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Impact of Pre-Procedure Anxiety on the Outcome of Upper Gastro-Intestinal Endoscopy. A Study at CMH Lahore

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ABSTRACT

Objective: To identify the association of anxiety with discomfort and tolerance in patients undergoing upper gastro-intestinal endoscopy at CMH, Lahore.
Study Design: Prospective longitudinal study.
Place and Duration of study: CMH Lahore.
Methodology: From October 2017 to December 2018 total 103 patients were recruited for the study from the Department of Gastroenterology, Combined Military Hospital, Lahore. All patients above 18 years, scheduled to undergo routine, diagnostic non-advanced endoscopy were included while patients with a history of decompensated liver disease, and esophageal or fundal varices were excluded from the study. To evaluate the anxiety of patients, a 10-point visual analogue scale (VISUAL ANALOGUE SCALE) is used before the endoscopy procedure. The examinations were performed in a regulated way. Variables including the age, gender, education, current diagnosis with pharyngitis, and self-evaluated tolerance for uncomfortable feelings (evaluated with a 10-point VISUAL ANALOGUE SCALE) were recorded.
Results: Out of 103 patients, 53 were females, and 50 patients were males. The mean age of 34.8±11.7 years was observed. The patients who scored low on visual analogue scale, were significantly older compared to those who had higher scores on visual analogue scale (p=0.007).
Furthermore, the mean self-evaluated tolerance scores were significantly higher in patients with low visual analogue scale scores were compared to those with greater visual analogue scale scores (p=0.005).
Conclusion: The current study reported that patient anxiety before endoscopy in our setting was influenced by age and self-reported tolerance levels.

Keywords: Anxiety, Discomfort, Endoscopy, Fear, Panic, Tolerance.

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INTRODUCTION

During the past few decades, endoscopic procedures have become the standard in aiding in the diagnosis and treatment of various gastrointestinal disorders. However, as endoscopy is a simple albeit inVisual analogue scaleive procedure, many patients experience discomfort and pain during the procedure.[1-3] Patients often imagine a more frightening and painful experience associated with their endoscopy. Therefore, it is crucial for clinicians to adequately guide and inform patients undergoing endoscopy the details about the procedure. This aids, to an extent, patients to limit their anxiety about the procedure by separating reality from imagination.[4]

Anxiety is defined as the feeling of unease and worry. It is the result of a series of complicated cognitive, affective, and behavioral events that is triggered most commonly by stress.[4,5] It is the combination of perceived stressful feelings, restlessness, and fearfulness associated with the activation of the autonomic nervous system.[6] One method of tackling anxiety experienced by patients undergoing endoscopy is the use of sedatives which effectively reduce anxiety and relieve discomfort.[7,8] However, for most patients use of strong sedatives is not recommended and they still suffer panic and discomfort.

There is a scarcity of data from Pakistan, on frequency and severity of anxiety experienced by patients and very little is known about the correlated factors that influence the severity of anxiety among patients. In the current study, we set forth to identify the relationship of anxiety with the perceived tolerance of pain and discomfort during gastrointestinal endoscopy and how fear and panic influence the anxiety levels among patients.

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METHODOLOGY

One Hundred and Three patients undergoing the procedure of upper gastrointestinal endoscopy in Department of Gastroenterology Combined Military Hospital Lahore were enrolled in the present study, prospectively. The study was conducted from 1st August to 30th November, 2020.

Inclusion Criteria: Patients aged 18 years or older, scheduled to undergo routine, diagnostic non-advanced endoscopy for the first time.

Exclusion Criteria: Patients having a history of decompensated liver disease, and a high likelihood of esophageal or fundal varices were excluded from the study. They were also excluded if they were neurologically unfit and unable to complete the provided questionnaires.

Firstly, at the time of enrolment in the study the subjects were provided with a brief summary of the endoscopic procedure and written consent was obtained. This explanation also included estimated procedure duration, benefits and risks of the procedure. To evaluate the anxiety of patients, a 10-point visual analogue scale (VISUAL ANALOGUE SCALE) is used before the endoscopy procedure. The examinations were performed in a regulated way. A procedure was considered technically acceptable if all segments of the upper Gastro-Intestinal tract (esophagus, stomach, and the second portion of the duodenum, fundus of the stomach) were sufficiently viewed. After 10 to 20 minutes in the recovery area, while patients wait for their results, a nurse in the Upper GI Endoscopy Department evaluates them with a simple questionnaire. A structured questionnaire was used throughout the study. The questions included (age, gender, education, current diagnosis with pharyngitis, and self-evaluated tolerance for uncomfortable feelings (evaluated with a 10-point VISUAL ANALOGUE SCALE).

The statistical analysis of this study was performed on SPSS version 23. Our primary analyses included two comparisons (high anxiety group vs. low anxiety group, moderate anxiety group vs. low anxiety group). Descriptive analysis was carried out for continuous variables and percentages were obtained for categorical variables. Correlation was use to find the relationship between VAS score with Duration and Tolerance Score.To adjust for established and potential confounding factors multivariate regression analyses were adopted. For all analyses, $p \leq 0.05$ was considered statistically significant.

RESULTS

Mean age of patients was 34.80±11.74 years. Among patients 15(14.6%) were uneducated, 35(34.0%) were primary pass, 30(29.1%) were secondary pass and 23(22.3%) were having high school education. Mean pain score of patients was 4.94±2.89. However pain severity showed that 35(34%) had low, 33(32%) had moderate and 35(34%) had severe pain. Mean duration of procedure was 6.10±0.020. Mean tolerance score was 5.05±0.26. Only 13(12.6%) cases were diagnosed with Pharyngitis (Table-I).

Table-I: Characteristics of Study Participants (n=103)

Characteristics	n%
Age	34.80±11.74
Education	
Uneducated	15(14.6%)
Primary	35(34.0%)
Secondary	30(29.1%)
High	23(22.3%)
VAS Score	4.94±2.89
Pain Status	
Low	35(34%)
Moderate	33(32%)
High	35(34%)
Duration	6.10±0.020
Tolerance	5.05±0.26
Pharyngitis	13(12.6%)

Pain severity did not show significant association for Pharyngitis. Total 13(12.62%) patients had pharyngitis. i.e. (p-value=0.475). Normality testing of the data showed that duration and tolerance scores were not normally distributed. Mean duration and mean tolerance score showed significant difference in relation to pain severity. Patients with higher pain intensity had higher duration (p-value<0.001) and patients with lower pain intensity had higher tolerance score. (p-value<0.000) (Table-II).

As mentioned above mean duration and tolerance score showed significant difference in relation to pain intensity. Multiple comparison test was applied to see the difference between categories for both categories. Statistically significant difference was seen in duration between low and moderate pain intensity and between moderate pain and high pain intensity category. However statistically significant difference was seen for tolerance score between low-moderate pain intensity, low to high pain intensity

Table-II: Pain Insensitivity in Relation to Patient Characteristics (n=103)

		VAS			*p*-value
		Low	Moderate	High	
Pharyngitis	Yes	3(8.6%)	6(18.2%)	4(11.4%)	0.475*
	No	32(91.4%)	27(81.8%)	31(88.6%)	
Duration		6.10±0.008	6.07±0.013	6.11±0.014	<0.001**
Tolerance		5.34±0.15	5.03±0.13	4.77±0.09	<0.001**

Note: (*): Chi Square Test

(**): Kolmogorov-Smirnov Test (p-value<0.05: Not normally distributed)

Table-III: Duration and Tolerance Scores in relation to Pain Severity (n=103)

		VAS			*p*-value*
		Low	Moderate	High	
Duration	Mean±SD	6.10±0.008	6.07±0.013	6.11±0.014	<0.05
	Median (IQR)	6.11 (0.02)	6.08(0.00)	6.12(0.01)	
Tolerance	Mean±SD	5.34±0.15	5.03±0.13	4.77±0.09	<0.05
	Median (IQR)	5.30(0.10)	5.00(0.15)	4.80(0.10)	

Note: (*): Kruskal Wallis Test

Table-IV: Pairwise Comparison of Duration and Tolerance in Relation to Pain Severity (n=103)

		VAS		
		Low	Moderate	High
Duration	Low	-	<0.001	0.185
	Moderate		-	<0.001
	High			-
Tolerance	Low	-	<0.001	<0.001
	Moderate		-	<0.001
	High			-

category and between moderate to high pain intensity. (Table-III& IV)

Seventeen patients (16.5 percent) reported severe panic and fear during endoscopy in our study. The adjusted odds ratio for 1-score increase in pre-endoscopy anxiety VISUAL ANALOGUE SCALE score was 1.64 (95%CI [1.31, 2.07]). Moderate (adjusted OR 16.28, 95%CI [2.99, 78.24]) and high (adjusted OR 78.45, 95%CI [14.21, 457.51]) pre-endoscopy anxiety were associated with severe panic and fear during endoscopy when compared with those with low level of anxiety. (Table-V).

Table-V: Associations of Pre-endoscopy Anxiety with Panic/fear During Endoscopy and the Willingness to Repeat Unsedated Endoscopy.

Very weak correlation was seen between duration and VAS score (r=0.065, *p*-value=0.513) while significant negative high correlation was seen between VAS score and tolerance score. (r=-0.806, *p*-value=0.001) (Figure-1 & 2)

DISCUSSION

The current study reported that the patients who scored low on VISUAL ANALOGUE SCALE scale, were older compared to those who scored higher on the VISUAL ANALOGUE SCALE. Normality testing of the data showed that duration and tolerance scores were not normally distributed. Mean duration and mean tolerance score showed significant difference in relation to pain severity. Patients with higher pain intensity had higher duration of tolerance (*p*-value<0.001) and patients with lower pain intensity had higher tolerance score. (*p*-value<0.000). This indicates that patients who had higher perceived tolerance had lower levels of anxiety in comparison to those who were less confident about their pain tolerance. Another interesting finding was the link between older age and lower VISUAL ANALOGUE SCALE scores, highlighting that older patients were

more confident and less anxious before undergoing endoscopy when compared with younger patients.

It is common for patients to be a little anxious before any Visual analogue scaleive procedure that may have potential to cause discomfort or pain. Moreover, patients are also anxious about the findings and results on endoscopy or colonoscopy.[9] In a study by Micheal JP and colleagues they evaluated patient anxiety correlated with diagnostic, sedated endoscopic procedure in an outpatient setting.[10] They found that the diagnostic endoscopy in outpatient settings was correlated with only moderate anxiety and were not affected by age, gender, type of procedure, indication of endoscopy, or source of referral. These findings are in contrast to the current study as we observed that age significantly influenced the anxiety levels among the study participants.

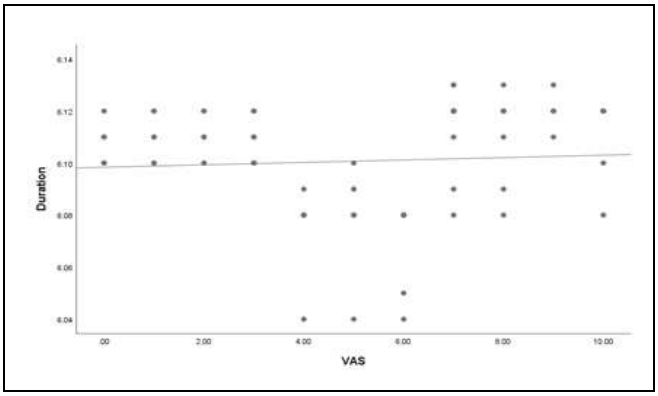

Figure-1: Correlation between VAS score and Duration
Correlation coefficient= r= 0.065, p-value= 0.513

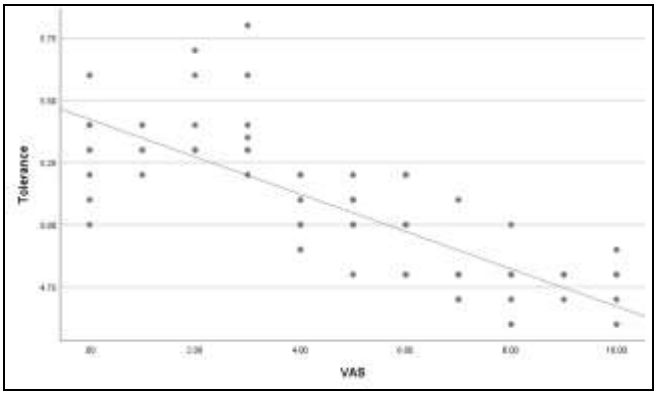

Figure-2: Correlation between VAS score and Tolerance Score
Correlation coefficient= r= -0.806, p-value= 0.001

In another study by Trevisani *et al*, the effect of different endoscopic procedures on the patient anxiety were evaluated along with the influence of anxiety on patient tolerance.[11] The study revealed that patients undergoing gastroscopy, bronchoscopy, or colonoscopy all had similar levels of pre-procedure anxiety. Moreover, the degree of patient cooperation was inversely related to the levels of trait and state anxiety among study participants with $p<0.05$ and $p<0.01$, respectively.

The current study divulged that moderate to high severity of anxiety were significantly correlated with increase in patient discomfort as well as panic and fear among the study participants [Table II-III]. In a study evaluating the association between pre-endoscopic levels of anxiety and the risk of a panic attack during an endoscopic procedure, it was found that patients who suffered panic attacks during a procedure had significantly more severe anxiety compared to those who did not experience a panic attack.[12] They further claimed that women had higher levels of anxiety compared to men. Very recently, the relationship between the anxiety and its correlated factors and the expected level of pain and discomfort experienced by the patients were explored.[13] The study revealed that the patients undergoing endoscopy for the first time were more distressed and had higher levels of anxiety compared to patients who were familiar with the procedure. They found that patients who were more anxious experienced greater discomfort than others. The authors concluded that psychological preparation before sedation is essential and can be helpful for female, younger, and first-timer patients in reducing the anxiety before procedure.[13]

Anxiety can be debilitating for many patients undergoing these diagnostic procedures.[14-16] To help reduce anxiety El-Hassan H, Mckeown K, and Muller AF conducted a clinical trial which evaluated the impact of music in reducing anxiety levels in patients undergoing endoscopic procedures.[17] They reported promising results revealing that anxiety levels were significantly reduced among patients listening to music while undergoing endoscopy compared to the control group. Similar evidence was published in a meta-analysis reinforcing the use of music during endoscopic procedures to reduce the anxiety levels among patients.[16] The use of relaxing and soothing music during an endoscopic procedure can help reduce anxiety beside it being a very inexpensive, simple, and evidently effective strategy.

CONCLUSION

The current study reported that patient anxiety before endoscopy in our setting was influenced by age and self-reported tolerance levels. It was further reported that

patients who experienced fear and panic attacks during the procedure had higher anxiety levels and experienced more discomfort.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

MAF & MU: Data acquisition, data analysis, critical review, approval of the final version to be published.

HM & AA: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

MS & MAY: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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