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DEVELOPMENT OF THE TONSILLITIS KNOWLEDGE ATTITUDE SCALE; A METHODOLOGICAL STUDY

TONSİLLİT BİLGİ TUTUM ÖLÇEĞİNİN GELİŞTİRİLMESİ; BİR METODOLOJİK ÇALIŞMA

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Özet

Amaç: Tonsillit Bilgi Tutum Ölçeğini geliştirip, geçerlik-güvenirlik çalışmasını yapmaktır.

Gereç ve Yöntem: Araştırma, metodolojik olarak, gerçekleştirildi. Tonsillit Bilgi Tutum Ölçeğini için madde havuzu çalışması, uzman görüşlerinin alınması, ön uygulamadan sonra geçerlik-güvenirlik çalışması yapıldı. Araştırma, bir Sağlık Bakanlığı Hastanesinin Çocuk Sağlığı ve Hastalıkları, Kulak -Burun -Boğaz polikliniklerinde, Eylül 2019-Haziran 2020 tarihleri arasında gerçekleştirildi. Evren, ilgili hastanenin belirtilen polikliniklerinde, tonsillit tanısı alan, 0-18 yaş gurubunda olan çocukların ebeveynlerini (S=273) kapsadı ve örnekleme yöntemine gidilmeden evren ile çalışıldı. Veriler, Kişisel Bilgi Formu ve Tonsillit Bilgi Tutum Ölçeği ile elde edildi. Veriler, tanımlayıcı istatistikler, ölçek geliştirme, geçerlik ve güvenirlik analizleri, ki kare, testi ile değerlendirildi. Etik ilkelere bağlı kalındı.

Bulgular: Tonsillit Bilgi Tutum Ölçeği; Tonsil, Tonsillit, Bulgular, Tedavi ve Bakım olmak üzere 5 alt boyutu ile 40 maddeden oluşan, 5'li likert tipi, geçerlik (madde toplam korelasyon değerleri; r=.314-.620, Alpha katsayısı=.927) ve güvenirlik (ayırt edicilik; p=.000<.001) ölçütlerini kabul edilebilir ve yüksek düzeyde karşılayan özellikleri ile geliştirildi.

Sonuç: Tonsillit Bilgi Tutum Ölçeği, tonsillit bulguları gösteren çocuklar için erişkinlerin tonsillit bilgi ve tutumunu belirleme ve geliştirmede geçerli ve güvenilir bir şekilde değerlendirme aracı olarak kullanılabilir, farklı kültürlere uyarlanabilir.

Anahtar Kelimeler: Bilgi, Çocuk, Tonsillit, Tutum

Abstract

Aim: This study aimed to develop the Tonsillitis Knowledge Attitude Scale (Tonsillitis-KAS) and to conduct its validity and reliability studies.

Material and Method: This methodological study included item pooling, obtaining expert opinions, a pilot study, and validity-reliability studies for the development of the Tonsillitis-KAS. The study was conducted between September 2019 and June 2020 in the outpatient Pediatrics and Otorhinolaryngology clinics of a hospital affiliated with the Turkish Ministry of Health. The study population included parents (N = 273) of children aged 0–18 years who were diagnosed with tonsillitis in the specified outpatient clinics of the relevant hospital. No sampling method was used and the study was conducted with the entire population. Data were obtained using a personal information form and Tonsillitis-KAS, and they were evaluated using descriptive statistics, scale development, validity and reliability analysis, and the chi-square test. Ethical principles were followed.

Results: Tonsillitis-KAS was developed as a 5-point Likert-type scale including 40 items with five subscales: tonsil, tonsillitis, findings, treatment, and care. Validity (item-total correlation values; r = .314–.620, Cronbach's alpha coefficient = .927) and reliability (discrimination, p = .000 < .001) criteria were acceptable and high.

Conclusion: Tonsillitis-KAS can be used as a valid and reliable assessment tool to identify and improve tonsillitis knowledge and attitudes of caregivers for children with tonsillitis symptoms. The scale can also be adapted to different cultures.

Keywords: Attitude, child, knowledge, tonsillitis

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INTRODUCTION

Tonsillitis is a medical condition including infection of the tonsils, which are lymphoid tissues that are essential in the defense and protection of the body and have all the cell types necessary for the humoral and cellular immune response (1-4). Tonsillitis often occurs together with pharyngitis (2-4). Tonsillitis and pharyngitis, which are very common diseases in childhood, are usually accompanied by a viral infection (4).

Viruses frequently play a role in the etiology of tonsillitis, and a viral infection may initiate a tonsillitis attack, laying the groundwork for bacterial infection (4-6). Group A beta-hemolytic streptococci (GABHS) are the most common bacterial agents associated with tonsillitis. Previous studies have found that viral infections are common in preschool children and bacterial infections are common in older children (4,5,7,8). Tonsillitis is more commonly seen in school-age children (2,8).

Children with GABHS-associated tonsillitis have headaches, abdominal pain, nausea, vomiting, diarrhea (2) high fever, sore throat, and lethargy. Tonsillar tissue is bright red and edematous (4). The sick child has difficulty breathing and swallowing due to edema in the pharyngeal region. Throat cultures are necessary to identify the causative organism (2). Untreated streptococcal tonsillitis and pharyngitis infections can cause problems such as scarlet fever, otitis media, and infection of surrounding tissues; additionally, more severe complications including acute glomerulonephritis and acute rheumatic fever may develop (4).

Despite scientific and technological advances, tonsil infections remain important because acute tonsillitis ranks first among upper respiratory tract infections in children as well as in adults. Acute tonsillitis usually heals without complications using medical treatment; however, although appropriate antibiotic treatment is administered, the microorganisms causing tonsillitis cannot be eliminated and chronic tonsillitis often becomes inevitable. In tonsillitis caused by GABHS, the bacteria are present in 20% of cases after penicillin treatment. Chronic tonsillitis increases the cost of treatment because of complications and reduces the contributions of parents and adult patients to the labor force; accordingly, a tonsillectomy is often presented as a treatment option (1). One study found that the average duration of illness in a tonsillitis attack was 7 days and the recovery period after illness was 5 days. Furthermore, the total cost of a tonsillitis attack was high when parameters such as loss of parental work days and the cost of medical treatment were taken into account (7). Despite the use of appropriate medical treatment, recurrent tonsillitis attacks make a tonsillectomy inevitable.

In recent years, establishing treatment criteria, such as appropriate antibiotic treatment at the proper time, has reduced the prevalence of tonsillectomies; however, a tonsillectomy remains the most common surgical procedure performed during childhood (1).

Tonsillitis, a disease in which antibiotics are widely used, is frequently seen in children, thus childhood is turning into a period of the highest antibiotics use. Therefore, the education of parents, especially mothers, is one of the main issues in the use of antibiotics in children. In addition, it is important to know the knowledge and attitudes of parents and address the lack of relevant knowledge for parents to recognize the symptoms of tonsillitis, consult a physician to make appropriate interventions, ensure that treatment is effective in the acute period, and thus prevent tonsillitis from becoming chronic. Having a standardized measurement tool to evaluate knowledge and attitudes about tonsillitis may contribute to achieving positive results. A literature review showed that there were no national or international scales but only survey studies on the subject. It is necessary to develop a scale to evaluate tonsillitis knowledge and attitudes to prevent chronic tonsillitis in children without requiring further treatment and care practices. The aim of this study was to develop the

Tonsillitis Knowledge Attitude Scale (Tonsillitis-KAS) and conduct its validity and reliability study.

MATERIAL- METHODS

This study, which is methodological in nature, was conducted at the Pediatrics and ENT Outpatient Clinics of the University of Health Sciences Regional Training and Research Hospital in Erzurum, Turkey, between September 2019 and June 2020.

The population of the study consisted of parents (*N*=273) of children aged 0–18 years who were diagnosed with tonsillitis in the Pediatrics and Otorhinolaryngology outpatient clinics of the relevant hospital between September 2019 and March 2020. No sampling method was used in the study and it was conducted with the entire population. When conducting a scale study, the study population should be at least 5 and at most 10 times the total number of scale items (9). Therefore, considering the statements in the Tonsillitis-KAS (51 items), 273 parents who applied to the abovementioned outpatient clinics were sufficient. Data were obtained using a personal information form, Tonsillitis-KAS, and face-to-face interviews.

Personal Information Form: This form included questions about participating parents' sex, age, family type, income, social security, education and occupation statuses, and number of children.

Tonsillitis-KAS: Tonsillitis-KAS was developed to assess adults' knowledge and attitudes about tonsillitis. The scale comprised 45 statements to which adults are expected to indicate whether they agree or disagree with the knowledge and attitudes about tonsillitis in children according to a 5-point Likert-type scale. Responses to the items of the scale were 5 = "strongly agree," 4 = "agree," 3 = "undecided," 2 = "disagree," and 1 = "strongly disagree." No item was reverse-scored. The scale included five factors: Tonsil (items 1–6), Tonsillitis (items 7–18), Findings (items 19–24), Treatment (items 25–33), and Care (items 34–40). The scoring of the scale included six separate calculations—five for the subscales and one for the entire scale. The scores of the subscales and the overall score were calculated by dividing the sum of the item values by the number of items (arithmetic mean). A minimum score of 1 and a maximum score of 5 can be obtained for the subscales and overall scale scoring. High overall scale and subscale scores indicated that the tonsillitis knowledge and attitude of adults were high.

The Cronbach's α coefficient of the Tonsillitis-KAS was calculated as .927 for the entire scale. For the subscales, it was .869 for Tonsil, .895 for Tonsillitis, .837 for Findings, .835 for Treatment, and .832 for Care.

Data: The data were collected between September 2019 and March 2020 using face-to-face interviews and the question-answer method at the convenience of the parents without interfering with the examination workflow. Data collection took 15 minutes for each participating parent. Tonsillitis-KAS was developed following the processes below:

Creation of item tool: A total of 65 candidate statements were identified through a literature review, examination of previously prepared measurement tools (9,10) and content analysis.

Content Validity Study: The statements were selected from the item pool determined by the thesis supervisor and the researcher, and the parts of the statements that needed correction were revised. The candidate items of the finalized scale were presented to 10 field experts to obtain their opinions. Lawshe's (1975) technique was used to prove the item content validity with numerical data and to evaluate the opinions of the experts in a meaningful way. When using this technique, the opinions of at least five experts should be obtained (11). The experts evaluated each statement as "necessary," "needs rearrangement," and "needs to be removed," and reported their opinions. Content validity ratios (CVRs) were determined as the ratio of the number of experts who expressed the opinion of "necessary" (NG) for an item to the total number of experts who expressed their

opinion for the item (N) minus 1(9).

$$(\mathrm{CVR} = \frac{\mathrm{NG}}{\frac{\mathrm{N}}{2}} - 1).$$

Reliability and Item Analysis Study: A reliability test of the Tonsillitis-KAS was conducted to determine its internal consistency. Reliability test, this test is used to determine the consistency of a scale between items and the overall scale (12).

Exploratory Factor Analysis (EFA): EFA was used to determine the construct validity of the Tonsillitis-KAS. Factor analysis defines the scale with fewer variables by collecting numerous interrelated variables together (13). In factor analysis, the diagonal sampling adequacy is determined for each item with the anti-image matrix including partial covariance's and correlations. When this value (*r*) is below .5, it indicates that the item should be excluded from the analysis (14).

Confirmatory Factor Analysis (CFA): CFA refers to a type of structural equation modeling that assesses the relationship between observed variables and unobserved variables in a scale (15). In the present study, goodness-of-fit indices (GFI) found in the literature were used. The established factor structure of the Tonsillitis-KAS was confirmed by CFA.

Test-Retest Reliability: The test-retest reliability of a scale is provided by determining the relationship between the scores obtained by reapplication of the scale to the same participants after a period of time. In the present study, the developed scale was re-administered to 30 people for 3 weeks.

Item discrimination: Another test for a scale shows the discrimination in item analysis. The discrimination test between the two groups is the division of the total score obtained from the scale into the lower 27% and upper 27% quartiles and the difference between the quartiles is significant. The absence of a difference between the two groups indicates that the difference between the lowest and highest scores has decreased, which means that the scale measuring the narrow range does not differentiate differences. In the study, the difference between the upper and lower 27% groups on the Tonsillitis-KAS scores was tested.

The study data were analyzed using the SPSS for Windows 22 and LISREL 8.80 package programs and the following statistics:

Numbers, percentages, minimum and maximum values, and mean and standard deviation calculations were used for the descriptive data.

Content validity was tested using the Lawshe Technique.

EFA was analyzed using the Kaiser-Meyer-Olkin (KMO) coefficient, Bartlett's Test of Sphericity, and principal components analysis.

CFA was conducted using a PATH diagram, x2/SD value, and GFI, AGFI, CFI, RMSEA, and SRMR fit indices.

Internal Consistency was tested using item-total correlation and Cronbach's α coefficient.

Finally, the *t-test* was used for the comparison of the lower and upper 27% (12).

Ethics approval was obtained from Erzurum Atatürk University Faculty of Medicine Clinical Research Ethics Committee with the number B.30.2.ATA.0.01.00/450 dated 26/09/2019. Written permission was obtained from the Health Sciences University Regional Training and Research Hospital where the study was conducted. The parents who would participate in the study were informed about the purpose of the study and the method of application, and their verbal and written consents were obtained. Ethical principles were observed: the principle of "Confidentiality and Protection of Confidentiality" was followed by stating that the information provided would be kept confidential and would not be used beyond the study, and the principle of "Respect for Autonomy" was adopted by including those who voluntarily participated in the study. Parents who volunteered to participate were included in the study and they were informed that they could leave the study whenever they wanted. The importance of protecting personal rights was emphasized in the research and the

Helsinki Declaration of Human Rights was observed within this process.

Participants: In this study, 56% of the parents were male, 53.8% were aged 31–40 years, 38.8% were university graduates, and 72.5% had nuclear families. The income of 59.3% of the parents was equal to their expenses and 83.5% had social security. In addition, 22.7% of the parents were housewives and 59.3% had 2 or 3 children.

RESULT

The Tonsillitis-KAS was developed by conducting content, construct, and internal validity studies for validity and reliability. Before all these procedures, an item pool was created and then the scale development started.

Item pool: A literature review was conducted and studies on the subject were examined. Then, an item pool including 65 candidate statements was created for the scale and presented to the experts for their opinions.

Content Validity: The Tonsillitis-KAS item pool was sent to 10 experts to obtain their opinions within the scope of content validity. Based on the opinions of the experts, 14 statements (15, 24, 25, 36, 40, 40, 42, 43, 49, 50, 52, 58, 61, 62, and 63) were deemed inappropriate to assess the knowledge and attitudes to be measured and were removed from the item pool. The content validity criterion of the remaining 51 statements was determined as a minimum of .62 by applying the Lawshe technique (12). The total content validity indices of all items in the scale were .872 (Tables 1 and 2).

The CVI scores of all statements of the Tonsillitis-KAS ranged between 0.3 and 1.0. The statements with low CVI scores (16, 19, 21, 22, 29, 30, 32, 34, 42, 48, and 50) were removed. The CVI scores of the scale then ranged between .8 and 1.0, and the scale included 40 statements.

Pilot Study: The 51-item draft form of the Tonsillitis-KAS was tested in a pilot study with a group of 30 participants with the same characteristics as the sample group. The scale statements were evaluated in terms of comprehensibility. According to the positive feedback and findings, the next stages of the scale development process were started.

Construct Validity Study: This was conducted to determine the construct validity of the factor analysis. To form the basis for factor analysis, KMO was applied to determine the adequacy of the sample size and Bartlett's Test of Sphericity to determine the significance of the relationship between the variables. In determining the construct validity of the Tonsillitis-KAS, it was found that the sample size was sufficient for principal component analysis (KMO = .872) and the relationship between the variables was significant (Bartlett's test: x2= 5735.919. p = .000).

Table 1. Examples of Experts' Evaluation Results

Items	Necessary	Needs rearrangement	Needs to be removed	CVI	Decision
Item 18	10	0	0	+1.00	Accepted
Item 39	8	2	0	+1.00	Accepted
Item 40	6	3	1	+0.5	Accepted
Item 44	7	2	1	+0.75	Accepted
Item 63	5	3	2	+0.25	Accepted
CVR				.62	
CVI				.872	
Number of experts evaluating the items: 10					

CVR: Content validity criterion, *CVI*: Content validity index

Table 2. Scale Minimum Values of CVIs at α= .05 Significance Level

Number of experts	Minimum value	Number of experts	Minimum value
5	.99	13	.54
6	.99	14	.51
7	.99	15	.49
8	.78	20	.42
9	.75	25	.37
10	.62	30	.33
11	.59	35	.31
12	.56	40	.29

The results were found to be suitable for factor analysis. In line with these results, the principal component method was applied as an EFA for the 40-item Tonsillitis-KAS.

The Tonsillitis-KAS showed a 10-factor structure in its natural form; however, analysis of the factor distributions showed that the scale did not differ according to any theoretical structure (Figure 1). The scale was then reduced from a nine-factor structure to a single-factor structure and re-examined, and the most appropriate theoretical structure was a 5-factor structure. This 5-factor structure was named as Tonsil, Tonsillitis, Findings, Treatment, and Care subscales as predicted in the item pooling phase of the scale.

The number of Items decreased (11 items were removed), thus the KMO and Bartlett's tests' values of the scale were re-examined before the second-factor analysis.

The test result of the Tonsillitis-KAS showed that the sample size was sufficient for principal component analysis (KMO = .858) (Table 3) and the relationship between the variables was significant (Bartlett's test: x^2=9911.281, p=.000), and thus suitable for factor analysis. In addition, the anti-image correlations of the scale items were also examined to assess the suitability of the data for factor analysis.

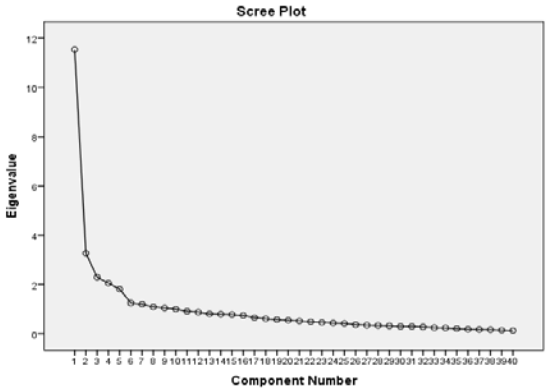

Figure 1. Tonsillitis-KAS Scree Plot Graph

When the scale items were analyzed in a 5-factor structure, the factor loadings of all statements were above .30. Therefore, no statement could be removed from the scale. The total variance explained for the Tonsillitis-KAS was 52.450%. After the EFA, CFA was performed to obtain clearer findings with structural equation modeling.

Table 3. Distribution of the Scores Obtained from Tonsillitis-KAS

Scale		***N***	**Min**	**Max**	**Mean**	***SD***
Overall Tonsillitis-KAS		**273**	**105.00**	**200.00**	**153.84**	**19.28**
Subscales	Tonsil	273	6.00	30.00	23.80	3.61
	Tonsillitis	273	17.00	60.00	45.04	7.44
	Findings	273	8.00	30.00	23.29	4.07
	Treatment	273	22.00	45.00	35.11	5.37
	Care	273	7.00	35.00	26.61	4.89

CFA: The fit index values determined for the Tonsillitis-KAS were within normal and acceptable values (Table 4).

Several indices, including x^2=7.86, GFI=.96, AGFI=.96, CFI=.97, RMSEA=.056, and SRMR=.064, were utilized to determine the fit values of the Tonsillitis-KAS. All of these fit index values were within acceptable limits (Table 4).

Table 4. Fit Index Values, Normal and Acceptable Values of Tonsillitis-KAS

Index	Normal value	Acceptable value	Determined value
x^2/SD	<2	<5	7.86
GFI	>.95	>.90	.96
AGFI	>.95	>.90	.96
CFI	>.95	>.90	.97
RMSEA	<.05	<.08	.056
SRMR	<.05	<.08	.064

The scale was accepted with this structure without any modifications. The factor loadings of the scale ranged from .55 to .87. The t-test values of all statements of the scale were above 1.96. At this stage, no statement was removed from the scale. The factor loadings of the Tonsillitis-KAS were presented with the PATH diagram (Figure 2).

DISCUSSION

In this study, the Tonsillitis-KAS was developed, its validity and reliability studies were conducted, and the hypothesis "A valid and reliable Tonsillitis-KAS is developed" was assessed. For this purpose, the scale was examined in terms of content, construct, and internal validity.

In scale development studies, first, a literature review on the subject should be conducted. In this process, it is important to focus on which behaviors and attitudes will be assessed by the scale (16). In addition, scale items should be simple, clear, and understandable; one item should not have more than one judgment and thought and should measure a single behavior and attitude (17,18). The created scale item pool should be submitted to experts (16), and content and face validity should be conducted based on expert opinions (19). Content validity, which necessitates these procedures, assesses whether the scale and each of its items, as a whole, contain the concepts intended to be measured and whether they contain unintentionally different concepts (9,20). At the content validity stage, the opinions of at least 5 and at most 40 field experts should be obtained (Lawshe Technique).

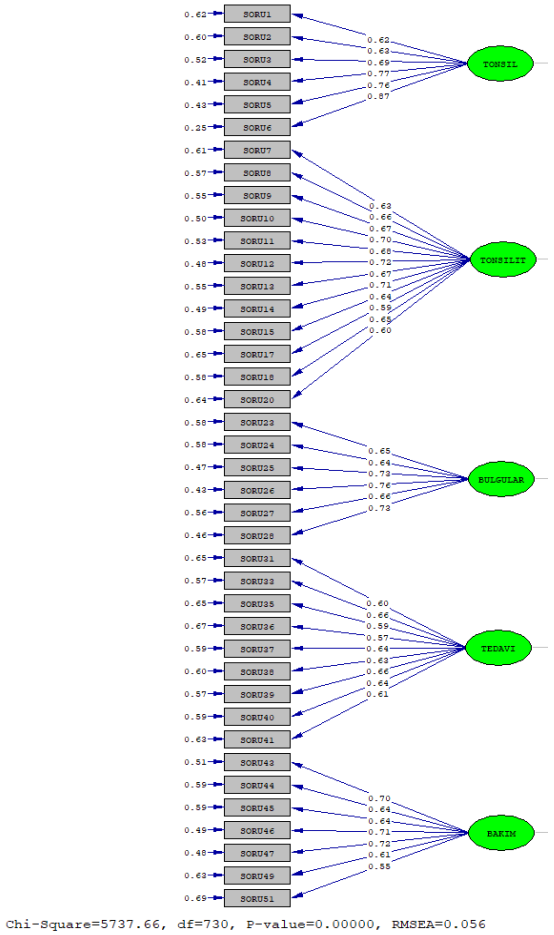

Figure 2. Tonsillitis-KAS PATH Diagram (Based on the main items)

Content validity indicates the level of a scale's ability to include the qualities to be measured (11). In the current study, the item pool consisting of 65 candidate statements for content validity was reduced to 51 based on the opinions of 10 experts. The Lawshe technique was applied to these items and the minimum content validity criterion was .62 (22). The total content validity indices of all items in the scale were .872 (Tables 1 and 2). This technique can be administered when at least five experts give their opinions (21). The CVRs of the scale were obtained by taking the ratio of the number of experts who thought each item was "necessary" to the total number of experts who gave an opinion for the item minus 1 (9). The CVI scores ranged between 0.3 and 1.0 for all items of the draft Tonsillitis-KAS. When the items with low scores (11 items: 16, 19, 21, 22, 29, 30, 32, 34, 42, 48, and 50) were removed, the scores ranged between 0.8 and 1.0 and the scale included 40 statements. The CVI results in the study were consistent with Lawshe's technique.

Previous studies have reported that a draft of the scale to be developed should be tested using a pilot study with a certain number of participants with the same characteristics as the sample group to create a prediction for the performance of the scale (23) and after obtaining the feedback from this trial, the scale should be administered to its study group for validity and reliability analyses (24). In the present study, the results from the pilot study applied to a group of 30 participants with the same characteristics as the sample group of the draft Tonsillitis-KAS showed that the scale statements were understandable and easy to answer.

EFA is applied to determine the construct validity of scales in scale development studies. Factor analysis, in general, determines which components make up a whole. At the same time, it is necessary to reduce the number of variables over many interrelated items and to reveal new common structures by utilizing the relationship between variables. Before conducting EFA, presupposition tests (KMO and Bartlett's tests) are administered to determine whether the analysis can be applied (13). The literature states that the appropriate value for the KMO test, which indicates whether the sample size is adequate for factor analysis, should be higher than .5, and that a KMO value of .70–.80 is moderate, .80–.90 is good, and higher than .90 indicates excellent sample adequacy (25). Bartlett's test shows the relationship between the variables included in the factor analysis and the test result should be $p < .05$.(26) In the current study, the sample size of the draft Tonsillitis-KAS with KMO analysis (.872) and the relationship between the data with each other with Bartlett's test (x^2= 5735.919, p = .000) were suitable for factor analysis and were accepted as compatible with the expected values in the literature.

In the study, factor analysis of the draft Tonsillitis-KAS showed a 10-factor structure that did not differentiate according to any theoretical structure in its natural form. A re-examination of the scale by reducing it from a nine-factor structure to a one-factor structure showed that the most appropriate theoretical structure was a 5-factor structure. Therefore, the KMO analysis (.858) and Bartlett's test (x^2= 9911.281. p = .000) showed that the sample size and the relationship between the data were suitable for factor analysis. In addition, the anti-image correlations of the scale statements showed that the data were suitable for factor analysis. As the factor loadings of all items of the scale were above .30, no statement could be removed from the scale (27) and the total variance explained for the Tonsillitis-KAS was found to be 52.450%. The 5-factor structure of the subscales were named "Tonsil," "Tonsillitis," "Findings," "Treatment," and "Care."

In scale development studies, CFA is the structural equation test that measures the relationship between observed variables and unobserved variables (15). After CFA, which is used to validate a scale with a certain factor structure, decisions are made based on GFIs. In each GFI, there are some critical limit points, which are not absolute, but only an approximation. Although there are many GFIs,

some of them are used in practice (13). Discriminant validity that the factors are separate from each other should be ensured (25). In the present study, the most commonly used fit indices (x^2, GFI, AGFI, CFI, RMSEA, and SRMR) found in the literature were used (28-30). The fit index values (x^2=7.86, GFI=.96, GFI=.96, AGFI=.96, CFI=.97, RMSEA=.056, and SRMR=.064) were normal and acceptable in the structural equality of the Tonsillitis-KAS with CFA (Table 3). As the factor loadings of the scale ranged between .55 and .87 and the t values of all items were >1.96, no item was removed from the scale. The scale was accepted as it was in its original structure without modification (Figure 2). Awang (2015) recommends that factor loadings should not be lower than .50 (31).

In scale development studies, the consistency between participants' responses to scale items is reliability analysis. In other words, it shows whether the scale items are consistent with each other and with the overall scale and whether they are understood in the same way by the participants (26). Scale reliability (internal consistency) is usually tested by Cronbach's alpha coefficient (12). In the present study, the internal consistency coefficient of the Tonsillitis-KAS was .927. Since the item-total correlation values of the scale were positive and the removal of any item did not increase Cronbach's alpha coefficient, no item was removed from the scale. Cronbach's alpha coefficient for the subscales were as follows: .869 for Tonsil, .895 for Tonsillitis, .837 for Findings, .835 for Treatment, and .832 for Care. Cronbach's alpha coefficient .00≤α<.40 means the scale is not reliable, .40≤α<.60 has low reliability, .60≤α<.80 is quite reliable, and .80≤α<1.00 means the scale is highly reliable (12). The present study found that the Tonsillitis-KAS was highly reliable.

In scale development studies, item analyses showing a significant difference between the lower 27% and upper 27% of the scale total score indicates discrimination. On the other hand, no difference between the two sections indicates that the range of the lowest and highest scores has narrowed, which means that the scale that measures this narrow range does not discriminate differences (32). In the present study, the comparison of the lower 27% and upper 27% sections of the Tonsillitis-KAS showed the discriminative power of the scale (p <.05) (Table 4).

Based on all these results, the hypothesis "Tonsillitis is a valid and reliable scale" was supported.

CONCLUSION

The results of this study, in which the Tonsillitis-KAS was developed and its validity and reliability studies were conducted showed the following:

The Tonsillitis-KAS is a 5-point Likert-type scale comprising 40 items with five subscales: Tonsil, Tonsillitis, Findings, Treatment, and Care. The scale's validity (item-total correlation values; r =.314; – .620, Cronbach's alpha coefficient =.927) and reliability (discrimination; p = .000; <.001) criteria were acceptable.

Tonsillitis-KAS was developed for the first time in Turkey; therefore, it can be adapted to different cultures. Further, it can be used as a valid and reliable assessment tool for determining and improving adults' knowledge and attitude toward tonsillitis for children with tonsillitis symptoms. The scale can provide a powerful assessment for health professionals to assess the knowledge of parents. Tonsillitis-KAS can be used in training and counseling activities for adults and health professionals on the subject. It is expected that the Tonsillitis-KAS will serve as a standard and form the basis for future studies on the subject.

Ethical Approval

Ethical approvals for this study were obtained from Clinical Research Ethics Committee, Faculty of Medicine, Ataturk University (Number: B.30.2.ATA.0.01.00/45019, Date: 26/09/2019) and Regional Training and Research Hospital in

Erzurum (Number: 90090794-604.02, Date: 18/10/2019).

Declarations

The research was presented as a master's thesis (thesis no: 635347, 2020) in Atatürk University Institute of Health Sciences, Department of Pediatrics Nursing.

Conflict of Interest

The authors did not declare any conflict of interest.

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Authorship Contributions

EE; Data Collection or data entry/Data Collection or Processing: EE, FGT; Analysis and interpretation/Analysis or Interpretation: FGT, EE; Literature search/Literature Search: EE, FGT; Writing/Writing: EE, FGT.

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