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The Impact of Language Barriers on The Success of Thyroid Fine-Needle Aspiration: A Communication Challenge

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Abstract

Background

This study aims to evaluate the impact of language barriers between physicians and patients on the success of thyroid fine-needle aspiration (FNA) procedures. Effective communication during medical interventions is crucial for patient compliance, particularly in minimally invasive procedures such as FNA, where patient cooperation is essential.

Methods

A retrospective analysis was conducted on patients who underwent thyroid FNA between 2022 and 2024 at two training and research hospitals. Patients were divided into two groups: Group 1 consisted of patients who spoke the same language as the physician (Turkish), and Group 2 included patients who spoke a different language (Kurdish or Arabic). Professional translators or family members assisted with communication for non-Turkish-speaking patients. Demographic data, thyroid nodule size, and cytological results were recorded and analyzed. Statistical comparisons between the two groups were made to assess the influence of language on diagnostic outcomes.

Results

A total of 155 patients were included in the study, with a median age of 46 years, 83.2% of whom were female. Nondiagnostic cytology results were significantly greater in Group 2 (47%) than in Group 1 (19%) ($p < 0.005$). Additionally, the mean age of Group 2 patients was significantly greater than that of Group 1 patients ($p = 0.001$). No significant differences were found between the two groups in terms of nodule size or sex.

Conclusion

Language barriers between patients and physicians significantly increase the likelihood of nondiagnostic outcomes in thyroid FNA procedures. Miscommunication, patient anxiety, and procedural noncompliance were identified as contributing factors. Addressing language barriers through improved translation services and patient communication strategies could enhance procedural success and reduce healthcare costs associated with repeated interventions.

BACKGROUND

In recent years, millions of people from numerous countries have sought asylum in neighboring regions. For example, following the outbreak of the Syrian civil war in 2011, approximately 6.3 million individuals migrated to surrounding countries and Europe (1). According to data from the Turkish Ministry of

Interior’s Directorate of Migration Management, as of May 2024, approximately 3.5 million Syrian refugees resided within Türkiye’s borders. Numerous studies have shown that immigrants face significant challenges in accessing and utilizing healthcare services, with language barriers being a primary obstacle (2–4). This can lead to delays in diagnosis and treatment, potentially resulting in increased morbidity and even mortality. Additionally, healthcare costs may increase due to repeated examinations and the management of complications stemming from delayed or inadequate care (5).

Imaging-guided biopsy procedures are widely recognized as effective and safe methods for cytopathological diagnosis. Fine-needle aspiration (FNA), in particular, is a reliable technique with a low complication rate and is commonly used for diagnosing thyroid nodules (6). While complications such as bleeding, pain, swelling, and vasovagal syncope are rare, they can occur following thyroid FNA (7). Biopsies that do not require sedation rely heavily on patient cooperation, as any movement during the procedure may increase the risk of complications. Therefore, even with respect to FNA, which is one of the safest biopsy methods, patient compliance and cooperation with physicians are crucial. It is well known that all biopsies, including FNA, are contraindicated in uncooperative patients (8).

Patients often experience anxiety and tension before biopsy procedures (9). To mitigate this, effective communication is essential to prevent movements such as neck motion, deep swallowing, speaking, or withdrawal, which could lead to complications. Providing patients with clear, detailed information about the procedure and the commands they need to follow has been shown to improve compliance and reduce discomfort during the procedure (10).

In our experience, several issues arise during biopsy procedures when there is a language barrier between the physician and the patient. Professional translators may lack empathy or fail to relay the doctor’s commands (such as "do not swallow" or "do not talk") clearly and promptly, leaving patients anxious. When family members act as translators, they may express their own anxiety, exacerbating the patient’s stress. These factors often increase patient anxiety, resulting in noncompliance during the procedure and, in some cases, the termination of the biopsy.

This study aimed to evaluate the impact of effective communication between physicians and patients on the success of thyroid FNA procedures.

MATERIAL – METHODS

Study Design

This retrospective study was approved by the Institutional Review Board (Decision No: 2024/175) and conducted in accordance with the tenets of the Declaration of Helsinki. Our study was conducted at two different institutions, training and research hospitals. All biopsy procedures were performed under ultrasonography (USG) guidance by the same interventional radiologist with 7 years of experience. All patients were given detailed information about the procedure, and informed consent was obtained. Patients were informed by the doctor that the doctor and the patient spoke the same language. In cases

where the doctor and the patient spoke different languages, information about the biopsy procedure was provided through a professional translator, and consent was obtained from the patients. What patients should and should not do during the procedure is explained in detail. During the biopsy procedure, when the doctor and the patient spoke different languages, a professional translator or a relative of the patient who spoke Turkish was helpful during the procedure. Patients who underwent thyroid FNA between 2022 and 2024 were included in the study. Patients who had previously undergone any biopsy procedure, patients under the age of 18, and patients with sonographic lesions other than TI-RADS 3 were not included in the study. First, patients who underwent thyroid FNA were identified from the hospital information management system. To ensure that the biopsied nodules had similar morphologies, patients reported as TI-RADS 3 in the USG report were included. Patients were categorized according to their thyroid biopsy results as “diagnostic cytology” or “nondiagnostic cytology”. Patients or their relatives were then contacted by phone, and the language they spoke was asked about and recorded. The patients spoke 3 different languages: Turkish, Kurdish and Arabic. The patients included in the study were classified into group 1 and group 2, those who spoke the same language as the physician (Turkish) and those who spoke a different language than the physician (Kurdish and Arabic), respectively. Figure 1 shows the flowchart of the study population. Additionally, patients' age, sex, thyroid nodule size, and biopsy results were recorded. The biopsy results were divided into two groups: the diagnostic group and the nondiagnostic cytology group.

Statistical analysis

The SPSS 26.0 package program was used to evaluate the data. Descriptive variables are presented as the means, standard deviations, numbers, and percentages. Whether the numerical variables were normally distributed was evaluated with the Kolmogorov–Smirnov test. The chi-square test was used to evaluate whether there was a difference between two or more groups. Statistical significance was accepted at $p < 0.05$.

RESULTS

A total of 155 patients who were evaluated in the TI-RADS 3 category with thyroid USG and who could be reached by phone were included in the study (Table 1). The median age was 46 years, and 83.2% (n = 129) of the patients were female. Figure 2 presents the biopsy results for all patients. There was no significant difference between the sexes in terms of age ($p = 0.216$). When evaluated according to patient sex, no significant relationship was found in the biopsy results for either parameter ($p = 0.152$). When evaluated according to patient sex, no significant relationship was found between sex and biopsy results ($p = 0.152$).

Table 1
The characteristics of the study population

Age	**47,9 ± 14.11**
Male/Female	26(16,8%)/129(83,2%)
	Language
Turkish	72(46.5%)
Kurdish	50(32.3%)
Arabic	33(21.2%)

The average size of the biopsied nodules was recorded, and the average size was 24.6 ± 10.8 mm. When nodule sizes were compared, no significant difference was observed between group 1 and group 2 (p = 0.852). No significant relationship was found between nodule size and biopsy results (p = 0.148).

When the patients were compared according to the language they spoke, a statistically significant difference was observed between group 1 and group 2 (p < 0.005) (Table 2). Nondiagnostic cytology results were more common in Group 2, which consisted of patients who spoke a different language to the doctor (n = 50, 47%). This rate was observed to be quite low in Group 1 (n = 14, 19%).

Table 2
Patients' language and pathology results.

	Turkish	**Kurdish**	**Arabic**	**Total**	**p**
Non-diagnostic	14	24	12	50	0.003
Diagnostic	58	26	21	105	
Total	72	50	33	155	
Chi-squared test					

While there was no significant relationship between patient age and biopsy results (p = 0.216), the mean age of patients in group 2 was 55.04 ± 12.6 years, the mean age of patients in group 1 was 39.67 ± 10.91 years, and the mean age of patients in group 2 was significantly greater (p = 0.001).

DISCUSSION

This study demonstrated that communication barriers between physicians and patients, particularly due to language differences, can significantly affect the success of thyroid fine-needle aspiration (FNA) procedures. Although imaging-guided biopsy is a reliable diagnostic method, patient cooperation is essential for all interventional procedures (8,11,12). Elevated anxiety levels during biopsies are common and can further complicate patient compliance (9,10). Even in relatively simple procedures such as FNA,

patients must be provided with clear and detailed information both before and during the procedure to increase their compliance. Previous studies suggest that improved communication not only contributes to a smoother procedure but also enhances patient satisfaction (9,13).

Effective communication, particularly in procedures such as FNA, facilitates a faster, more straightforward process for both the physician and the patient (9). The tone of voice, clarity in delivering commands, and timing of instructions all play critical roles. In our routine biopsies, language barriers necessitated the involvement of either a professional translator or a relative who could speak the doctor's language. In cases where family members provided translation, their anxious demeanor often heightened the patient's stress. On the other hand, professional translators, although efficient, sometimes lack the empathy necessary to calm the patient. As a result, patients often move, speak, or swallow during biopsy, increasing the likelihood of terminating the procedure prematurely.

Thyroid FNA is a well-established technique for distinguishing benign from malignant nodules; however, nondiagnostic results can occur in 5–22% of cases (14). These outcomes are frustrating for both the clinician and the patient and often lead to increased healthcare costs because of the need for repeated biopsies or follow-up imaging (15). Our study revealed that nondiagnostic results were consistent with the literature at 19% in the group that shared a common language with the physician (Group 1) (16). However, in Group 2, where patients and physicians spoke different languages, this rate was significantly higher at 47%. We attribute this to communication problems that arise when translators, rather than the physician, explain the procedure. Miscommunications likely led to multiple interventions during biopsy, with patients talking or swallowing during critical moments, thereby reducing the procedure's success and increasing the rate of nondiagnostic cytology.

Patient anxiety, often triggered by potential pain or complications during biopsy, is another common factor. The fear of receiving a malignant diagnosis may exacerbate this anxiety. Maimone et al. reported that patient anxiety and pain during breast biopsies were not necessarily related to age, likely because of thorough preprocedure counseling by experienced nurses (10). In our study, many patients in Group 2 underwent a biopsy for the first time, and the information they received was relayed through a translator rather than directly from the doctor. This indirect communication may increase anxiety and impair cooperation.

Miller et al. reported that anxiety levels during biopsies depend on various factors, including race and communication with a physician (9). White women were found to have higher anxiety levels than nonwhite women did, whereas patients who communicated directly with the radiologist experienced lower anxiety. These findings underscore the importance of patient–physician communication, suggesting that better communication can reduce anxiety and improve compliance during procedures.

In the past decade, the number of individuals migrating internationally has increased steadily, posing significant challenges to healthcare systems globally. Several studies emphasize that language barriers are among the most significant obstacles for migrants seeking high-quality healthcare (2–5). Delayed diagnoses, increased complications, and decreased patient satisfaction have all been linked to language

barriers, particularly in patients with chronic diseases or low proficiency in the physician's language (17,18). In line with these findings, our study illustrates how language differences can disrupt healthcare services, resulting in reduced patient understanding and cooperation and, ultimately, procedural failure.

Importantly, the non-Turkish-speaking group in our study did not consist solely of immigrants. Türkiye is home to a variety of ethnic groups, particularly in the eastern and southeastern regions, where Kurdish and Arabic are commonly spoken (19). However, with the expansion of formal education over the past few decades, most citizens are now fluent in Turkish. The older age of patients in Group 2, compared with Group 1, may be explained by the fact that older individuals from these regions may not have had access to formal education in their childhood and thus never learned Turkish.

While this study provides valuable insights, it is important to acknowledge certain limitations. First, as a retrospective study, we were unable to assess patients' anxiety levels before and after the biopsy procedure, which could have provided a more comprehensive understanding of the impact of communication barriers. Additionally, it was not determined whether patients who spoke a different language from the physician received assistance from a professional translator or a family member, which could influence the outcomes. Finally, the study focused exclusively on patients who underwent thyroid FNA, limiting the generalizability of the findings to other biopsy procedures or healthcare settings.

CONCLUSION

This study highlights the critical role of effective patient—physician communication in the success of thyroid fine-needle aspiration (FNA) procedures. Language barriers between doctors and patients significantly impact procedural outcomes, leading to higher rates of nondiagnostic results. While FNA is a reliable method for distinguishing between benign and malignant thyroid nodules, patient compliance is essential, and communication is a key factor in ensuring compliance. Miscommunication or indirect communication through translators often increases patient anxiety and decreases cooperation during the procedure, ultimately reducing the success rate. To mitigate these issues, efforts should focus on improving communication, particularly in regions with diverse linguistic populations. This could include offering language courses for immigrants, training translators to enhance their communication skills with anxious patients, and encouraging healthcare providers to learn the local languages in the areas they serve. By addressing these communication challenges, healthcare systems can improve patient outcomes, reduce complications, and prevent unnecessary repeat procedures, thereby enhancing overall healthcare quality.

Declarations

Ethics approval and consent to participate: Ethical approval for this research was obtained from the Non-Interventional Research Ethics Committee of Düzce University, and the study was conducted in

accordance with the principles of the Declaration of Helsinki. Informed consent was obtained from all individual participants included in the study.

Consent for publication: Not applicable

Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author on request.

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Authors' contributions: IFN and MAO analyzed and interpreted the patient data regarding heart rate dynamics, coronary computed tomography angiography image quality, and clinical parameters regarding scan cancellations and procedural success, and were major contributors in writing the manuscript. IFN and AM performed the data acquisition and were major contributors in critically reviewing and editing the manuscript. All authors read and approved the final manuscript.

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Figures

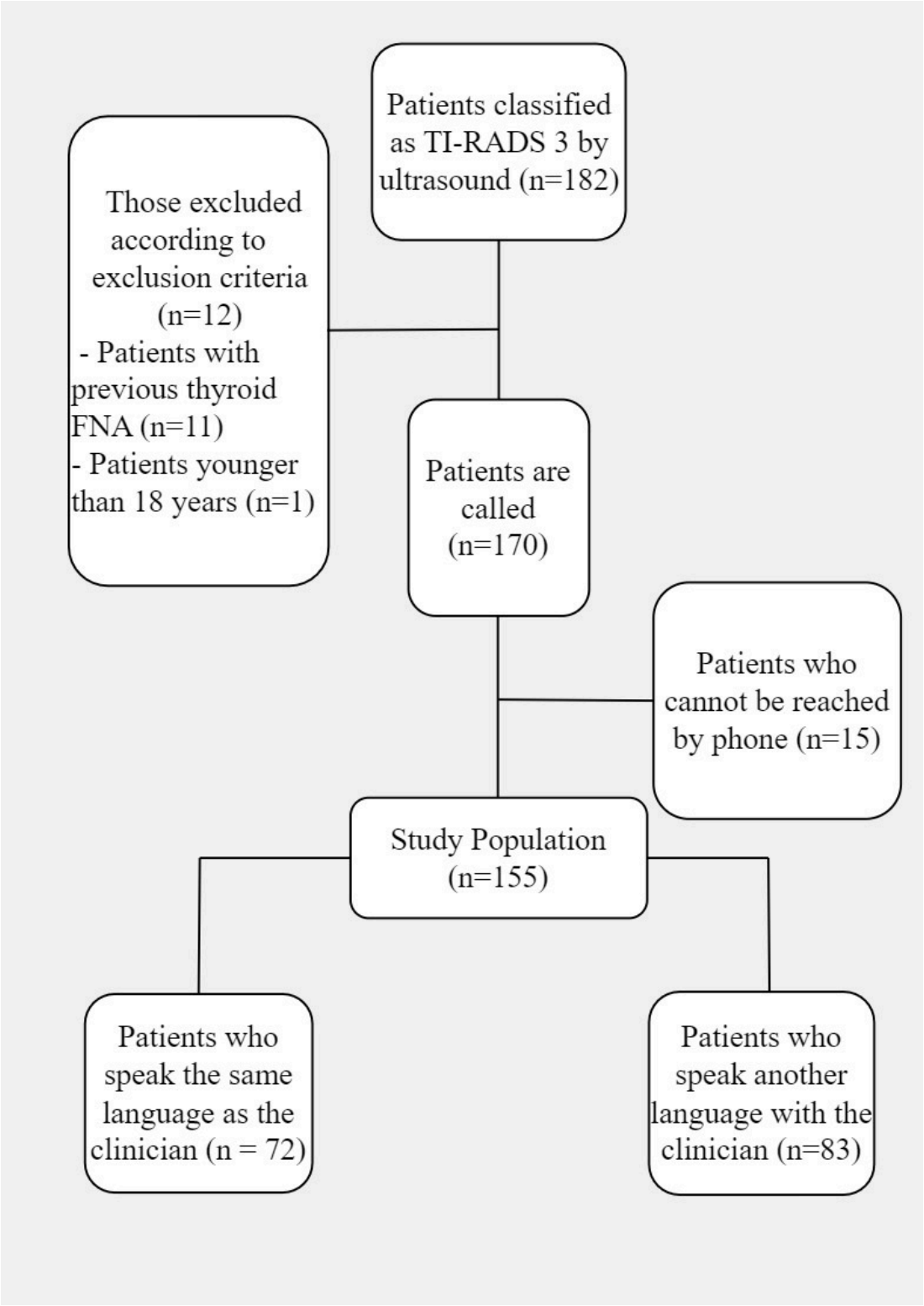


Figure 1

Flowchart of study

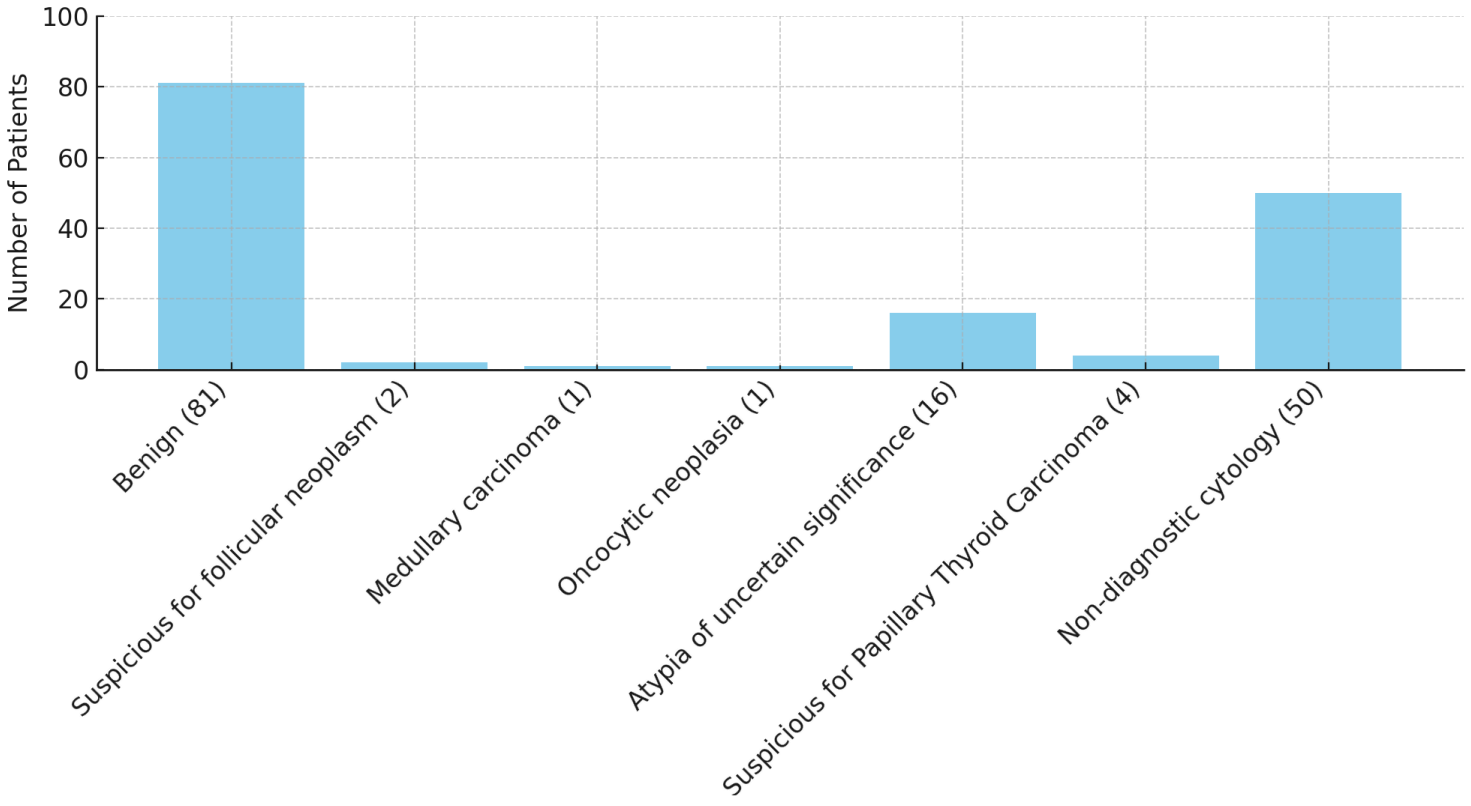


Figure 2

Distribution of patients by diagnosis