Acta Scientific Otolaryngology

Volume 3 Issue 7 July 2021

Research Article

Translation of the Tonsil and Adenoid Health Status Instrument to the Arabic language

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Received: May 20, 2021

Published: June 10, 2021

Abstract

Background: Adenotonsillectomy is one of the most commonly performed pediatric surgeries worldwide. To date, no questionnaire assessing the quality of life of patients post-operatively exists in the Arabic language. Our objective is to translate the Tonsil and Adenoid Health Status Instrument from English to Arabic and evaluate its internal consistency. We then attempt to use the translated questionnaire to assess the change in quality of life of patients undergoing adenotonsillectomy.

Methods: Translation of the English TAHSI was performed using the guidelines for cross- cultural translation of quality of life measures. The obtained version of the questionnaire in Arabic was used on 141 patients enrolled prospectively over 3 years to assess for validity and internal consistency. Patients were enrolled from the pediatric otolaryngology clinic at the American University of Beirut Medical Center.

Results: Cronbach alpha coefficients for the pre-operative and post-operative translated questionnaires were 0.79 and 0.78 respectively, confirming adequate internal consistency. Mean total pre-operative score was 28.88 ± 10.80, significantly higher than the mean post-operative score of 5.00 ± 5.57 ($p < 0.0001$) showing an improvement in quality of life after surgery.

Conclusion: In this study we successfully translated the Tonsil and Adenoid Health Status Instrument from English to Arabic. The questionnaire obtained is the only available quality of life measurement tool in Arabic specific to adenotonsillectomy. It was used to show that adenotonsillectomy significantly improves the quality of life of patients.

Keywords: Adenoidectomy; Tonsillectomy; Quality of Life; Translation

Background

First performed around the turn of the 1st century AD, adenotonsillectomies have become one of the most common pediatric surgeries to be executed worldwide [1-4]. Over the years, the indications and techniques of adenotonsillectomy have fluctuated drastically [2,5,6]. The true benefit of this painful procedure remains unclear in the pediatric population because of a lack of universal outcome measurement instruments. Most clinicians rely on objective criteria to assess postoperative results and ignore subjective ones such as changes in quality of life [4].

Quality of Life is loosely defined as "wellness" [7]. There's unanimous agreement on its multidimensional aspect, i.e. it embodies social psychological and physical constructs [3]. There is a need in the otolaryngological community for a disease-specific, reliable and valid instrument to assess the impact of adenotonsillectomy on the patients' health status and quality of life.

Numerous questionnaires are available in the literature that endeavor to fill this gap. The SF-36 is a widely used questionnaire in outcome research. It is however very global and not specific for adenotonsillectomy [8-11]. Another global questionnaire commonly used for quality of life assessment is the Glasgow Benefit Inventory. It has been tailored to measure changes in health status of patients after otolaryngological procedures [7-9].

The Tonsil and Adenoids Health Status Instrument differs from its former counterparts in that it is disease-specific. It was refined in 2001 by Stewart., *et al*. to evaluate the outcomes of adenotonsillectomy. It consists of 6 subscales for a total of 15 questions to be filled by the patients' parents before and 6 months after surgery. Each question has a 5 point Likert scale. Involving a proxy in filling the questionnaire-in this case the parents-is an accepted method in the pediatric population. This instrument was found to have excellent test-retest ($r = 0.72 - 0.88$) and internal consistency reliability (Cronbach $\alpha = 0.73 - 0.87$) [3,8].

There is no such instrument that measures the change in Quality of Life after adenotonsillectomy in the Arabic language. In this study, we attempt to translate the TAHSI into Arabic, using the universally acknowledged guidelines for cross-cultural translation of quality of life measures by Guillemin., *et al* [12]. The resulting questionnaire will assist clinicians and researchers alike in the Arab world and beyond.

The secondary outcome of this study is to use the translated questionnaire to measure the change in the quality of life of patients after undergoing adenotonsillectomy. We hypothesize that surgery significantly improves quality of life.

Methods

Translation of the questionnaire

Translation of the English TAHSI was performed using the guidelines for cross-cultural translation of quality of life measures laid by Guillemin., *et al* [12]. The TAHSI was forward translated by two independent translators into Arabic. The research team met and amended discrepancies between the two versions. One of the two versions was then selected and sent to a third independent translator for back translation. The back translation was then compared to the original and any major discrepancies found were adjusted. The resulting draft was given to 10 native Arabic speakers to pilot test for clarity. The draft was then amended one last time and finalized based on the testers' feedback. Similar to the English TAHSI, the obtained translated questionnaire has 15 questions with a 5-point Likert scale each (From 0 to 4). The maximum attainable score is 60 points while the minimum score is 0.

Subjects

A total of 141 patients were enrolled in this prospective study from a pediatric otolaryngology clinic at the American University of Beirut Medical Center over 3 years. Caregivers of patients with adenotonsillar disease in need for adenotonsillectomy were asked to fill the translated TAHSI. They were then contacted by phone 6 months post-operatively and asked to fill the questionnaire anew. Inclusion criteria were age of 2 to 16 years with a primary caregiver that reads and writes fluently in Arabic along with a diagnosis of any of the following: Recurrent tonsillitis, chronic tonsillitis, obstructive sleep apnea. Exclusion criteria were diagnosis of possible tonsillar malignancy or isolated adenoid hypertrophy; non-Arabic-speaking primary caregiver; marked immunodeficiency; cleft palate.

Data analysis

Data was entered into a database using SPSS 22 for Windows (SPSS Inc, Chicago, IL). Descriptive statistics at the baseline was conducted to describe the characteristics of the recruited group of subjects (n = 141). Means with standard deviations were reported for quantitative variables. Cronbach's α coefficient was used to analyze internal consistency of the questionnaire. A factor analysis was also performed to re-define subscales. Paired t-test was used to compare the mean questionnaire scores before and after surgery. Statistical significance was defined with a p-value less than 0.01.

Results

Demographics

Table 1 summarizes the demographics of the patient pool. The mean age was 4.81 ± 2.30 years. 61% of participants were male and 39% were female.

Gender	No. (%)
Male	86 (61.0)
Female	55 (39.0)
Age, mean (SD)	4.81 (2.30)

Table 1: Demographics.

Internal consistency and factor analysis

Cronbach alpha coefficients for the pre-operative and post-operative questionnaires were 0.79 and 0.78 respectively.

Table 2 shows the factor analysis performed on the 15 items of the pre-operative questionnaire. The analysis yielded 4 orthogonal factors. Based on the items that loaded onto them, the subscales were re-defined as "Burden of infection and utilization of healthcare" (Items 2, 3, 4, 5, 8, 9), "Disordered breathing" (Items 1, 7, 11, 13), "Nutrition and behavior" (Items 12, 14, 15), "Financial burden" (Item 10). Even though item 10 did not load into any other item it was deemed relevant enough to keep in the questionnaire. Table 2 also shows adequate Cronbach alpha coefficient for every subscale with more than 1 item.

	Eigen Values	% of variance	Items	Cronbach alpha
1	4.807	32.048	8; 3; 5; 2; 4; 9 and 6	0.89
2	3.111	20.742	13; 1; 7 and 11	0.82
3	1.192	7.944	14; 12 and 15	0.70
4	1.093	7.288	10	

Table 2: Factor analysis.

Quality of life assessment after surgery

Mean total pre-operative score was 28.88 ± 10.80, significantly higher than the mean post- operative score of 5.00 ± 5.57 ($p < 0.0001$), as shown in figure 1. This significant decrease in score was also found when comparing subscales as shown in table 3.

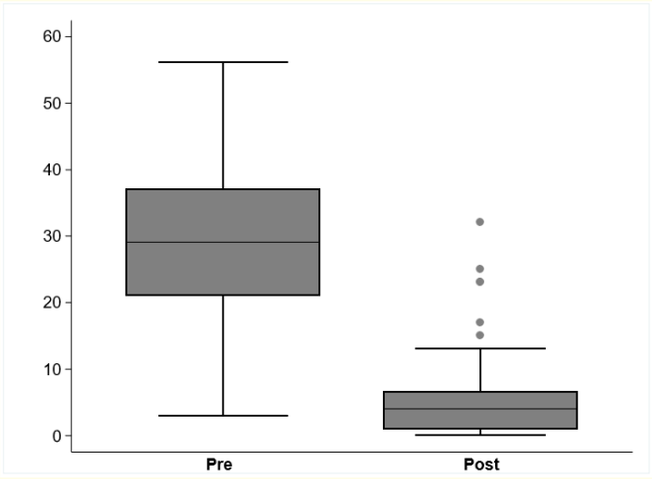

Figure 1: Box plot showing scores of patients pre-operatively and post-operatively.

	Pre-operative (N = 141)	Post-operative (N = 141)	p-value
Total Score, mean (SD)	28.88 (10.80)	5.00 (5.57)	< 0.0001
Burden of infection and utilization of healthcare, mean (SD)	12.88 (7.82)	1.72 (2.98)	< 0.0001
Disordered breathing, mean (SD)	10.17 (4.43)	1.73 (2.44)	< 0.0001
Nutrition and behavior, mean (SD)	4.63 (3.60)	1.27 (1.98)	< 0.0001
Financial burden, mean (SD)	1.20 (1.17)	0.28 (0.69)	< 0.0001

Table 3: Mean scores pre-operatively and post-operatively.

Discussion

Even though adenotonsillectomy is one of the most commonly performed pediatric surgeries worldwide, its indications keep on evolving [13,14]. The literature abounds with studies describing its short-term peri-operative effects on the pediatric population [14-18]. That being said otolaryngologists are still faced daily with caregivers' concerns and questions about the necessity of this procedure. Conventional wisdom suggesting that it is an inconsequential surgery on the long-term is offset by emerging evidence that it might be associated with minor negative outcomes in adulthood [19,20]. The literature describing the impact of adenotonsillectomy on the quality of life of pediatric patients remains scarce [3,21-23]. There are many disease-specific QOL measures described in the literature but the TAHSI stands out by having an excellent internal consistency, reliability and satisfactory response to change [23]. Even though it is not the most commonly used instrument, unlike its counterparts it is not limited to sleep-disordered breathing only. Through its different subscales, it measures 6 different aspects of adenotonsillar disease [3,23].

Language barriers can often stand in the way of proper medical care. In this era of globalization where multicenter and multicountry research is the norm it is important to cater for cultural groups and non-english-speaking patients. The perception of Quality of life varies from culture to culture [12]. In this study we successfully adapted the TAHSI from English to Arabic. The translation process included several modifications and fine-tunings as described by Guillemin., *et al* [12]. The resulting questionnaire is user-friendly and can be filled over the phone. We obtained a Cronbach alpha of 0.79, comparable to that of TAHSI (0.73 - .087) [3,23] making it internally consistent. We modified the subscales slightly based on the statistics obtained, with the Arabic TAHSI now consisting of 4 subscales: "Infection and healthcare utilization", "Disordered breathing", "Nutrition and behavior", "Financial burden". By doing so we preserved the ability to measure the different aspects of adenotonsillar disease found in the English questionnaire. It is recommended to use the individual subscale scores for a more informative interpretation.

The little evidence available in the literature suggests that adenotonsillectomy has a positive impact on the quality of life of pediatric patients. In a review of the literature, Torretta., *et al*. [22] shows adenotonsillectomy leads to better psychosocial and intellectual outcomes. Goldstein., *et al*. [21] also show a significant improvement in global and disease-specific QOL of pediatric patients undergoing tonsillectomy for recurrent tonsillitis. In accordance with the literature, the overall score of the Arabic TAHSI in our study significantly dropped after surgery. This was also true of the individual subscale scores. As such our hypothesis that adenotonsillectomy has a positive impact on the patients' quality of life was confirmed using the validated Arabic TAHSI. The questionnaire obtained in this study is the only one in the Arabic language addressing the quality of life of patients with adeno-tonsillar disease before and after surgery. It is of great use to Otolaryngologists especially in regions of the Arab world that do not have access to tertiary care centers and sophisticated diagnostic modalities. It can serve as a cheap and reliable screening tool used in the decision-making process when opting for adenotonsillectomy.

The results of this study are limited by response bias as patient's caretakers were directly contacted by the physician who performed adenotonsillectomy or their surgical team. As such, some responders were inclined to exaggerate improvement after surgery. Questions regarding financial burden were also limited by some degree of social desirability bias.

Conclusion

The decision to perform adenotonsillectomy should include a measure of its impact on quality of life. In an attempt to satisfy the need for a disease specific QOL outcome measurement tool in Arabic, we translated and adapted the TAHSI. The resulting tool was internally consistent and used to show a significant improvement in quality of life for pediatric patients undergoing adenotonsillectomy.

Ethics Approval

Approval obtained from the Institutional Review Board at the American University of Beirut.

Consent to Participate

Subjects gave their written consent for participation according to the rules and regulations of the Institutional Review Board at the American University of Beirut.

Consent to Publish

Subjects gave their written consent for publication according to the rules and regulations of the Institutional Review Board at the American University of Beirut.

Availability of Data and Materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding Support

No funding was provided.

Authors' Contributions

GH contributed in conception and design of the study, acquisition and analysis of data, interpretation of data and writing of the manuscript. RB contributed in conception and design of the study, results interpretation and revision of the manuscript.

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