.2% of students confessed to having suicidal ideation.<sup>15</sup> A similar study in China reported the percentage of students having suicidal thoughts to be 17.9% which is nearer to our results.<sup>16</sup> Studies have shown that the most common mental health problem in people who suffer from suicidal ideation is a major depressive disorder.<sup>17</sup>

In our study, a very high percentage of students (69.6%) were found to be suffering from self-reported anxiety/depression. The results are similar to another study conducted in Saudi Arabia where the percentage of male students having depression was 44.4%, while that of females was 66.6%.<sup>18</sup> Another study estimated that approximately 28% of medical students suffered from depression out of which 5.8% experienced suicidal ideation.<sup>19</sup> A study conducted among medical students of Dow medical college also identified a history of psychiatric disorders as an important risk factor predisposing them to suicidal ideation.<sup>13</sup> The findings of another study conducted in a public medical college revealed a significant association between suicidal ideation and self-harm and the percentage of students having suicidal ideation and self-harm tendency was reported as 34% and 12.4% respectively.<sup>20</sup>

The variations in study results may be due to differences in sample size, study methodology, and screening criteria. Being a single-centered study, generalizability is not possible. For this reason, it is recommended to conduct the study in different medical and dental college settings in the province.

## CONCLUSION

A high proportion of medical students were found to have suicidal ideation and anxiety/depression in the current study. Considering the findings projecting an alarming situation, strategies should be

devised to make the study load more manageable for medical students. It is suggested that a baseline health profiling of the medical students should be done at the time of admission and through subsequent years as well. Timely identification of students at risk helps to design effective interventions to counsel and treat the vulnerable ones.

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**Conflict of Interest:** Nil

## AUTHOR CONTRIBUTION

BS: Original idea and data collection

RA: Supervisor/manuscript review and editing

ZP: Article methodology and results

SA: Introduction writing

LA: Discussion writing

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## Review Article

### IRISIN: A NEWLY DISCOVERED NOVEL MYOKINE

Sana Akram<sup>1</sup>, Hamid Javaid Qureshi<sup>2</sup>

#### ABSTRACT

The name irisin was given after the Greek messenger goddess Iris. It is secreted by muscles during exercise. Irisin enhances lipolysis and inhibits hepatic cholesterol synthesis. Acute exercise markedly increases irisin levels and is correlated mainly with ATP levels.

A positive correlation exists between plasma irisin and muscle mass, glucose, ghrelin, IGF1, and BMI. Plasma irisin levels are reduced markedly in patients with type 2 diabetes. Irisin levels are negatively associated with age, serum cholesterol, serum insulin, and serum adiponectin levels. Irisin induces the browning of subcutaneous white adipocytes. It increases aerobic capacity. In the liver, irisin promotes the synthesis of glycogen and inhibits gluconeogenesis. It may contribute to the beta cells profile ration. Irisin has an antioxidant effect. It induces endothelial angiogenesis.

**Key Words:** Exercise, BMI, Muscle

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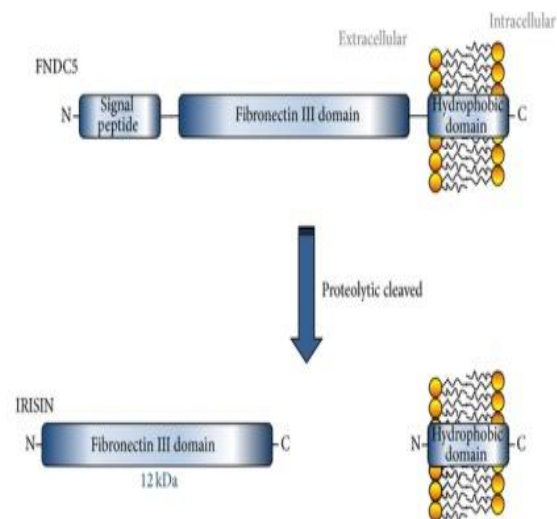
#### STRUCTURE OF IRISIN

Bostrom et al 2012 for the first time identified it while searching for secretions by muscle in response to PGC-1 $\alpha$  activation having systemic metabolic effects.<sup>1</sup> PGC-1 $\alpha$  has been established as a major regulator of many good remodeling effects induced by exercise in muscle.<sup>2</sup>

Irisin is a 112 amino acid containing polypeptide having a molecular weight of 12 kDa. X-ray crystallography has revealed a structure that has an N-terminal domain and a C-terminal tail.<sup>3</sup> FNIII domains are found in the extracellular domains of many receptors.<sup>4</sup> Human and mouse irisin has 100% structural homology.

Fibronectin type II domain that contains protein 5 (FNDC5) in skeletal muscle secretes irisin. Expression of FNDC5 is stimulated in muscle by PGC-1 $\alpha$  in response to exercise.

FNDC5 is a glycosylated type I membrane protein with a 29-amino acid signal sequence at its N terminal, followed by the irisin segment, a linking segment, a transmembrane domain, and a 39 amino acid cytoplasmic domain. Cleavage in the linking peptide by an unknown protease releases irisin into the extracellular milieu.<sup>3</sup> (Figure 1).



**Figure 1.** Structure of FNDC5 and irisin secretion.<sup>5</sup>

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<sup>2</sup>Professor of Physiology, Akhtar Saeed Medical & Dental College, Lahore.

## MECHANISM OF ACTION

Irisin can bind to proteins of the  $\alpha V$  class of integrins.<sup>6</sup> Zhang et al. elucidated, that r-irisin administration increases UCP1 in adipose tissue through the phosphorylation of p38 mitogen-activated protein kinase (p38 MAPK) and extracellular signal-related kinase (ERK) signaling pathways.<sup>7</sup> Moreover, FNDC5 overexpression promotes Akt phosphorylation, which is known to mediate the effects of insulin on glucose metabolism.<sup>8</sup> Irisin has also been shown to increase lipid breakdown via the cAMP-PKA-HSL/perilipin pathway.<sup>9</sup> Irisin inhibits hepatic cholesterol synthesis through successive activation of AMPK and downregulation of SREBP.<sup>10</sup>

## DURATION OF ACTION

Acute exercise significantly raises irisin levels and has been correlated mainly with ATP levels. The raised irisin level during exercise has been shown to fall 30 minutes after the end of the exercise. The strong short-term effect of the irisin is to restore adenosine triphosphate (ATP) and once obtained, it decreases to basal level.<sup>11</sup>

## TISSUES DISTRIBUTION OF FNDC5/IRISIN GENE

Tissue-specific studies have shown that the gene for FNDC5 is predominantly expressed in human skeletal muscle. Sufficiently high expression is also present in cardiac muscle and smooth muscle of cerebral arteries and the terminal part of the colon.<sup>12</sup>

Low levels of FNDC5 mRNA have been demonstrated in vital organs like the kidney, liver, lung, and fat.<sup>12</sup> Even though sc-WAT is one of the main targets of irisin action, its expression in adipose tissue is about 1/100th the expression in muscle.

## FACTORS AFFECTING IRISIN LEVELS

Plasma irisin levels are positively related to muscle mass, glucose, ghrelin, IGF-1, and BMI. A study revealed that levels of irisin were significantly declined after bariatric

surgery, indicating its positive relationship with BMI.<sup>11</sup>

On the other hand, irisin levels are negatively associated with age, cholesterol, insulin, and adiponectin levels.<sup>11</sup> Irisin levels are greater in young male athletes than in middle-aged obese women.

Marked reductions in irisin levels have been reported in patients with type 2 diabetes, especially those having complications.<sup>13,14</sup> Insulin resistance completely changes the metabolism of myocytes, and secretion of myokines during exercise in type 2 diabetics.<sup>15</sup>

## PHYSIOLOGICAL ACTIONS OF IRISIN

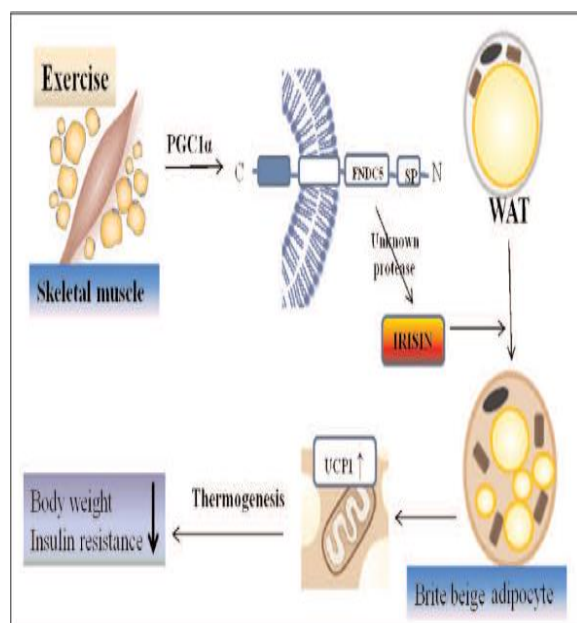
### Irisin induces browning of subcutaneous white adipocytes:

There is a wide difference between white adipose tissue (WAT) and brown adipose tissue (BAT) in their metabolic functions. WAT is a storehouse of triglycerides whereas BAT promotes heat production and energy consumption by expressing UCP1.<sup>6</sup> Previously, BAT was thought to only help in body temperature regulation in infants and did not have much significance in adults. However, WAT contains cells that have the potential to greatly express UCP1 and transform into bright/beige cells that are adaptive brown cells. Moreover, these adaptive brown cells present in WAT are from a different lineage than the BAT. For the browning of fat, exercise is the most important factor, other factors include (1) beta-amino isobutyric acid (2) gamma-aminobutyric acid (3) PPAR $\gamma$  agonists (4) JAK inhibition (5) Irisin.<sup>16</sup>

Irisin intermediate the advantageous effects of physical activity on metabolism by triggering 'Brite fat' development in subcutaneous adipocytes.<sup>1</sup> (Figure 2). The browning of sc-WAT is mediated by irisin-induced phosphorylation of the p38 mitogen-activated protein kinase and extracellular signal-related kinase (ERK) signaling pathways.<sup>7</sup> Irisin increases energy expenditure, promotes weight loss, and



decreases insulin resistance due to fat accumulation.



**Figure 2:** Irisin-induced browning of white adipocytes.<sup>16</sup>

#### Irisin increases aerobic capacity:

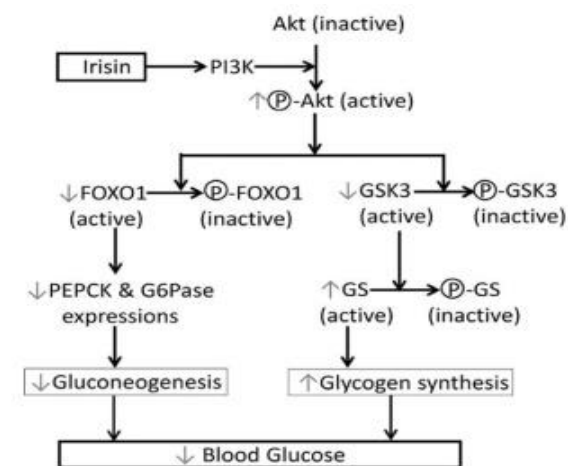
The FNDC5 and PGC-1 $\alpha$  genes expression has been correlated with exercise through maximal oxygen uptake (VO<sub>2</sub>max) and gas exchange (VE/Vco<sub>2</sub>). Between PGC-1 $\alpha$  and FNDC5 genes and exercise a significant positive correlation was obtained.<sup>17</sup>

#### Irisin promotes hepatic glycogen synthesis and inhibits gluconeogenesis:

In an STZ-high fat diabetic mouse model, continuous subcutaneous infusion of irisin improved insulin response, reduced FBG levels, increased glycogen synthase kinase 3 and Akt phosphorylation, glycogen content, and irisin level. It also inhibited phosphorylation of glycogen synthase and glucose-6-phosphatase expression in the liver.<sup>7</sup> It was shown that the effects of irisin to reduce gluconeogenesis were through PI3K-Akt-FOXO1 mediated downregulation of phosphoenolpyruvate carboxykinase (PEPCK) and glucose-6 phosphatase and to increase glycogenesis via activation of glycogen synthase,<sup>7</sup> thus indicating that irisin may be effective in decreasing insulin resistance in type 2 diabetes. (Figure 3)

#### Irisin-betatrophin axis may contribute to $\beta$ cell proliferation

Irisin administration stimulates the expression of an adipokine, betatrophin, which has been shown to promote pancreatic  $\beta$ -cell proliferation.<sup>18</sup> This finding suggests that increased betatrophin expression by irisin may partly explain its anti-diabetic effect. This association is, however, still controversial and needs further validation.



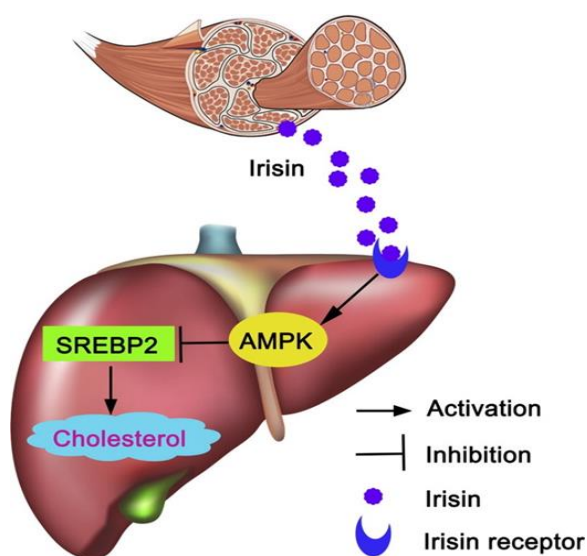
**Figure 3:** Effect of irisin on hepatic glucose output.<sup>5</sup>

#### Irisin's effect on lipid metabolism:

The effect of irisin on the metabolism of fat has been reported to be controversial. Most studies reported a negative correlation between irisin and lipid derangement. Increased expression of FNDC5 decreases plasma lipids and glucose in obese mice.<sup>9,10</sup> In a Chinese population, a positive correlation was found between serum irisin and total cholesterol, LDL cholesterol, and free fatty acids. Reduction of irisin due to energy restriction was associated with a decline in total cholesterol and HDL cholesterol.<sup>19-21</sup>

In a study conducted by Tang et al, infusion of irisin for two weeks resulted in a reduction of plasma and hepatic cholesterol in HFD-fed obese mice. It was shown that these effects were induced by successive activation of AMPK and downregulation of SREBP2.<sup>13</sup> (Figure 4). SREBP2 is a transcription factor responsible for the

activation of genes involved in cholesterol synthesis.



**Figure 4.** Effect of Irisin on hepatic cholesterol synthesis.<sup>10</sup>

#### **Anti-oxidant effect of irisin:**

Irisin, by reducing oxidative stress, has been shown to improve endothelial dysfunction and protect against atherosclerosis. Recombinant irisin significantly controlled atherosclerosis in apolipoprotein E-deficient mice.<sup>22</sup> There was a significant reduction in ox-LDL activated biomarkers infiltration of macrophages and T cells within the atherosclerotic plaque by reducing the expression of inflammatory biomarkers. The effect of irisin on human umbilical vein endothelial cells has also revealed that irisin improves endothelial function by suppressing hyperglycemia-induced apoptosis and oxidative stress; along with increasing the expression of antioxidant enzymes.<sup>23</sup>

#### **Irisin induces endothelial angiogenesis:**

Recent findings by Fei Wu and colleagues have shown that irisin promotes angiogenesis in a human umbilical vein through stimulation of the extracellular signal regulator kinase (ERK) pathway, proposing that irisin may have a pivotal role in preserving endothelial homeostasis.<sup>24</sup>

#### **Irisin as a biomarker of CVD in diabetes:**

In patients with T2DM with macrovascular complications, irisin levels were lower as compared to patients without macrovascular complications, implying that this myokine may be a biomarker of CVD disease in people with T2DM.<sup>14</sup>

#### **Irisin's possible role in the action of metformin:**

In a study by Li and colleagues, metformin, promoted the release of irisin from skeletal muscle<sup>25</sup>, suggesting that its release could be one of its mechanisms of action.

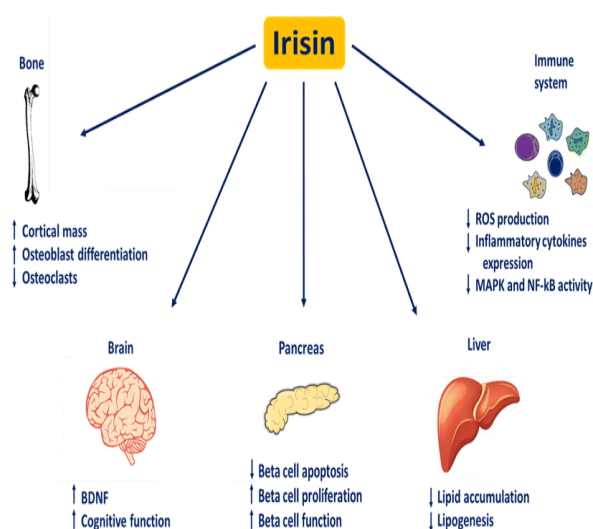
#### **Other effects of irisin:**

**On bone:** Increased cortical bone mineral density, thickness, and bending strength results when low dose recombinant irisin is given. (Figure 7).<sup>26</sup> This action has been attributed to activation of osteoblasts and a parallel reduction in osteoclast number and activity.

**On brain:** Recombinant irisin administration has been shown to promote hippocampal neurogenesis in mice, proposing its possible role in improving memory.<sup>27</sup> FNDC5 expression was shown to increase in the hippocampi of mice taking part in a thirty-day voluntary wheel running regime. FNDC5 expression in the brain upregulates the production of the neurotrophin BDNF,<sup>28</sup> which may have a role in mediating its beneficial effects in neural tissue (Figure 5).

**Anti-aging effect:** Plasma irisin levels showed a significant association with telomere length.<sup>29</sup> It is known that irisin signaling activates p38 MAPK which controls the expression of human telomerase reverse transcriptase.<sup>30</sup>

**Anti-cancer effect:** According to a recent study, irisin has an inhibitory effect on the amount and metastatic properties of neoplastic breast cells<sup>31</sup> and has also been shown to suppress proliferation in lung carcinoma.<sup>31</sup>



BDNF: brain-derived neurotrophic factor; ROS: reactive oxygen species; MAPK: mitogen-activated protein kinase; NF-κB: nuclear factor-kappa B.

**Figure 5.** Physiological actions of Irisin on bone, brain, pancreas, liver, and immune system.

## AUTHOR'S CONTRIBUTION

SA: Manuscript writing

HJQ: Supervision and critical review

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## Case Report

### AN UNUSUAL CASE OF A RETAINED FOREIGN BODY IN THE PERIORBITAL AREA.

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#### ABSTRACT

**Background:** Foreign object penetrations in the craniofacial region are sometimes reported as a result of occupational or work-related accidents. This can result in serious injuries because of the presence of many fragile anatomical structures in this region.

**Case presentation:** A 25-year-old male working as a carpenter faced an accident when a nail gun accidentally shoots resulting in a steel nail impalement in the right side of his face, just missing the eye. His primary physician missed the diagnosis and gave him palliative treatment. For five years, the patient kept visiting different doctors for his symptoms that appeared on and off but were medicated and sent back. After five years of this incident, he visited this hospital where his CT scan was ordered which revealed the presence of a long steel nail that was completely penetrating the right side of the face, crossing the nasal cavity and maxillary sinus to reach the maxillary bone of the left side. Surgery was done for the removal of the nail and debridement of the adjacent tissues was done. The patient was prescribed an antibiotic course.

**Conclusion:** This is a rare case because of the time duration for which the foreign body of such a large size was retained in the skull without causing any harmful effects to the neighboring vital structures and without the patient's knowledge.

**Key Words:** Surgery, Palliative Treatment, Foreign body

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## INTRODUCTION

Penetrating peri-orbital work-related injuries are uncommonly seen in everyday work practices. However, incidences of accidental injuries though uncommon, are still being reported from time to time, causing major disabilities and discomfort to the affectees. These accidents may involve a gunshot wound, a knife stabbing, or an industrial mishap.

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Such piercing injuries specifically in the craniofacial region are called 'Jael's syndrome' derived from a biblical reference where a nail was impaled into the temple of a sleeping person (Judas IV:21).<sup>1</sup> The symptoms from these embedded foreign bodies in the orbital and periorbital region can range from mildest discomfort to infections, retinal toxicity, facial disfigurement and even loss of vision or brain injuries. Imaging scans such as craniofacial radiographs and Computed Tomography (CT) play a pivotal role in the detection of such foreign objects.<sup>2</sup> Considering the delicacy of the anatomical structures residing in this region, the decision for performing surgery is made after carefully weighing the pros and cons of the surgical procedure. The treatment plan mainly relies on the site, size, and nature of the object, and the possibility of the presence

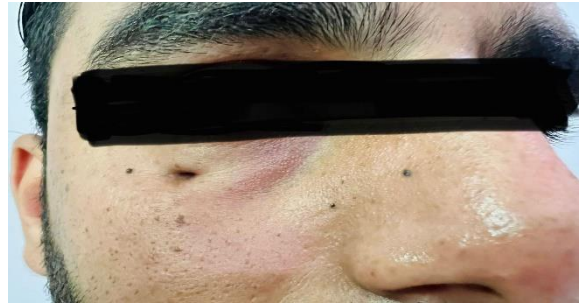


of a secondary infection or nerve compression.<sup>3</sup> If no symptoms are being experienced, then the foreign object can be left in situ to lower the risk of inflicting an iatrogenic injury during the surgical procedure.<sup>4</sup> However, if the patient is symptomatic, sometimes surgery is inevitable.<sup>5</sup>

This study reports a case of a patient who presented with a history of a steel nail penetration in the peri-orbital region resulting in the formation of a draining fistula.

### CASE PRESENTATION

A 25-year-old Asian male presented to the Farooq Hospital Westwood, Lahore with complaints of a persistent fistula with occasional discharge, nasal blockage, and mild irritation of the infraorbital region. The patient was also experiencing episodes of mild paresthesia in the area of the distribution of the right infraorbital nerve. History revealed a work-related incident that happened five years ago (April 2017) when he was working as a carpenter in Saudi Arabia. An automatic nail-firing gun (nailer) that he was using fired off accidentally, resulting in the piercing of a steel nail through the cheekbone. Upon immediate examination by a primary physician, the patient was told that the nail fragment has been removed and he was medicated and discharged from the hospital. Later on, he went to multiple doctors who prescribed him antibiotics to treat the purulent discharge coming from the fistula. Strangely, the cause behind this persistent discharge was never investigated properly. After five years, the patient reported to Farooq Hospital (in May 2022). A detailed history showed no medical conditions or morbidities. Upon thorough clinical examination, there was a non-resolving fistula just under the right eye, but fortunately, no globe or retro-orbital abnormality or any signs of loss of vision were seen (Figure 1).



**Figure-1.** Preoperative clinical image showing fistula under the right eye.

The patient's vital structures like the eye and brain were not affected so luckily the delay did not produce any debilitating effects. A Computed tomography (CT) scan was done. Imaging revealed a long-curved radioopaque foreign body of a large diameter entering the infraorbital rim of the right side, passing horizontally through the maxillary sinus and into the contralateral side of the face via the nasal cavity, completely embedded in the maxillary bone of the left side. The maxillary sinus was hazy too (Figures 2a and 2b)



**Figure-2a.** A CT scan (coronal view) shows a radioopaque metallic object.



**Figure-2b:** A CT scan (axial view) showing a radioopaque foreign object.

The patient was informed and surprisingly, he had no idea about this nail that was embedded in his skull for the past five years. An informed decision for surgery was taken and surgery was performed under general anesthesia. An infraorbital approach was used for surgical exploration and extraction of the steel nail was done along the path of its insertion. The extracted foreign body was still intact when removed and its shaft was covered in black necrotic debris. It measured 6.35 cm in length and 1.27 cm in diameter (Figure 3).



**Figure-3.** The retrieved intact Steel nail showed necrotic debris on its shaft.

The surrounding devitalized necrotic debris was irrigated profusely and debridement was done followed by fistulectomy and closure of the wound was done with polypropylene sutures (Figure 4).



**Figure-4.** Postoperative image.

The right maxillary sinus was debrided via the Caldwell Luc approach through an intraoral vestibular incision and BIPP (Bismuth iodide paraffin paste) pack was placed. The patient was given Intravenous

antibiotics (1 gram Ceftriaxone and 500 mg metronidazole 8 hourly for 7 days) and analgesics, was monitored overnight, and had an uneventful discharge from the hospital the very next day. He was prescribed oral antibiotics.

## DISCUSSION

Research done on multiple cases of retained foreign bodies with missed diagnoses showed that the shortest period for which a foreign object stayed in the body was of 3 days and the longest time period was 15 months.<sup>6</sup> We have reported this case because of its uniqueness that in this patient, a nail was embedded in his skull for five whole years and he did not know about it. On top of it, he kept consulting doctors but no one investigated the root cause. Also, the size and trajectory of the steel nail are distinctive as it crosses the midline. Research has shown that one of the most common causes for overlooking these foreign objects were because the physicians pay more attention to the wound (point of entry) but fail to address the possibility of foreign body lodgements.<sup>4</sup> Therefore, imaging scans are an absolute necessity in case of foreign object penetration because history and physical examination can prove to be inadequate.<sup>7</sup> Among all the radiographic modalities, CT scans are considered the gold standard for diagnostic purposes.<sup>8</sup> Nevertheless, CT scans can also produce a false-negative result if the foreign body is less than 0.5 mm in size but in our case, the CT scan demarcated the steel nail because of its large size.<sup>9</sup>

Different approaches have been used to extract a foreign body from the periorbital region including subsidiary, subconjunctival, subtarsal, and infraorbital approaches. The subtarsal approach is considered to be the safest approach.<sup>10</sup> However, in this case, the infraorbital approach was used as it included the fistular opening in the line of incision thus maintaining the facial esthetics. In addition, the Caldwell Luc approach was taken to debride the maxillary sinus to prevent the extension of infection in the neighboring spaces.



## CONCLUSION

CT scans are the mainstay for foreign body penetrations and their diagnoses. In the periorbital region, the extraction of foreign bodies requires the high expertise of the surgeon to avoid iatrogenic injury to the surrounding vital structures.

### Consent

Written informed consent was taken from the patient for the publication of this case details and the accompanying images.

### Conflict of interest

The authors declared that there was no conflict in interests.

## AUTHOR'S CONTRIBUTION

SSK: Conception, case data collection and writing

WA: Primary Maxillofacial surgeon

ZSQ: Associate Surgeon

OF: Primary Physician

SW: Supervision and Editing

SF: Case data collection

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## **Qualitative Research**

# **EXPLORING THE PHENOMENON OF CHILD MARRIAGES IN SOUTH PUNJAB: A CASE STUDY OF THESIL RAJANPUR**

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### **ABSTRACT**

The present study explores the socio-cultural causes behind the practice of child marriage and its impact on adolescent girl's life in a certain era. Pushing factors behind this cultural trend are based on unawareness about the hazardous effect of early marriage, inflexible cultural values, rigid mentality, lack of education and influence of punchaiti decision by the practice of watta Satta and pait likhi. All these factors have a bad impact on preadolescent girl's life as psychologically torched, physically frail by miscarrying pregnancy, economical crises, socially disorder, maladjustment in spouse family and faced spousal violence. The researchers have used an interpretive scientific approach to explore the phenomena in its all sense through in-depth interviews, empirical observation and case study method. The study's outcome is that the custom of child marriage among girls is a most practiced and civilized societal act. It has a hazardous impact on young married girl in their whole life in each domain and even female is being deprived of their basic human rights in this era.

**Key Words:** Marriage, Pregnancy, Adolescent

**doi:** <https://doi.org/10.51127/JAMDCV4I1QR01>

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## **INTRODUCTION**

Many societies have irrelevant customs that are ever harmful in practice silently and haphazardly and early marriage is one of them. It is a condition in which the victim is not psychologically torched but also physically harassed by her married family. According to Pakistan, the legal age of marriage is 18 years for females. Still, in the most milieu, not just in the Pakistani context but also globally marriage less than 18 years of adolescence girl have become a customized value which gives rise to many social and mental problems and maladjustment of the girl in a new setup and adaptation to the new environments and norms.<sup>1</sup>

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In developing countries, the female who marries at a premature age lack their autonomy, are less aware about their social life, are fully deprived of their fundamental human rights and bear domestic violence by their mate.<sup>2</sup> In a country like Africa, early marriage is also a complicated issue that harms the physical and mental growth of a child and has possessions on her education and free will. And the countries with a high rate of early marriage have a high rate of poverty and population.<sup>3</sup>

In Pakistan, females face the risk of mental health problems, disability, death, risk problems of newly born babies, and loss of confidence in building a healthy relationship due to early marriage. They cannot hold up their responsibilities entirely and are psychologically depressed. It is often due to rigid religious beliefs, cultural norms, lack of education, low economic status, and residence in rural or backward areas.<sup>4</sup>

Most parents marry their daughters at an early age due to the poor economic

conditions<sup>5</sup>, ignorance of the negative consequences of early marriage; the girls could be the cause of disgrace to family and parents<sup>6</sup>, cultural and traditional issues of honor and poverty.<sup>7</sup> They have low decision-making power, so females cannot resist early marriage.<sup>8</sup> Prejudiced traditional and religious norms<sup>9</sup>, parental misconception, and revision of their cultural and family norms<sup>10</sup> also become the cause of early marriages of the adolescent girls. Low level of education and parents' willingness to keep away the girls from schooling is also the push factors to marry the girls at their premature age.<sup>11</sup> Panchiati's decision on girl's marriage<sup>12</sup> and exchange marriage<sup>13</sup> are the strong influential elements in early marriage. Male dominancy is another factor that urges the female to marry at an immature age.<sup>14</sup> The major consequences of early marriage are the instability in homes<sup>15</sup>, a large number of children, less well-being of children and their low level of education<sup>16</sup>, women's inequality<sup>17</sup>, physiological immaturity of sexual organs<sup>18</sup>, health-related issues about pregnancy<sup>19</sup> and increase in poor fertility.<sup>20</sup> Early marriage does not lead to better socioeconomic status and prosperity in spouse life.<sup>21</sup>

The researchers conducted the present study in the Southern Punjab context of District Rajanpur to determine the causes and effects of early marriage life on females in Pakistan. The area of district Rajanpur is underdeveloped and rural to a great extent. Most people are illiterate, and the family system is followed through the Biradri system having strict cultural values very strictly. The current study explores the pushing factors behind early marriage and its effect or consequences on the spouse, especially on female life. It also aims to check the understanding level of marital relationships among spouses.

## RESEARCH METHODOLOGY

A qualitative research method was used in this exploratory study. Data was collected through the case study method; data was collected about a person's previous

experiences to understand their behavior with the help of in-depth interviews and participant observation. Different sampling methods were used while conducting research, i.e., the purposive sampling technique was used just to focus on special informative cases. The snowball sampling technique was used because registered data was not found in District Administration offices. Information was collected from the Nikah registrar about the persons who married at an early age, i.e. below 18 years. By using this sampling technique, researchers have found 12 cases of child age marriage as samples who were married in their teenage. As a tool for data collection, structured, unstructured questionnaires and in-depth interviews have been used. Photography and recording have also been used using modern technology. The researchers conducted this research for five-month from March 2021 to July 2021.

## RESULTS AND DISCUSSION

Marriage is a social, religious, spiritual, emotional, and/or legal union of individuals that creates kinship. Civil marriage is the legal concept of marriage as a governmental institution following marriage laws of the jurisdiction. If recognized by the state, by the religion(s) to which the parties belong, or by society in general, the act of marriage changes the personal and social status of the individuals who enter into it. Child marriage is a gross human rights violation that puts young girls at risk and keeps them mired in poverty. The current study elaborates on the pushing factors behind early marriage customs in rural areas and how it affects girl life. According to respondents, interview pushing factors behind this early marriage system in this era is that most parents are illiterate and unaware of the destructive results after early marriage and another leading cause of early marriage is that there is a binary system based on ethnocentrism with strict cultural norms early marriage is a custom and prevailing in this society and all their custom and cultural values are different from modern societies and due to solid

social forces people of that era cannot evade themselves by societal pattern. The major cause behind this custom is; the Panchaiti system in which all the decisions of this area are done by feudal, landlords, and those who have political power, so in many cases of panchaiti decisions, mostly girls are given as a 'Chatti'to another party which is a great loss for adolescent girl life and another cause of early marriage are Watta satta; exchange marriage system, Pait Likhi; marriage agreement of juvenile before their birth, a matter of honor; girl should have to marry in her early age so that she may avoid from any illegal sexual relation which may not cause dishonor of family status. In society Another cause of early marriage in that era is poverty. Most parents consent themselves to early marriage behind this subject that they cannot afford expenditures about necessities of life of their child so they marry them at an early age as they feel less burden of expenses and their child will live smooth life in her spouse family. According to a respondent, Hina from Basti Mashori "My spouse often quarrels with me because I cannot fully participate in domestic work or agriculture work, and he often beat me on suspicion that you are involved in the illegal affair". This indicates that due to early marriage, girls have to face many hardships related to domestic work and alarm that due to a lack of understanding and rational maturity, these types of early marriages lead to divorce. From another interviewee, it was asked, "In the start of your marriage, which sort of problems was you encountered"? According to Fiza, "I often visit hospitals to keep my health level. Initially, I felt disturbance socially after marriage because my friends took me on the suspected way that she was now a girl and became a lady then. I feel shy. I feel neglected by my mother. This is why I cannot afford domestic responsibilities fully so she often quarrels with me. Due to early marriage, all my dreams vanished and I feel like a puppet with nothing her willingness and desire". In this era, girls are facing many critical conditions and there is a great need for

awareness among the masses in this era about the consequences of early marriage, which become causes of hazardous health, social, psychological and economic problems.

## **LIMITATIONS OF THE RESEARCH**

The period was very short; therefore, it was difficult to cover all possible aspects and deeply investigate the problem due to a shortage of time and assets. Most people in the study area were illiterate, so it was difficult for the researchers to convince them. While conducting the study, researchers faced a lot of complications due to their rigid cultural norms and values. Most males did not allow the researchers to communicate with their females due to their stiff cultural norms.

## **CONCLUSION**

Through in-depth interviews, it was determined that this system was completely antisocial, ethically repugnant, and particularly hostile to the rights of young boys and girls. Despite this, an entire population arranges such marriages to adhere to their evil traditions and customs. The majority of residents in the study area were illiterate. They had a very low literacy rate. Due to their low literacy rate, their economic situation was precarious, and another significant factor was that most people were ignorant of fundamental human rights. They were completely oblivious to children's rights. Male dominance was another factor that dominated tribal areas according to these standards. In every aspect of life, women are less respected than men. Their parents have even decided on mate selection. Father's decision is considered final and conclusive. Through in-depth interviewing and observation, it was determined that women were more victimized than men. Sometimes it appears impossible to change harmful traditions. Attempts to alter or eradicate them will require the cooperation and understanding of

community leaders, policymakers, and those who have personally experienced or witnessed the hardships caused by these practices. Community education is critical for raising public awareness of these practices' negative consequences and altering societal norms. Legislation prohibiting harmful practices must be enacted and enforced. When done with respect for tradition, advocacy has the potential to unite communities by reinforcing practices that benefit all members while confronting those that undermine the integrity and humanity of girls and boys. Despite this, society has criticized females more harshly for being compelled to engage in such actions that are completely harmful and have negative consequences.

### AUTHOR'S CONTRIBUTION

- AA: Principal contributions and acquisition of the conception and design of the present study, i.e. Methodology, construction of a tool for data collection, and Literature review.
- MH: Verified the analytical methods and critically reviewed the work, i.e. Data collection, Data Analysis, and Interpretation of findings.
- AA: Drafting the manuscript for important intellectual content & literature citation and referencing and assisted the principal author with Data Collection.

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