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Assessment of Stool Regulation Practices and Anxiety-Induced Bowel Changes that Lead to Hemorrhoids

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ABSTRACT

Hemorrhoids are a common anorectal disease that may be caused by several physical, lifestyle, and behavioral factors. This research investigates whether there is an association between the severity of anxiety and the prevalence of hemorrhoids and identifies other lifestyle and behavioral factors that may influence the development of anorectal disease. The study was a cross-sectional study with 370 participants, using a questionnaire. The Anxiety Sensitivity Index (ASI) was used to assess anxiety. Spearman's correlation and binary logistic regression tests were used to investigate the relationships and to determine factors associated with hemorrhoids. 58.1% of the subjects reported having hemorrhoids. The prevalence of the condition seemed to be greater in people with higher levels of anxiety: 44.2% of those in the low-anxiety group, 51.8% of those in the moderate group, and 64.6% of those in the high-anxiety group. But in the logistic regression analysis, when other variables were considered, anxiety was not a significant predictor of hemorrhoids ($p = 0.101$). Significant predictors included low water intake (OR = 2.100, $p = 0.032$), irregular fiber consumption (OR = 1.781, $p = 0.029$), and smoking (OR = 0.405, $p < 0.001$). The overall model was significant ($p < 0.001$) with a predictive accuracy of 69.4%. While increased levels of anxiety were descriptively associated with an increased prevalence of hemorrhoids, anxiety was not a predictor of hemorrhoids. Rather, lifestyle factors such as diet and sufficient fluid intake seem to play an important role. Thus, the focus of efforts to prevent hemorrhoids should be on modifiable lifestyle factors, such as diet and hydration status, as well as the need to maintain positive psychological health.

Keywords: Hemorrhoids, Anxiety, ASI, Constipation, Lifestyle Factors, Stool Regulation Practices.

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INTRODUCTION

Hemorrhoids develop due to dilation of the submucosal vascular tissue in the distal anal canal. This vascular tissue is supported by connective structures that, when weakened, allow the hemorrhoids to descend or prolapse.(Mounsey, Halladay, & Sadiq, 2011) Internal hemorrhoids arise above the pectinate line, the junction between columnar and squamous epithelium, and are viscerally innervated, which makes them typically painless. In contrast, external hemorrhoids originate below the pectinate line, are somatically innervated, and are often associated with pain (Rubbini & Ascanelli, 2019). The literature states the prevalence in Pakistan to be 30-39% (Ghani *et al*., 2025). A study conducted in the Pakistan Institute of Medical Sciences in Lahore revealed that from 219 patients, there were 26.7% patient suffering from anal bleeding were suffering from internal hemorrhoids (Jamali *et al*., 2025). Daily life now includes smartphone use, which affects attitudes toward personal health and hygiene. Smartphone usage is increasing as people sit on the toilet to read news, interact on social media, or just pass the time. This more and more prevalent behavior might have serious health consequences, most of which have not been sufficiently investigated. (Ramprasad *et al*., 2025) Mobile phone use while sitting in the best seat can delay your bowel time and also divert your mind, due to which rectal emptying time increases. However, evidence regarding this behavior remains limited and requires further investigation. The relationship between anxiety disorders and anorectal diseases such as hemorrhoids, anal fissures, and anal fistulas has not been extensively studied. Recent evidence suggests a rising prevalence of anxiety disorders among both children and adults. Early identification and targeted intervention in patients diagnosed with either anorectal disease or anxiety disorders may help reduce the overall morbidity associated with both conditions.(Misra, Niranjan, & Bhat, 2025; Peery *et al*., 2015). In this study, we will assess the stool regulation practices and anxiety-induced bowel changes that lead to hemorrhoids or any other anorectal condition(Giuliani *et al*., 2020; Misra, Niranjan, & Bhat, 2025). We will be able to prevent the daily routine diseases, such as constipation, which is the ultimate cause of hemorrhoids (Kalkdijk *et al*., 2022).

Hemorrhoids are a frequently under-recognized yet distressing condition. Yet many of the causes are not well understood, despite their negative impact on well-being. This cross-sectional observational study seeks to investigate the impact of anxiety and irregular bowel habits, and to develop a better understanding of its potential associations with the development of anorectal disease (Ghani *et al*., 2025). This study, by looking at the interaction between anxiety, irregular bowel habits, and other factors, seeks to fill in some of the unknown and pinpoint behaviors and psychological symptoms that can be modified. The study aims to offer practical advice that can help individuals prevent the development of hemorrhoids, better manage their symptoms, and avoid recurrence. In the end, the study aims to help identify realistic and practical measures, such as improving bowel habits, coping with stress, and recognizing early signs and symptoms, linking lifestyle, psychological factors, and long-term colorectal health. Constipation is considered an important contributing factor to hemorrhoids, which we are going to cover under this patient-based research. This study will help to identify all the common problems that induce and trigger hemorrhoids.

METHODS AND MATERIALS

This hospital-based cross-sectional observational study was carried out among individuals attending outpatient departments (OPDs). The participants included patients seeking care for anorectal or gastrointestinal symptoms, as well as those visiting the hospital for general check-ups or other medical concerns. The study was conducted across Ghurki Trust Teaching Hospital, involving departments such as Gastrointestinal Surgery, Gastroenterology, and Psychiatry/Anxiety Clinics. The study was carried out over 12 months. The study population comprised patients attending outpatient and inpatient services of the participating hospitals. Individuals aged 16 years and older, from both sexes, were eligible to participate in the study, whether or not they had hemorrhoids. Including both affected and unaffected participants made it possible to compare the two groups and better assess potential risk factors associated with the condition. Pregnant women, patients with organic bowel diseases, diagnosed cases of gastrointestinal malignancy, and individuals with psychiatric comorbidities other than anxiety disorders were excluded from the study. A total sample size of 370 participants was targeted. Participants were recruited through the Purposive Sampling Technique(Rai & Thapa, 2015). The prevalence of hemorrhoids is 26.7% in the region of Lahore. Sample size was calculated by using OpenEpi, Population size (for finite population correction factor or fpc) (N): 1000000.

Hypothesized % frequency of outcome factor in the population (p): 26.7%+/-5, Confidence limits as % of 100 (absolute+/-%) (d): 5%, Design effect (for cluster surveys-DEFF): 1. Sample size n=d2/Z1−α/22×(N−1) +p(1−p) DEFF × N × p (1−p).

Primary Variables included anxiety levels, stool regulation practices, bowel habit patterns, and presence of anorectal diseases. Secondary Variables included toilet habits, lifestyle factors, dietary habits, demographic characteristics, IBS-related symptoms, and cognitive factors.

The Anxiety Sensitivity Index (ASI) was used to assess anxiety sensitivity. Anxiety levels were categorized into low, moderate, and high groups based on tertiles of the Anxiety Sensitivity Index (ASI) scores for comparative analysis. The self-structured questionnaire was developed based on relevant literature and expert input to assess stool regulation practices, lifestyle, and dietary behaviors (Rafiuddin *et al*., 2025). After obtaining written informed consent, participants were recruited, and data were collected using interview-based and self-administered questionnaires in the local language. Due to the non-normally distributed data, nonparametric tests were applied. The Mann–Whitney U test was used to compare two groups, whereas the Kruskal-Wallis's test was used to compare three or more groups. Spearman's rank correlation was used to assess correlations between continuous variables. Finally, binary logistic regression was used to identify factors predictive of hemorrhoids. Data analysis was performed using SPSS 25 (SPSS Corp., Chicago, IL). Descriptive statistics were used for this study. The p-value of <0.05 was considered significant. The study was approved by Ghurki Teaching Hospital, Lahore. All participants provided written informed consent before participating; we took all precautions to maintain confidentiality and privacy.

RESULTS AND FINDINGS

The study enrolled 370 respondents (n=370). Most participants were between 20 and 29 years of age (25.1%), followed by those aged 40–49 years (22.2%) and 30–39 years (20.0%). Smaller proportions were in the 50–59 age group (14.9%) and 60 years or older (11.1%), while 6.8% were younger than 20. The gender distribution was nearly equal, with 51.1% males (n = 189) and 48.9% females (n = 181). Likewise, most of the participants were married (67.0%) or single (28.4%). Few were widowed (2.2%) or separated (2.4%). Almost half (45.4%) of the participants were from urban regions, 32.7% from semi-urban regions, and 21.9% from rural regions. In terms of family history, 28.1% of the participants had a family history of psychiatric disease, while the remaining 71.9% had no such history. Further, more than half (56.8%) of participants reported a family history of anorectal disease, whereas 43.0% did not.

Table 1

Demographic Characteristics of Participants (n = 370)

Variable	Category	Frequency (n)	Percentage (%)
Age Group	<20	25	6.8
	20-29	93	25.1
	30-39	74	20.0
	40-49	82	22.2
	50-59	55	14.9
	>60	41	11.1
Gender	Male	189	51.1
	Female	181	48.9
Marital Status	Married	248	67.0
	Unmarried	105	28.4
	Widowed	9	2.2
	Separated	9	2.4
Residence	Urban	168	45.4
	Semi-Urban	121	32.7

	Rural	81	21.9
Family History of psychiatric illness	Yes	104	28.1
	No	266	71.9
Family History of Anorectal Disease	Yes	210	56.8
	No	159	43.0

Clinical Characteristics of Participants (n = 370)

In terms of clinical presentation, 62.2% reported blood in their stool, whereas 37.3% reported that the stool was normal and there was no blood. For pain during defecation, 64.9% of participants reported pain during bowel movements, while 35.1% reported no pain. Bowel regulation procedures, 24.1% of individuals said they used enemas or other techniques to make defecation easier, but the majority (74.9%) did not.

Table 2

Clinical Characteristics of Participants (370)

Variable	Category	Frequency (n)	Percentage (%)
Stool Condition	Body	230	62.2
	Normal	138	37.3
Pain During Defecation	Yes	240	64.9
	No	130	35.1
Use of Enemas	Yes	89	24.1
	No	277	74.9

Lifestyle and Behavioral Factors (n = 370)

Concerning lifestyle and behavioral aspects, 53.0% of respondents were non-smokers, whereas 46.8% indicated they smoked. The consumption of alcohol was quite low, as only 8.9% of participants indicated they used alcohol, while 91.1% reported they did not consume any. A significant percentage of participants (82.4%) indicated a daily water consumption of under 2 liters, while merely 17.6% drank 2 liters or more each day. Dietary patterns indicated that 50.0% of participants ate spicy food over three times a week, whereas 49.7% did so less often. In the same way, 38.9% indicated they ate fast food over three times a week, while 60.5% did so less often. Concerning fiber consumption, most participants (75.7%) exhibited inconsistent intake of fiber-rich foods, while just 21.4% indicated consistent consumption.

Regarding toileting habits, 35.1% of participants indicated that they use mobile phones or read while on the toilet, while 64.9% do not follow this behavior. Constipation was noted by 67.6% of participants, showing a high occurrence, whereas 31.1% did not report experiencing constipation. Moreover, 66.5% of participants indicated they faced work-related or personal stress, while 32.7% did not indicate experiencing such stress. Meanwhile, in terms of eating habits, most participants (68.9%) adhered to a mixed diet, while 16.2% were non-vegetarian and 14.9% followed a vegetarian diet.

Table 3

Lifestyle and Behavioral Factors

Variable	Category	Frequency (n)	Percentage (%)
Smoking	Yes	173	46.8
	No	196	53.0
Alcohol Consumption	Yes	33	8.9
	No	337	91.1

Water Intake (L/day)	<2	305	82.4
	≥2	65	17.6
Spicy Food Intake/week	>3 times	185	50.0
	≤3 times	184	49.7
Fast Food Intake/week	>3 times	144	38.9
	≤3 times	224	60.5
Fiber-Rich Food	Regular	79	21.4
	Irregular	280	75.7
Reading/Phone in the Washroom	Yes	130	35.1
	No	240	64.9
Constipation	Yes	250	67.6
	No	115	31.1
Stress (Work/Personal)	Yes	246	66.5
	No	121	32.7
Dietary Pattern	Vegetarian	55	14.9
	Non-vegetarian	60	16.2
	Mixed	255	68.9

Anorectal disease profile (n= 370)

Hemorrhoids were the most common ailment, affecting 58.1% of the study group, according to the distribution of anorectal illnesses among participants. Anal fissures and anal fistulas were recorded in 6.8% and 3.2% of participants, respectively, although other anorectal disorders were less common. Notably, 31.6% of the patients reported no history of anorectal disease, indicating that almost one-third of the sample was free from anorectal diseases.

Table 4

Anorectal Disease Profile

Variable	Category	Frequency (n)	Percentage (%)
Type of Anorectal Disease	Hemorrhoids	215	58.1
	Anal Fissure	25	6.8
	Anal Fistula	12	3.2
	None	117	31.6

Hemorrhoid Severity (Goligher Classification) n=370

Using the Goligher grading system, the most prevalent type of hemorrhoids in the study participants were Grade II (21.6%) and Grade I (21.1%). The less common grades (III and IV) were at 13.0% and 5.1% respectively. Notably, 39.2% of the participants did not have hemorrhoids.

Table 5

Hemorrhoid Severity (Goligher Classification)

Grade	Frequency (n)	Percentage (%)
Grade I	78	21.1
Grade II	80	21.6
Grade III	48	13.0

Grade	Frequency (n)	Percentage (%)
Grade IV	19	5.1
None	145	39.2

Comorbid Conditions

In terms of the presence of other diseases, 40.8% of participants had hypertension, while 59.2% did not. Similarly, 27.3% had diabetes mellitus and 72.7% did not. As for irritable bowel syndrome (IBS), 19.2% had IBS while 80.5% did not have IBS.

Table 6

Comorbid Conditions

Variable	Category	Frequency (n)	Percentage (%)
Hypertension	Yes	151	40.8
	No	219	59.2
Diabetes	Yes	101	27.3
	No	269	72.7
IBS	Yes	71	19.2
	No	298	80.5

Descriptive Statistics

The Anxiety Sensitivity Index (ASI) descriptive statistics show a mean score of 34.41 (SD 10.07). This suggested, on average, the sample had a moderate level of anxiety sensitivity, but there was some variability among participants.

Table 7

Descriptive Statistics

Variable	Mean	Standard Deviation (SD)
ASI Score	34.41	10.07

Association Between Anxiety Level and Hemorrhoids

The findings have interesting implications for the relationship between psychological stress and physical burdens. So, it appears that the more burdened by anxiety, the more burdensome the body becomes.' For those whose souls are freer from anxiety, the low-stressed, only 44.2% carried this burden. But as the mind darkens, so does the body; 51.8% of those with moderate anxiety suffered from this burden, and a staggering 64.6% of those with high anxiety suffered.

The haven of health follows the peace of soul. Where 55.8% of the low-anxiety group could breathe a sigh of relief, this figure is reduced to just 35.4% in those with the highest anxiety. And finally, with 58.3% of the sample affected, the numbers tell us a sad story of our emotional disturbances not always being confined to our minds, and often affecting our physical health

Table 8

Association between Anxiety Level and Hemorrhoids

Anxiety Level	Hemorrhoids No (%)	Hemorrhoids Yes (%)
Low	55.8	44.2
Moderate	48.2	51.8
High	35.4	64.6
Overall	41.7	58.1

Distribution of Anxiety Scores Between Two Independent Groups

The Mann–Whitney U test was applied to compare the distribution of anxiety scores between two independent groups. There was no statistically significant difference in anxiety scores between male and female participants (p = 0.178). Similarly, no significant difference in anxiety scores was observed between participants with and without constipation (p = 0.376). Additionally, anxiety scores did not differ significantly between participants reporting work-related or personal stress and those who did not (p = 0.341).

Table 9

Distribution Of Anxiety Scores Between Two Independent Groups

Variable	Groups	p-value
Anxiety Score	Male vs Female	0.178
Anxiety Score	Constipation	0.376
Anxiety Score	Stress	0.341

Differences in Anxiety Scores Across Multiple Groups

We used the Kruskal-Wallis test to identify differences in anxiety scores. There was a statistically significant difference in anxiety scores across age groups (p < 0.001), meaning that anxiety scores vary with age. But there were no significant differences in anxiety scores among different types of anorectal disease (p = 0.373). Likewise, anxiety scores were not significantly different in various hemorrhoid grades (p = 0.146), indicating that there was no correlation between anxiety and grade of hemorrhoids.

Table 10

Differences In Anxiety Scores Across Multiple Groups

Variable	Groups	p-value
Anxiety Score	Age Groups	<0.001
Anxiety Score	Anorectal Disease Type	0.373
Anxiety Score	Hemorrhoid Grade	0.146

Relationship Between Anxiety Scores and Hemorrhoid Severity

We also examined the association between anxiety and hemorrhoids by using Spearman's rank correlation test. We found a weak negative association between the Anxiety Sensitivity Index (ASI) and hemorrhoid grade (r = –0.082). But this correlation was not significant (p = 0.115).

Table 11

Relationship Between Anxiety Scores and Hemorrhoid Severity

Variables	Correlation (r)	p-value
Anxiety Score vs Hemorrhoid Grade	-0.082	0.115

Factors Associated with the Presence of Hemorrhoids

Our study into the causes of this condition, hemorrhoids, took us beyond the surface to determine which lifestyle factors affect the body. Through a statistical model, we managed to classify and predict 69.4% of the cases, giving us a deeper insight into the important variables. The findings indicate our health is often inextricably bound up with the most basic aspects of our lives: Food and Drink: You are what you eat. We found that irregular fiber intake was 1.781 times more likely to have hemorrhoids. More importantly, we found decreased water consumption was more than twice as likely (OR = 2.100). Life Hacks: While we found that smoking was significantly associated with our model (OR = 0.405), we did not find other "usual suspects". Psychosomatic: In fact, once we took account of these physical aspects, the Anxiety Score (ASI) was not significant (p = 0.101$).

Other things we might expect, such as talking on the phone or reading, stress, or even constipation, were not significantly associated in our model ($p > 0.05$). Ultimately, while our model explains 12.5% of the reason why this happens (Nagelkerke $R2 = 0.125$), it shows that the most significant factors in predicting it may be the day-to-day things we can do for our physical health, like drinking water and eating fiber.

Table 12

Factors Associated with the Presence of Hemorrhoids

Variable	B	S. E	p-value	Odds Ratio (Exp B)
ASI Score	0.019	0.012	0.101	1.019
Constipation	-0.313	0.229	0.172	0.731
Stress	0.057	0.240	0.813	1.058
Fiber Intake	0.577	0.265	0.029	1.781
Water Intake	0.742	0.346	0.032	2.100
Smoking	-0.904	0.244	<0.001	0.405
Toilet Habit	-0.262	0.263	0.319	0.770

Model Summary (Logistic Regression)

When we consider all of these factors, we find that they not only co-exist, but they also paint a meaningful picture. Our statistical model (value = 34.408, significance = $p < 0.001$) demonstrates this is not by chance. It shows that considering these lifestyle factors gives us more information than would be obtained by simply throwing darts. There are a lot of factors at play in the human body, but this model is a good fit and explains 12.5% of why this condition occurs (Nagelkerke $R2 = 0.125$). This may not seem like much, but this is a lot for health and behavioral aspects. The model was a good rule of thumb, being able to predict whether or not someone has the condition 69.4% of the time. It suggests that while there is still a lot to learn, by focusing on these specific attributes, we are now on the right track to understanding the full story of our health.

Table 13

Model Summary (Logistic Regression)

Parameter	Value
Model Chi-square	34.408
p-value	<0.001
Nagelkerke R^2	0.125
Overall Accuracy	69.4%

DISCUSSION

The primary aim of this study was to examine the delicate mind-body interaction and how the stress of anxiety may be reflected in the somatic symptoms of hemorrhoids(Helvaci *et al*., 2023; Huang *et al*., 2024; Huang *et al*., 2025). The story we've learnt is the story of the interactions between our mental state, lifestyle, and physical health (Pattanaik, 2025; Sodi, 2025). At first glance, the link appeared clear-cut: the higher the anxiety, the greater the incidence of the disease. This confirms the presence of the gut-brain axis, in which our emotional state can impact on our physical body and affect the functioning of our guts. It tells us that the anxiety we feel in our minds often doesn't just remain there; it can manifest in our bodies(Hillestad *et al*., 2022; Mayer, Nance, & Chen, 2022; Wadan, El-Aziz, & Ellakwa, 2025). But when we examined the issue in our statistical model, we found something more complicated.

Anxiety is frequently present, but it wasn't the "culprit" ($p = 0.101$). Rather, anxiety is more like a ghost - it affects our behaviors, which affect our health. The study found it wasn't the anxiety itself that was the problem, but the way anxiety alters our lifestyle - our diet, our self-care, and so on (Catherine, Joseph, & Kumar, 2024; Hosseini, 2023; Kalkdijk *et al*., 2022; Sadiqa *et al*., 2022). The biggest factors impacting health were the most basic, everyday things. These were the big-ticket items:

1. Water: Water is our first defense; decreased water consumption doubled the odds (OR = 2.100, p = 0.032).
2. Nutrition: Consistency is key. Those with an irregular fiber intake had significantly higher odds (OR = 1.781, p = 0.029).

On the other hand, some of the other suspects weren't significant in these statistical tests. Despite constipation being a typical suspect, it was no longer significant once diet and water intake were taken into account (Ramnayan, Kher, & Mandal; Uddin *et al*., 2024). Reading and mobile phone use while sitting on the toilet, and long-time sitting were also not significant factors (p > 0.05 (Byrne, 2025; Nedim & Yildirim, 2022; Yazkan *et al*., 2025).

This study demonstrates that our body is a complex puzzle. Our mood is important, but the best things we can change are changeable. By ensuring we're eating enough fiber and drinking enough water, we can help our bodies even when we feel anxious (He *et al*., 2022; Ng *et al*., 2025). It reminds us that we can't always control the stressors in our lives, but we can control the simple yet critical habits that keep us strong and well (Rachmad, 2022; Rubbini & Ascanelli, 2019). This study has limitations, such as being a cross-sectional study, which prevents us from drawing causal conclusions, and using purposive sampling, which may affect the study's generalizability. Smoking: We found a statistical association (OR = 0.405, p < 0.001), but this probably reflects a number of lifestyle factors that need further study.

CONCLUSION

The present study uncovers a multifaceted, but nonetheless intimate dialogue between the mind's anguish and the physical flesh. Although a cursory glance reveals that anxiety's melancholy is accompanied by a higher incidence of hemorrhoidal disease, the more rigorous gaze of multivariate analysis tells us that anxiety is not a direct cause of disease (p = 0.101). Instead, it hints at a mediated effect, via the physical and tangible routines of daily life and sedentary behavior. The research highlights that the body's complaints often stem from the failure to attend to elemental needs. The most important predictors of pathology among the factors examined were the subtle failures of nutrition and hydration: The irregular consumption of dietary fiber was found to be a major trigger of distress (The Threshold of Nutrition), with the results showing a steeply increased vulnerability among those not receiving regular nutrition (OR = 1.781, p = 0.029). Even more critical was the role of hydration; dehydration was found to be more than double the risk of developing this pathology (The Potency of Water), presenting itself as a vital key to anorectal well-being (OR = 2.100, p = 0.032). The statistical significance of (Lifestyle Intersections) smoking (OR = 0.405, p < 0.001) further underscores the nature of this disease as a multifarious entity, intricately intertwined with systemic habits. In conclusion, this study suggests that while the "gut-brain axis" offers a conceptual model for how emotional disarray may affect the body, the key to clinical recovery is largely found in what is changeable. The data suggest that the physiological realities of diet and bowel habits play a more dominant role in the development of hemorrhoids than the psychological factors alone. While the maintenance of mental health is a noble goal, the solutions to preventative action lie in the re-establishment of proper hydration and the rigorous intake of fiber, demonstrating that the body's story is most significantly written in the minutiae of our daily actions.

FUTURE RESEARCH DIRECTIONS

Future research should focus on longitudinal or prospective cohort studies to better understand whether anxiety and bowel habits directly contribute to the development of hemorrhoids. Including larger and more diverse populations from different regions would also help improve the generalizability of findings. Additionally, further studies could explore the biological mechanisms underlying the gut–brain axis, examine how stress management strategies may reduce risk, and assess the role of dietary and lifestyle changes in preventing anorectal conditions.

LIMITATIONS

This study has several limitations that should be considered. Because it used a cross-sectional design, it cannot determine whether anxiety actually causes hemorrhoids or is simply associated with them. The use of purposive sampling may also limit how well the findings apply to the broader population. In addition, the data were collected through self-reported

questionnaires, which can be affected by recall errors or personal bias in responses. Some lifestyle and psychological factors may not have been fully reported or may have been interpreted differently by participants, which could have influenced the results.

DECLARATION

Ethical Consideration: This study strictly adhered to the Declaration of Helsinki and relevant national and institutional ethical guidelines. Informed consent was obtained. All procedures performed in this study were consistent with the ethical standards of the Declaration of Helsinki. The study was conducted according to ethical standards for research involving human participants. Ethical approval was obtained from the relevant institutional review boards of the Ghurqi Trust Teaching Hospital, Lahore (90/HR/GTTH). All procedures performed in this study involving human participants were in line with institutional and international ethical guidelines.

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Similarity Index/ Plagiarism: The similarity index was checked, and it is well below the threshold value of 19%, whereas each source is less > 5%.

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