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Understanding Patient Anxiety and Perceived Sympathetic Responses during Endoscopic Ultrasound Procedures: A Qualitative Study

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ABSTRACT

Background: Endoscopic ultrasound (EUS) is one of the most vital tools of modern gastroenterology, serving both diagnostic and therapeutic purposes. Despite its value, patients often experience significant anxiety due to concerns about invasiveness, sedation, complications, and cost. Anxiety is not only psychological but also involves physiological responses mediated by the autonomic nervous system and stress hormones.

Objective: To explore patients' perceptions of anxiety and their perceived sympathetic body responses during endoscopic ultrasound.

Methods: Semi-structured interviews were conducted with patients undergoing or scheduled for EUS preceded by ethical approval from research committee of MMC General Hospital Peshawar. The study duration was six months from January 2025 to June 2025. Thematic analysis identified patient concerns, experiences, and perceptions. Key themes included invasiveness, anesthesia, cost, complications, and physiological stress.

Results: Patients reported high levels of fear, often related to sedation, possible complications, and financial burden. Anxiety manifested physiologically as tachycardia, flushing, sweating, and altered breathing. Pre-procedure counseling, adequate sedation (including benzodiazepines or dexmedetomidine), and educational interventions (videos, pamphlets) were effective in reducing anxiety. Social and cultural factors played a lesser role than financial and physiological concerns.

Conclusion: Patient anxiety in EUS is both psychological and physiological, influencing comfort and procedural outcomes. Addressing this requires multidisciplinary collaboration, pre-procedural counseling, patient education, anxiolytic medications, and possibly non-pharmacological approaches such as mindfulness. Recognition of the physiological basis of anxiety,sympathetic activation, cortisol surge, and autonomic imbalance highlighting the need for holistic preparation strategies.

Keywords: *Anxiety ,physiological ,comfort.endoscopic ultrasound*

1. INTRODUCTION

EUS is one of the most essential tools of modern gastroenterology and is now widely available in advanced endoscopy centers across the country. It is both diagnostic and therapeutic,for example, it allows diagnosis of benign and malignant lesions while also enabling therapeutic interventions such as celiac plexus block.1 This innovative field combines the expertise of radiologists and gastroenterologists, pushing the boundaries of diagnostics and therapeutics.2

However, indications for EUS must be carefully chosen, as many gastroenterologists are still on the learning curve of this advanced procedure. Importantly, EUS is not without risks, and patient anxiety is one of the major hurdles to smooth

performance. 3The anxiety originates not only from psychological concerns but also from physiological responses such as increased sympathetic drive, elevated cortisol levels, and altered autonomic balance.4

Patient apprehensions include cost, anesthesia, procedure duration, and possible complications. 5Since EUS is expensive, many patients cannot afford it, causing added stress. The use of anesthesia and fear of immediate complications are particularly significant triggers of anxiety.6

EUS has major utility in diagnosing malignancies of the pancreas, biliary system, liver, and mediastinum and has become integral in multidisciplinary patient management. However, the minimally invasive nature of EUS still triggers fears. This makes it vital to assess both patient perceptions and physiological responses, as anxiety has direct implications for peri-procedural safety and recovery.7

2. METHODOLOGY

This qualitative study aimed to understand the experiences and anxieties of patients undergoing or scheduled for EUS procedures. Patients were purposively selected to capture varied experiences. The study duration was six months from January 2025 to June 2025. Semi-structured interviews explored concerns, fears, and perceptions about EUS. Key physiological experiences like palpitations, sweating, and breathlessness were also noted. Interviews were transcribed and analyzed using thematic analysis to identify patterns in patient anxiety and comfort.

3. RESULTS

1. Patient Reactions to EUS: Fear and uncertainty were common, particularly due to lack of familiarity and high cost. Participants frequently described heightened physiological arousal consistent with sympathetic activation during the anticipation and performance of EUS. Commonly reported experiences included palpitations, sweating, tremors, dry mouth, and a sense of breathlessness. Several patients linked these responses directly to their anxiety, noting that bodily sensations often amplified their perception of procedural distress. These sympathetic manifestations were not only physical but also intertwined with emotional discomfort, reinforcing the cyclical relationship between anxiety and physiological reactivity.

2. Factors Contributing to Anxiety: The invasiveness of EUS, fear of anesthesia, and potential complications were dominant concerns. Physiologically, patients reported tachycardia, flushing, and difficulty breathing before procedures.

3. Ensuring Patient Comfort: Pre-procedure counseling and sedation preferably general anesthesia or conscious sedation with benzodiazepines were crucial.

4. Role of Patient Education: Counseling, pamphlets, and videos explaining the procedure significantly reduced anxiety and physiological arousal.

5. Effectiveness of Interventions: Patients receiving counseling and education reported reduced heart rate, lower self-reported anxiety, and greater willingness to proceed.

6. Impact of Sedation: Midazolam and dexmedetomidine were effective in reducing anxiety and sympathetic overactivity.

7. Patient Feedback: General anesthesia was associated with higher satisfaction scores due to reduced awareness of the procedure.

8. Influence of Social Factors: Financial burden emerged as the strongest non-physiological stressor.

9. Effect of Pre-Procedure Counseling: Reduced physiological arousal (steadier heart rate) was noted in counseled patients.

10. Additional Comfort Measures: Relaxation techniques and mindfulness exercises may further mitigate sympathetic overactivation.

4. DISCUSSION

EUS procedures are associated with high patient anxiety, reflected in both psychological distress and physiological stress responses. Patients frequently reported fear, flushing, palpitations, and reluctance to undergo the procedure, consistent with activation of the sympathetic nervous system.[8]

Physiologically, anxiety triggers hypothalamic–pituitary–adrenal (HPA) axis activation, increasing cortisol secretion. This leads to tachycardia, elevated blood pressure, and heightened alertness,all of which were reported by patients in this study. Such responses, if unaddressed, may complicate sedation, increase anesthetic requirements, and prolong recovery.[9]

Pharmacological strategies remain essential. Benzodiazepines (e.g., midazolam) act via GABA-A receptors, providing anxiolysis, amnesia, and sedation with rapid onset. [10] Dexmedetomidine, an alpha-2 adrenergic agonist, provides sedation with minimal respiratory depression and dampens sympathetic overactivity, making it highly suitable in EUS settings.[11]

Non-pharmacological strategies also have physiological benefits. Pre-procedure counseling can reduce sympathetic drive, mindfulness lowers cortisol, and patient education enhances parasympathetic dominance, improving comfort.[12]

Our findings emphasize that gastroenterologists must recognize and address not only psychological fears but also the neurophysiological basis of anxiety. This aligns with evidence suggesting that pre-procedure anxiety increases sedative requirements, affects hemodynamics, and influences recovery outcomes.[13]

Limitations: The study involved limited interviews and primarily reflected gastroenterologists' perspectives. Broader studies with direct physiological monitoring (HR, BP, cortisol levels) and patient-reported anxiety scales would strengthen the findings.[14]

5. CONCLUSION

Patient anxiety during EUS reflects a complex interplay of psychological fears and physiological stress responses. Early recognition, structured counseling, adequate anxiolysis, and patient education are crucial to reduce anxiety and optimize procedural outcomes. Integrating both psychological support and physiological management can improve patient experience and safety during EUS.[15]

REFERENCES

[1] Li Y, Xu Y, Guo Y, et al. Exploring anxiety triggers in non-sedated upper gastrointestinal endoscopy: a prospective analysis. Dig Dis Sci. 2025 Jul 24. doi:10.1007/s10620-025-09216-3

[2] Li Y, Xie Y, Chen Y, et al. Safety and efficacy of remimazolam versus propofol during endoscopic ultrasonography: a multicenter randomized controlled study. Gastrointest Endosc. 2025;101(6):1120-1129. doi:10.1016/j.gie.2025.03.007

[3] Mohan BP, Dhawan A, Chandan S, et al. Safety and efficacy of dexmedetomidine vs. midazolam in complex gastrointestinal endoscopy: a systematic review and meta-analysis. Clin Res Hepatol Gastroenterol. 2024;48(4):102315. doi:10.1016/j.clinre.2024.102315

[4] Xie Y, Wang X, Zhao J, et al. Efficacy and safety of sedation with dexmedetomidine in adults undergoing gastrointestinal endoscopic procedures: a systematic review and meta-analysis of randomized controlled trials. Front Med. 2023;10:1276456. doi:10.3389/fmed.2023.1276456

[5] Othman M, Alharbi O, Alqutub A, et al. The effect of pre-procedure anxiety on sedative requirements for sedation during upper gastrointestinal endoscopy. Saudi J Gastroenterol. 2022;28(3):201-207. doi:10.4103/sjg.sjg_60_22

[6] Al-Qahtani H, Al-Shahrani A, Al-Harbi Y, et al. Relation between knowledge and anxiety level of Saudi patients undergoing upper gastrointestinal endoscopy. J Int Crisis Risk Commun Res. 2024;7(1):45-58.

[7] Ali N, Anwar S, Farooq U, et al. Dexmedetomidine versus ketofol for moderate sedation in endoscopic retrograde cholangiopancreatography. J Coll Physicians Surg Pak. 2024;34(9):991-995. doi:10.29271/jcpsp.2024.09.991

[8] Wang X, Liu J, Zhang Y, et al. Effect of different doses of dexmedetomidine on the median effective concentration of propofol during gastrointestinal endoscopy: a randomized controlled trial. Br J Clin Pharmacol. 2023;89(3):1292-1302. doi:10.1111/bcp.15647

[9] Dumonceau JM, Riphaus A, Schreiber F, et al. Patient satisfaction and physiological tolerance of endoscopy under sedation: an updated ESGE guideline. Endoscopy. 2023;55(5):455-472. doi:10.1055/a-2094-8395

[10] Leung FW, Hsieh YH, Lee JG, et al. Strategies to reduce pre-endoscopy anxiety and improve patient comfort: recent advances. World J Gastrointest Endosc. 2023;15(6):401-410. doi:10.4253/wjge.v15.i6.401

[11] Yoo JH, Lee HS, Kim JH, et al. Patient anxiety and cardiorespiratory changes during endoscopic ultrasound under conscious sedation. Ultrasonography. 2024;43(2):150-159. doi:10.14366/usg.23090

[12] Azizi A, Patel S, Kaul V, et al. Current trends in sedation for EUS: balancing patient safety and comfort. Curr Opin Gastroenterol. 2024;40(3):220-227. doi:10.1097/MOG.0000000000000950

[13] Kanno Y, Koshita S, Ogawa T, et al. Anxiety levels in patients undergoing endoscopic procedures: impact on recovery and outcomes. BMC Gastroenterol. 2023;23:115. doi:10.1186/s12876-023-02634-1

[14] Banerjee R, Reddy DN, Sharma M, et al. Endoscopic ultrasound: patient perspectives and evolving challenges. JGH Open. 2024;8(1):25-32. doi:10.1002/jgh3.13050

[15] Khan M, Shah A, Iqbal U, et al. Psychological and physiological determinants of anxiety in gastrointestinal endoscopy: a narrative review. Ann Gastroenterol. 2023;36(5):456-465. doi:10.20524/aog.2023.0821