

RESEARCH ARTICLE

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A Validity and Reliability Study of Universitas Sebelas Maret Patient Satisfaction Level-Questionnaire (UNS-TyQ8) for Patients after a Benign Thyroid Procedure

Kristanto Yuli Yarso^{1*}, Yohanes Yohanes², Akhmad Azmiardi³

Abstract

Background: There are no tools to measure patients' satisfaction after a thyroid procedure. Many papers about measuring patients' quality of life after a procedure for malignant thyroid have been written and published. However, we need a simple and comprehensive questionnaire to measure the satisfaction of the thyroid procedure. This study aimed to develop a patient satisfaction level questionnaire (UNS-TyQ8) for benign thyroid nodule patients after surgery in Indonesia and to test the reliability and validity of the questionnaire by using established models. **Methods:** The first step was collecting patient complaints one month after lobectomy thyroid surgery. Then, we compiled a collection of questions that patients often complain about. From these 80 patients, we got eight questions frequently asked by patients. These patients were asked to make an interview appointment, either face-to-face or by phone. A complete interview was conducted by an interviewer. The answers were documented and analyzed. A total of 30 patients with benign thyroid nodules completed the interview after their surgery. We assessed the construct validity and reliability using Pearson's r-table value and Cronbach's α coefficient. **Results:** The results of the analysis showed that 30 participants completed all eight questions of the instrument between March and August 2020; the Pearson's value of all items of the UNS-TyQ8 with Cronbach alpha value indicated the questionnaire was reliable, $r=0.733$ ($r>0.60$). From the validity test results, all questions had a value greater than the r-table, 0.361. The lowest score was 0.364, which was obtained from question number 4. Meanwhile, the highest score was in question number 7, which was 0.616. This indicated that these questions were valid. So, it can be stated that these questions are valid and reliable. **Conclusions:** The result of this study proves that UNS-TyQ8 is accepted, valid, and reliable. It can be used for future investigation, especially in patients undergoing a thyroid surgery procedure.

Keywords: Thyroid nodules- questionnaire- reliability- validity

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Introduction

Benign thyroid nodules are a common problem found in 10–41% of the population by ultrasonography [1]. Although most thyroid nodules are benign and do not require treatment, some patients with benign nodules may require treatment for nodule-related symptoms and/or cosmetic problems [2]. There are a lot of treatment choices for thyroid nodules, starting from open surgery and endoscopic surgery, as well as novel treatments with minimally invasive procedures such as heat ablation, which consists of laser, radiofrequency, and microwave. Although surgery is curative for thyroid nodules, some patients may be unsuitable for surgery because of high surgical risk and other various reasons for refusal. Among the alternative therapeutic strategies for thyroid nodules

are several minimally invasive procedures, including ethanol ablation, percutaneous laser ablation (PLA), microwave (MW), and radiofrequency ablation (RFA) [1].

Indications for surgery of benign thyroid nodules are nodule-related clinical problems such as symptoms, for example, neck pain, dysphasia, foreign body sensation, discomfort, and cough, cosmetic issues, or thyrotoxicosis in cases of autonomously functioning thyroid nodules (AFTNs) [3].

There have been many studies on the quality of life after thyroid surgery for both partial thyroidectomy and total thyroidectomy, especially for thyroid malignancies. However, to measure satisfaction with thyroid surgery, we need a simple, fast, and easy-to-understand measuring tool. Thus far, there are no objective measures of patient satisfaction level. A questionnaire with generic measures

¹Department of Surgery, Oncology Division, Faculty of Medicine, Sebelas Maret University, Muwardi General Hospital, Surakarta, Indonesia. ²Department of Surgery, Faculty of Medicine, Sebelas Maret University, Muwardi General Hospital, Surakarta, Indonesia. ³Magister of Public Health, Faculty of Public Health, Mulawarman University, Samarinda, Indonesia.

*For Correspondence: yarsaonko@gmail.com

that can be applied to any population is needed. Therefore, we developed a questionnaire at this centre that does not measure patients' quality of life after thyroid procedures. Still, this questionnaire asks the patients' opinions, which can represent all aspects of satisfaction with a type of thyroid procedure. To develop a standard questionnaire, the standard questionnaire must be ideally valid and reliable. This means the measurement reflects the concept and is consistent [4].

This study aimed to assess the questionnaire we developed at our centre to evaluate satisfaction and whether it meets the standards for assessing patient satisfaction level-questionnaire for benign thyroid nodule patients after surgery in Indonesia and to test the reliability and validity of the questionnaire by using established models.

Materials and Methods

Patients

In the first stage, we collected patients who underwent thyroid surgery. Of the 80 patients who underwent the thyroid lobectomy procedure, we collected the complaints they experienced after one month of surgery. From these questions, we compiled eight questions that patients often ask. The next stage is composing questions in Indonesian that are easy to understand and answer for common people. Then, the willingness to be interviewed was distributed to 80 patients undergoing thyroid lobectomy surgery. Each subject was asked to complete an online form or undergo an interview by telephone, chat, or face-to-face in the Oncology Outpatient dept. Hospital. Thirty patients willing to answer the questions were contacted between March and August 2020 and selected by the following inclusion criteria: 1) at least 20 years of age, 2) able to complete the questionnaire by themselves, and 3) having no communication problems, and 4) has passed the thyroid procedure at least one month. The exclusion criteria are having a degenerative disease and/or mental illness and malignant disease. From the outpatient department, 30 patients agreed to participate in this study and completed the questionnaire.

This cross-sectional study was ethically approved by The Health Research Ethics Committee of the Faculty of Medicine of Sebelas Maret University on February 20, 2020, No. 734/VI/HREC/2020.

Instruments

The UNS-TyQ8 was a designed combination of ordinal scales (grading scale from 1 – poor to 5 – excellent). To measure patient satisfaction, we administered the patient satisfaction questionnaire.

Table 1 describes that question number 1 is a question that assesses satisfaction with the wound healing, question number 2 is a question concerning a cost satisfaction monitor to assess patient satisfaction regarding the costs spent for the surgical procedure, question 3 is a question to assess and describe the pain after surgery, question 4 is used to assess satisfaction with the time required from surgery to complete recovery and describes the time of treatment and healing process, question 5 is a question

aimed at assessing the appearance of the surgical scar, question 6 is a question used to assess satisfaction with the side effects that occur such as swallowing or breathing problems, question 7 is used to assess the presence of complications after surgery such as movement disorders, cramps, and tingling in the extremities which can be caused by hypoparathyroidism, and question 8 describes complaints felt in the form of voice changes experienced after thyroid surgery procedures. The UNS-Ty8 is easily scored and consists of 8 items designed to measure patient satisfaction with services. Each item shows a score of 1 to 5. Final scoring is conducted by summing up the individual item scores to produce a range of 8 to 40, with higher scores representing greater satisfaction (satisfied=40-30, neutral=29-20, unsatisfied=19-8). Validity and reliability tests were also conducted, and, in conclusion, the questionnaire can be used in patients with benign thyroid nodules after surgery.

Statistical Analysis

This cross-sectional study needs a minimum of 30 samples to conduct validity and reliability tests. Construct validity was measured by referring to Pearson's r-table correlation value, and reliability was calculated by referring to Cronbach's alpha coefficient. The value of Pearson's r-table must be >0.361 , and Cronbach's alpha coefficient is >0.60 .

The respondents were also asked about their demographic questions, including age and educational level. The data were collected and analyzed using IBM SPSS Statistics 25 for Windows.

Results

A total of 30 patients who underwent thyroid surgery were included in the study and interviewed between March and August 2020 at the Oncology Outpatient Clinic. The average age of respondents was 49.4 years. Based on educational background, 79% of the patients had attained a diploma or higher, while 21% had completed senior high school or less. Regarding marital status, 93% of the respondents were married, and 7% were single. Table 2 provides demographic data for all subjects.

The construct validity of the UNS-TyQ8 questionnaire was evaluated using Pearson's correlation coefficient. All eight items demonstrated a correlation value exceeding the minimum threshold of $r > 0.361$, confirming their validity. Specifically, question 7 (regarding complications such as neck stiffness, cramps, or tingling) yielded the highest correlation coefficient of 0.616, indicating a strong association with the overall construct of patient satisfaction. Conversely, question 4 (related to the duration of the healing process) presented the lowest correlation value at 0.364 but still met the validity requirement.

Reliability analysis was conducted using Cronbach's alpha coefficient. The Cronbach's alpha for the eight-item scale was 0.733, reflecting acceptable internal consistency. Removing any single item did not significantly improve the overall reliability, with Cronbach's alpha values for individual item deletion ranging between 0.624 and 0.693. Table 3 provides statistical data for these findings.

Table 1. Items of the Universitas Sebelas Maret Thyroid Questionnaire (UNS-TyQ8) and Response Scales

Questionnaire
Question 1:
Is the wound healed as well as expected?
Grade 1-5 (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)
Question 2:
Is the cost of a thyroid procedure affordable?
Grade 1-5 (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)
Question 3:
There is acceptable pain after surgery
Grade 1-5 (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)
Question 4:
The healing process from treatment took a short time
Grade 1-5 (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)
Question 5
The scar after surgery appears satisfyingly
Grade 1-5 (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)
Question 6
Are there any difficulties with breathing or swallowing after surgery?
Grade 1-5 (1=Always, 2= Sometimes, 3=Neutral, 4=Seldom, 5=Never)
Question 7
Are there any difficulties with neck moving, cramps, or tingling in the extremities?
Grade 1-5 (1=Always, 2=Sometimes 3=Neutral, 4=Seldom, 5=Never)
Question 8
Are there any changes in voice after surgery?
Grade 1-5 (1=Always, 2= Sometimes, 3=Neutral, 4=Seldom, 5= Never)

Table 2. Demographic Characteristics of the Study Participants

Characteristics	Frequency (n=30)	mean	%
Age			
20-80	30	49.4	
Education Level			
Senior High School	7		21
Diploma	23		79
Marital status			
Married	28		93
Single	2		7

These findings confirm that each item on the UNS-TyQ8 contributes meaningfully to the overall scale and that the questionnaire is valid and reliable for assessing patient satisfaction following benign thyroid surgery.

Discussion

Characteristics of benign thyroid nodules were detected in 72% of female and 28% of male patients. In a large population of 2,079 patients in another study, benign thyroid nodules were four times more common in females than in males [1].

The validation of UNS-TyQ8 was performed by evaluating the construct validity and reliability, referring

Table 3. t Validity and Internal Consistency (Cronbach's Alpha) for UNS-TyQ8 Questionnaire Items

Scales	Corrected item-total correlation	Cronbach's Alpha if the item is deleted	Cronbach's Alpha of All item
Question 1	0.388	0.688	0.733
Question 2	0.393	0.689	
Question 3	0.377	0.686	
Question 4	0.364	0.693	
Question 5	0.426	0.679	
Question 6	0.406	0.689	
Question 7	0.616	0.624	
Question 8	0.395	0.688	

to Pearson's $r > 0.361$ and Cronbach's alpha > 0.60 . All items showed $r > 0.361$, so all UNS-TyQ8 items were valid and reflected the concepts. The Cronbach's alpha showed a value of > 0.60 , ranging around 0.624 – 0.689. It means that all items had questionable internal consistency.

Despite all questions that showed the value of $r > 0.361$, some had a lower value than others. Question 4 (healing process) had the lowest value, showing $r = 0.364$. Another question that had a quite low value than the others ($r = 0.377$) was question number 3 (pain after surgery). From the previous study, patients might experience postoperative cosmetic deformity [5]. All those

questions were associated with scar formation, and this low value might be caused by the respondents having a hard time translating what they exactly felt and the lack of information for reconstructive surgery and at subsequent follow-up appointments [6]. Overall, based on Pearson's r and Cronbach's alpha values, all questions were valid and reliable and could be used as an instrument to assess the patient satisfaction level, especially in patients with benign thyroid nodules.

This study also had some limitations. The sample size was relatively small ($n = 30$), which may limit the statistical power and the generalizability of the findings. With a small sample, minor variations in patient responses can have a more pronounced impact on the calculated validity and reliability values. Larger studies are necessary to verify the questionnaire's robustness and determine whether similar results can be observed in different populations or clinical settings. Moreover, while the construct validity was evaluated using Pearson's r , other forms of validation, such as convergent validity, discriminant validity, known-group validity, and factor analysis, were not conducted in this study [7]. Future research should explore these validation methods and apply the UNS-TyQ8 in broader populations to improve external validity and applicability.

For future improvements, incorporating qualitative data is recommended. Open-ended interview questions, focus group discussions, or patient diaries could provide richer insights into patient experiences and satisfaction. Thematic analysis of such qualitative responses could complement quantitative scores, identify unmeasured domains, and guide refinement of the questionnaire to better capture the complexities of patient satisfaction following thyroid surgery.

In conclusions, this study proves that UNS-TyQ8 is an accepted, valid, and reliable tool for patients with benign thyroid nodules after surgery. The use of UNS-TyQ8 in recent years has already delivered meaningful data that may serve as a benchmark for future investigation, especially for patients undergoing minimally invasive surgery.

Author Contribution Statement

All authors contributed equally in this study.

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Competing of Interest

The authors declare that there is no competing interest in this study.

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