Patient Understanding and Anxiety Prior to Thyroid and Breast Fine Needle Aspiration Cytology (FNAC): A Cross-Sectional Study In Tertiary Care Centre in Chikkamagaluru

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Received date: 21 August 2025 Revised date: 16 September 2025
Acceptance date: 20 October 2025

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ABSTRACT

Background: Fine Needle Aspiration Cytology (FNAC) is a widely used, minimally invasive diagnostic procedure, particularly for evaluating thyroid and breast lesions. Despite its simplicity and safety, many patients experience anxiety and harbor misconceptions about the procedure. **Objective:** To assess the level of understanding and the degree of anxiety experienced by patients undergoing thyroid and breast FNAC in a tertiary care centre in Chikkamagaluru. **Methods:** A cross-sectional study was conducted at a tertiary care hospital in Chikkamagaluru over a period of 1 year. A total of 150 patients scheduled for thyroid or breast FNAC were interviewed using a structured questionnaire assessing their knowledge of the procedure and their anxiety levels using a standardized anxiety scale (e.g., GAD-7). Demographic data, clinical history, and prior exposure to FNAC were also recorded. **Results:** Out of the 150 participants, 72% were female and 28% male, with a mean age of 42.3 years. While 68% of patients had heard of FNAC before the procedure, only 35% could correctly describe its purpose. High levels of anxiety were observed in 58% of patients, with significantly higher scores among those undergoing the procedure for the first time or lacking adequate pre-procedure counselling. Patients who received prior explanation from healthcare providers showed markedly reduced anxiety levels ($p < 0.01$). **Conclusion:** There is a clear gap in patient understanding regarding FNAC procedures, contributing to heightened anxiety. Structured patient education and counselling prior to FNAC can significantly reduce anxiety and improve patient compliance and satisfaction.

INTRODUCTION

Fine-needle aspiration cytology (FNAC) is a well-established diagnostic tool for evaluating thyroid and breast lesions. It is widely preferred because it is minimally invasive, cost-effective, and provides rapid results that guide further clinical management. Compared to surgical biopsies, FNAC carries fewer risks and is generally well tolerated by patients [1].

Despite these advantages, patients frequently experience anxiety before undergoing FNAC. This may result from fear of pain, uncertainty regarding the possibility of malignancy, limited knowledge about the procedure, or concern about the results. Previous studies have shown that

higher levels of pre-procedural anxiety are associated with greater pain perception and, in some cases, inadequate or nondiagnostic samples due to reduced cooperation[1,2]. Thus, psychological factors can directly influence the effectiveness of the procedure.

Clear communication and counselling are key to alleviating this anxiety. Research has demonstrated that providing patients with simple explanations about the procedure and expected outcomes significantly lowers stress and improves their overall experience [3]. On the other hand, insufficient or overly technical explanations may worsen confusion and distress. Various supportive measures, including pre-procedure education, same-day reporting, and even non-pharmacological interventions such as music or relaxation techniques, have been shown to reduce anxiety [3,4].

In the Indian context, challenges such as heavy patient load, language barriers, and variable health literacy may contribute to misunderstanding and heightened anxiety. Assessing patient understanding and anxiety levels prior to FNAC in a tertiary care centre in Chikkamagaluru is therefore crucial. Such evidence can help identify knowledge gaps, guide patient-centred communication strategies, and ultimately improve both patient comfort and diagnostic accuracy.

Despite the widespread use of FNAC and its proven safety, patient perceptions and emotional responses remain critical factors influencing the overall diagnostic process. Anxiety and lack of understanding can lead to reluctance, delayed procedures, or suboptimal cooperation during sample collection, potentially affecting the accuracy of results. Studies suggest that patient-centred interventions, including structured education sessions, informational brochures, and clear verbal instructions, can significantly improve understanding and reduce pre-procedural anxiety. Considering demographic factors, prior medical experiences, and cultural beliefs is also important in tailoring communication strategies. Collecting data on patient knowledge and anxiety in specific regional and institutional contexts, such as tertiary care centres in smaller cities, provides valuable insights for designing practical interventions that enhance both patient comfort and the quality of cytological diagnoses [6].

MATERIALS AND METHODS

Study Design and Setting

This study was designed as a cross-sectional, descriptive analysis and was carried out in the Departments of Pathology and Radiodiagnosis at a tertiary care centre in Chikkamagaluru.

Study Period

The data collection and analysis will be conducted over a period of one year, from March 2024 to March 2025.

Study Population and Sample Size

A total of 150 individuals scheduled to undergo fine-needle aspiration cytology (FNAC) for thyroid or breast lesions will be included in the study.

Eligibility Criteria

Inclusion criteria

- Patients above 18 years of age undergoing thyroid or breast FNAC.
- Participants who are able to understand the study details and provide written informed consent.

Exclusion criteria

- Patients who have undergone FNAC of the thyroid or breast within the past 12 months.
- Individuals with a diagnosed psychiatric disorder that may interfere with reliable anxiety assessment.

Data Collection Instruments

Information will be obtained using the following tools:

- A structured, pretested questionnaire to evaluate the patient's knowledge about FNAC.

- The Generalized Anxiety Disorder-7 (GAD-7) scale to measure pre-procedural anxiety levels.
- A demographic and clinical information sheet to record baseline characteristics of the participants.

Statistical Analysis

Data were analyzed using descriptive statistics to summarize baseline characteristics and questionnaire responses. Associations between categorical variables were examined using the Chi-square test, while comparisons of continuous variables between groups were carried out with independent t-tests. A p-value of less than 0.05 was taken as the threshold for statistical significance.

GAD-7 Scoring

The **Generalized Anxiety Disorder-7 (GAD-7)** is a self-administered screening tool commonly used to assess the severity of anxiety symptoms. It consists of seven items, each scored on a 4-point Likert scale ranging from 0 to 3:

- **0** = Not at all
- **1** = Several days
- **2** = More than half the days
- **3** = Nearly every day

The total score is obtained by summing the responses, with possible scores ranging from **0 to 21**.

Interpretation of Scores

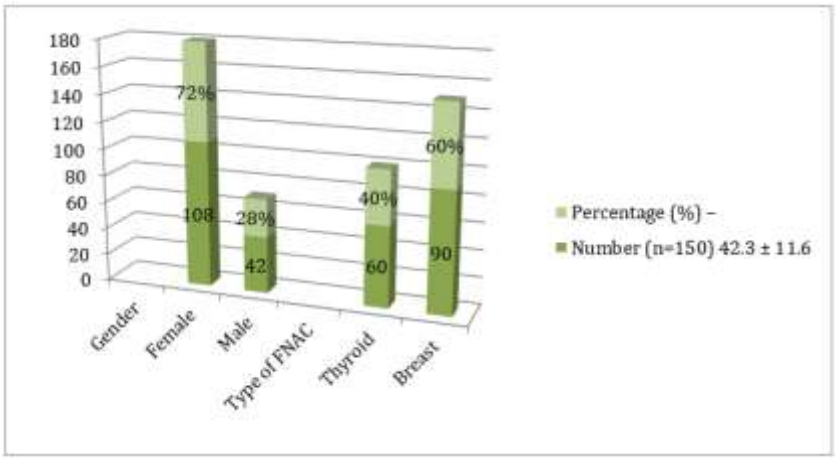
- **0–4**: Minimal or no anxiety
- **5–9**: Mild anxiety
- **10–14**: Moderate anxiety
- **15–21**: Severe anxiety

A cut-off score of **10 or above** has been shown to have good sensitivity (89%) and specificity (82%) for detecting generalized anxiety disorder. The tool is also validated for screening other anxiety disorders such as panic disorder, social anxiety, and post-traumatic stress disorder.[5]

RESULTS

Table 1: Demographic and Clinical Characteristics of Study Participants

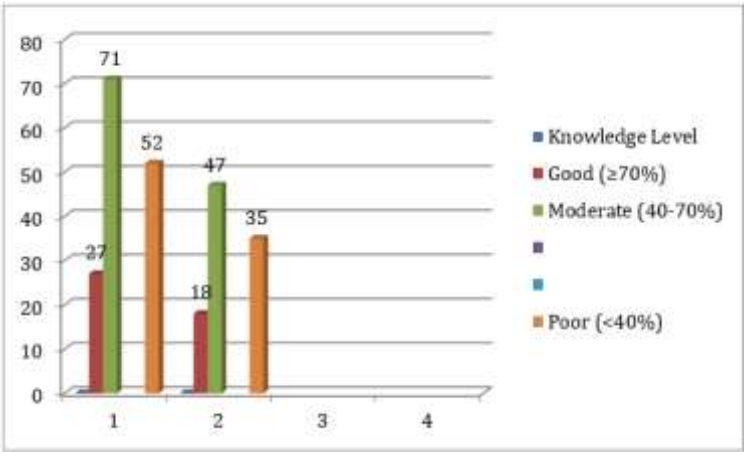
Characteristic	**Number (n=150)**	**Percentage (%)**
Age (years, mean ± SD)	**42.3**±11.6	--
GENDER		
Female	108	72
Male	42	28
TYPE OF FNAC		
Thyroid	60	40
Breast	90	60



Graph 1: Demographic and Clinical Characteristics of Study Participants

Table 2: Knowledge Levels About FNAC

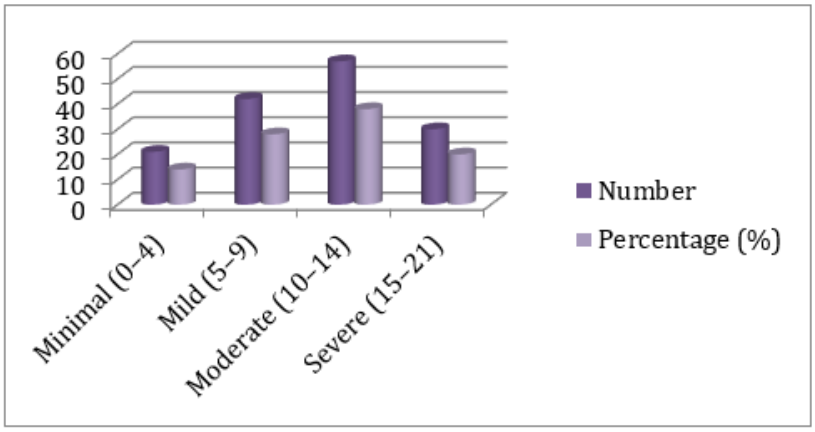
Knowledge Level	Number	Percentage (%)
Good (≥70%)	27	18
Moderate (40-70%)	71	47
Poor (<40%)	52	35



Graph 2: Knowledge Levels About FNAC

Table 3: Anxiety Levels (GAD-7)

Anxiety Level	Number	Percentage (%)
Minimal (0–4)	21	14
Mild (5–9)	42	28
Moderate (10–14)	57	38
Severe (15–21)	30	20



Graph 3: Anxiety Levels (GAD-7)

Table 4: Effect of Prior Counselling on Anxiety

Group	Mean GAD-7 score	SD	P-Value
With counselling	**6.1**	**--**	**<0.01**
Without counselling	**9.4**	**--**	**--**

DISCUSSION

In our study, a significant proportion of patients exhibited moderate to severe anxiety levels prior to undergoing FNAC for thyroid and breast lesions. Specifically, 38% experienced moderate anxiety, and 20% had severe anxiety, as assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale. These findings align with those of Senoymak *et al.* (2024), who reported that heightened anxiety levels can increase pain perception and may be considered risk factors for non-diagnostic cytology in thyroid FNACs. The study also highlighted that reducing anxiety and pain could decrease the incidence of non-diagnostic outcomes.

Regarding patient knowledge, 35% had poor understanding of the FNAC procedure, while 47% had moderate knowledge. This underscores the need for improved patient education. A study by Lodewijk *et al.* (2016) demonstrated that providing patients with clear explanations about the procedure and its purpose significantly lowers stress and improves their overall experience. Conversely, insufficient or overly technical communication may worsen confusion and distress.

Our findings revealed that patients who had received prior counselling exhibited significantly lower mean anxiety scores (6.1 vs. 9.4; $p < 0.01$). This is consistent with the observations of Zaleski (2015), who emphasized the importance of addressing not only the technical but also the psychological aspects of medical procedures. Effective communication and counselling play a crucial role in reducing patient apprehension.

Senoymak *et al.* **(2024):** This study found that increased anxiety levels during FNAB may be considered risk factors for non-diagnostic cytology. Thus, reducing anxiety and pain may decrease the incidence of non-diagnostic outcomes.

Lodewijk *et al.* **(2016):** Their research showed that same-day fine-needle aspiration cytology for thyroid nodules led to a rapid decrease in anxiety levels and high diagnostic accuracy, highlighting the importance of timely procedures in reducing patient stress.

Zaleski (2015): This study discussed the significance of withholding information from anxiety-prone patients, suggesting that tailored communication strategies are essential in managing patient anxiety.

Maimone *et al.* **(2020):** Their analysis of patient anxiety and pain during initial image-guided breast biopsy emphasized that understanding patient anxiety and pain is crucial for improving the biopsy experience.

Zaleski (2015): This research highlighted the role of withholding information from anxiety-prone patients, suggesting that appropriate communication strategies can mitigate patient anxiety.

CONCLUSION

Based on our findings and those of similar studies, we recommend the following strategies to enhance patient care: We can implement structured counselling pre-procedural sessions to educate patients about the FNAC procedure, potential outcomes, and address any concerns to alleviate anxiety.

We ensure that FNAC procedures are performed promptly to reduce waiting times, thus reducing turn around time which can contribute to heightened anxiety. **We can d**evelop communication strategies that are sensitive to individual patient needs, particularly for those who may be more anxiety-prone. **We can also provide** emotional and psychological support following the procedure to address any residual anxiety and ensure patient well-being.

Our study underscores the significant impact of patient anxiety on the FNAC experience. By enhancing patient education and implementing effective counselling strategies, healthcare providers can improve patient comfort, reduce anxiety, and potentially increase the diagnostic yield of FNAC procedures. Further research is warranted to explore the long-term effects of these interventions on patient outcomes.

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