



Cross-Cultural Adaptation of the SOHO-5 and Impact of Caries and Trauma on the Quality of Life in Turkish Children

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Abstract

The aim of the study is to cross-culturally adapt the Scale of Oral Health Outcomes for 5- year-old children (SOHO-5) to the Turkish language and to assess the impact of dental caries and trauma on the oral health-related quality of life (OHRQoL) of 5- to 6-year olds according to both self- and parental reports. The SOHO-5 was translated and adapted consistent with published standard guidelines. A total of 302 pairs of parents and children who refer to screening at the Gazi University, Faculty of Dentistry, Department of Pediatric Dentistry, completed the SOHO-5, which consists of a child self-report and a parental proxy-report version. The caries classification was made according to the decays, extraction due to caries, or fillings (dmf-t) on primary teeth. Trauma was classified into uncomplicated and complicated injuries. Kruskal-Wallis and Mann-Whitney tests were used to evaluate to caries and trauma according to SOHO-5 scores. The children an oral impact was mentioned 73.9% (high impact 32.8%) and parental reports was 78.8%(high impact 38.1%). The mean (standard deviation) SOHO-5 scores in child self-report and parental versions were 3.38(3.22) and 4.6(4.88), respectively. In both versions, caries was associated with worse children's OHRQoL, for the total score and all SOHO-5 items ($P < 0.001$). In contrast, negative effect of trauma on children's OHRQoL was not detected. SOHO-5 questionnaire was observed to be strong evidence for Turkish adaptation and cultural adaptation. Caries was associated with worse OHRQoL of 5- to 6-year-old children in terms of perceptions of both children and their parent, however trauma was not associated.

1. Introduction

Caries Oral health is a major public health problem that affects 60-90% of children globally despite of standard enhancements. Many nations focus on children for oral health policy (Tsakos et al., 2012). Oral health problems were important by affecting quality of life of preschool children and their parents (Peker, Uysal & Bermek, 2011). Children whose age less than 6 are particularly susceptible to oral health problems (Er-Sabuncuoglu & Diken, 2011, Sakaryalı, Bani, Cinar & Alaçam, 2019). Tooth decay has been shown to be an important problem among 5-6 year old children in studies made in Turkey. (Gökalp, Doğan, Tekçiçek, Berberoğlu & Ünlüer, 2010, Topaloglu-Ak, Eden & Frencken, 2009). Promotion or preventive programs for the improvement of oral health in preschool children have not been available in Turkey (Topaloglu-Ak et al., 2009, Kargul & Bakkal, 2010). Studies about preschool children in Turkey have focused on the risk factors and its behavioral, clinical and microbiological determination (Gökalp et al., 2010, Topaloglu-Ak et al., 2009, Kargul & Bakkal, 2010, Ersin, Eronat, Cogulu, Uzel & Aksit, 2006).

Oral health and quality of life measurement has a great role for evaluating oral health programs (Tsakos et al., 2012). Studies on the effect of dental caries and trauma on oral health-related quality of life (OHRQOL) in preschool children are limited. To measure this effect a standart instrument should be used. Parental proxy report forms seem to be the basis state in 5-6 age group datas (Tsakos et al., 2012, Peker et al., 2011, Sakaryalı et al.,2019, Abanto et al., 2013). In order to measure young children's OHRQOL assessing of parents'

perceptions has critical importance (Peker et al., 2011, Sakaryalı et al.,2019). In these days, two instruments have been used for this purpose in preschool aged children: The Early Childhood Oral Health Impact Scale (ECOHIS) and The Scale of Oral Health Outcomes for 5-year-old children (SOHO-5) (Tsakos et al., 2012, Peker et al., 2011, Sakaryalı et al.,2019, Abanto et al., 2013, Abanto et al, 2014). Peker et. al. created a Turkish version of the ECOHIS. Recently, SOHO-5 was developed to assess the OHRQoL in young children through both self- and parental reports (Abanto et al., 2013). But, Turkish version for SOHO-5 is not available.

Therefore, we cross-culturally adapted the SOHO-5 to Turkish language and tested its reliability and validity in children at the age of 5-6. The first aim of this study was to develop a Turkish version of the SOHO-5. The secondary purpose was to evaluate the impact of dental caries and trauma on OHRQOL of the children or their families.

2. Materials and Method

2.1. SOHO-5

The SOHO-5 is a survey consists of both child self-report and a parental report about the child's oral health history. The SOHO-5 has two main sections. The first section contains sociodemographic data. The second section includes the child effect part and the family effect part, includes 6 identical questions and 1 different question.

For the child version, the report queries difficulties while eating, drinking, speaking, playing, sleeping, smiling (due to pain) and smiling (due to

appearance). The family section includes the same questions, except the question of "difficulty drinking". and this question is replaced by the question of "affecting self-confidence" instead. A 3-point scale (no = 0, a little = 1, a lot = 3) is used for answers. A response of "Don't know" is not allowed in the SOHO-5 questionnaire. The SOHO-5 total scores are evaluated as the sum of the response points. The child's self-reports and parent reports scores change from 0 to 12. The higher score means the greater effect on the children's quality of life.

The study was performed in two steps. The first step is the adaptation of the questionnaire to Turkish language and culture and the second step is; the validity of the questionnaire in Turkish children and families, as well as the evaluation of caries and trauma on the children's quality of life.

2.2. Translation and cross-cultural adaptation

The SOHO-5 was translated and adapted in the light of published standard guidelines (Peker et al., 2011, Van Widenfelt, Treffers, Beurs, Siebelink & Koudijs, 2005, Guillemin, Bombardier & Beaton, 1993). Two translations into Turkish were made by two native Turkish translators (MB, AA). A single pilot text was created after combining these two translations. The consensus-translated version was tested on twenty children with the age of 5-6 and their parents for intelligibility. The panel developed a pilot version, which was translated back into English by two bilingual professional translators. In line with the comments of children, parents and experts (researchers, child specialist, expert translator, statistician) minor changes were made in the questionnaire. The back-translated English consensus version was compared with the original English

version to determine semantic equivalence. The Turkish version of the questionnaire was approved by the statistician with 98% intelligibility. Final version was pilot tested for second time on a different convenience sample of thirty children at the age of 5-6 and their parents. There were no changes regarding new suggestions or difficulties of comprehension. The adaptation and cultural adaptation was completed by comparing the English text and the original English version of the questionnaire by the experts and checking the consistency and cultural equivalence of the Turkish version.

2.3. Sample size and participants

The sample size was calculated to give a standard error of 5% with a 95% confidence interval. The minimum sample size was estimated as 280 children.

The inclusion criteria of participating in this study for children and their parents are being in both genders for children, having no systemic diseases and/or mental developmental disorders and being willing to participate. Furthermore, both child and parents should be a native Turkish speaker. SOHO-5 was applied to 302 children aged 5-6 years and their parents who applied to Gazi University Faculty of Dentistry, Department of Pediatric Dentistry. Before applying the questionnaire, written consent was obtained from the children and their parents, and their participation in the study was ensured.

Both the children and parents were interviewed, face-to-face and independently in order to avoid the influence of each others responses. The interviews were conducted on the same day prior to the clinical examinations by two trained interviewers who were

blind to the clinical findings (YA, AC). The children’s oral examinations referred to dental caries a trauma according to standard widely applied clinical criteria (WHO, 2017, Hallet & O’Rourke, 2006, Malmgren et al., 2012) and were conducted by two pediatric dentistry specialists who were calibrated prior to data collection (Kappa: 0.90 for intra- and 0.86 for inter-examiner reliability).

Sociodemographic data and characteristics of the families were recorded as age (5 or 6) and gender (boy or girl) of the child, family applicant (mother or father) and monthly family income (0: 1 minimum wage, 1: 1-3 minimum wage, 2: 3 more than minimum wage).

In order to evaluate the effects of caries and trauma on children's quality of life, they were divided into two subgroups as caries and trauma. Also dental caries was classified as caries, caries-related extraction or filling (dmf-t), and trauma was classified as complicated and uncomplicated injury. It was coded as 0 if dmf-t was 0, as 1 if dmf-t was between 1-5, and as 2 if dmf-t was greater than 5. It was coded as 0 if there was no trauma, 1 if it was not complicated, and 2 if it was complicated.

2.4. Data analysis

Internal consistency was assessed using Cronbach's alpha for the total score and the item-total score correlations. Poisson regression models were used to associate the different clinical and sociodemographic factors to the outcome. Kolmogorov-Smirnov test for distribution of study data; Kruskal-Wallis and Mann-Whitney tests were used to compare caries and trauma according to SOHO-5 scores

3. Results

Although SOHO-5 is a simple and easily understandable questionnaire, there was little difficulty in translating SOHO-5 from English to Turkish due to spoken language differences. In order to provide an accurate cross-cultural adaptation of the scale, the word 'due to tooth' was added to the root of questions. E.g; Have you had difficulty eating because of your teeth? Changes were made based on expert comments and data from the pilot test. As a result of the pilot test, the SOHO-5 questionnaire was approved for Turkish adaptation and cultural adaptation by all experts.

Total of 302 parents and children agreed to participate in the research (positive response rate of 97.4%). All of them completed the Turkish SOHO-5 (n = 302), and no questionnaire was excluded from the analysis due to incomplete information.

Table 1. Sociodemographic datas, caries and trauma distribution

Average age of children	5.53		
Child Gender	Girl: 47.1%	Boy: 52.9%	
Parents	Mother: 85.4%	Father: 14.6%	
Family Income Rate	0: 16%	1: 62%	2: 22%
Caries	0: 1.3%	1: 45%	2: 53.6%
Trauma	0: 79.8%	1: 10.2%	2: 9.9%

The sample consisted primarily of boys (52.9%) and average age of children was 5.53. Moreover, 98.7% of the sample had a history of dental caries (dmft 0: 1.3%, dmft 1: 45%, dmft 2: 53,6%), and most of the children did not have dental trauma (0: 79.8%, 1: 10.2%, 2: 9.9%) (Table 1). Most of the parental questionnaires were answered by mothers (85.4%)

(Table 1). High-income families had lower OHRQoL impact outcomes, but there was no statistical difference ($P>0.001$).

Parents reported on average worse OHRQoL than children, as indicated by the mean total scores (Table 2). Overall, 73.9% (high impact 32.8%) of children reported at least one an oral impact, and the corresponding estimate for parental reports was 78.8% (high impact 38.1%). The mean (standard

deviation) SOHO-5 scores in child self-report and parental versions were 3.38(3.22) and 4.6(4.88), respectively. In both versions, caries was associated with worse children’s OHRQoL, for the total score and all SOHO-5 items ($P<0.001$) (Table 2). Furthermore, clinically diagnosed dmf-t was greater than 5 were associated with worse SOHO-5 scores. In contrast, no negative association of TDI on children's OHRQoL was found ($P>0.001$).

Table 2. SOHO-5 Total score (standard deviation (SD)), percentage impact rate, high impact rate, and impact values by trauma or caries

	Child	Parents
SOHO-5 Total score(SS)	3.38(3.22)	4.6(4.88)
SOHO-5 Impact rate	73.9 %	78.8%
SOHO-5 High impact rate	32.8%	38.1%
Caries	$P<0.001$	$P<0.001$
Trauma	$P>0.001$	$P>0.001$

Table 3. Total score Cronbach’s alpha and percentage distribution (%) of oral impacts by item in child and parents scores

	Child (%)	Parents (%)
Total score Cronbach’s alpha	0.71	0.82
Difficulty eating	50.3	66.3
Difficulty drinking	20.9	---
Difficulty playing	10.1	11.3
Difficulty speaking	12.2	13.9
Avoiding smiling (due to pain)	13.9	12.6
Avoiding smiling (due to appearance)	18.3	24.9
Difficulty sleeping	21.6	29.5
Affected self-confidence	---	24.9

4. Discussion

The SOHO-5 questionnaire for children aged 5 was first developed and validated in English in the UK. It was later adapted to different languages and cultures in countries such as Brazil, Iran, Dominican Republic. All version SOHO-5 (child self-report version and parental version) has demonstrated construct and discriminant validity, test–retest reliability, and reproducibility properties (Tsakos et al., 2012, Abanto et al., 2013, Abanto et al, 2014). To our knowledge, this is the first study in Turkey to assess the agreement in OHRQoL ratings for 5-6 years old children between self- and parent reports using this valid, reliable, and responsive measure. This study employed a pre-test phase, which is important for identifying potential problems with the

questionnaire content. The results showed semantic equivalence between the English and Turkish language versions of the SOHO-5. This study cross-culturally adapted and successfully validated the SOHO-5 for use among Turkish children and their parents.

All children were able to understand and respond appropriately to the questionnaire and the vast majority did not have any difficulty comprehending the SOHO-5 questions. On average, parents in this study rated their OHRQoL as more compromised than children did, a higher mean SOHO-5 total scores expressed this. OHRQoL of young children, parents' proxy reports may not necessarily be identical to those of their children and the relevant studies have shown weak or moderate associations between them (Jokovic, Locker & Guyatt, 2004, Barbosa & Gavião, 2008). This is contrary to some studies assessing the agreement between parents-child reports on school-age children's OHRQoL, but in concordance with other studies (Abanto et al., 2014b, Abanto et al., 2011, Gomes et al., 2014, Wilson-Genderson, Broder & Phillips, 2007). It is important to emphasize that very few of these studies were carried out with preschool children and used different OHRQoL instruments.

Our results showed that parents report for SOHO-5 items are systematically different than those of their children in difficulty eating and difficulty sleeping items. It was interesting that avoiding smiling (due to appearance) and affected self-confidence appeared at the same rate in families. Some parents expressed little concern whereas others reported serious concerns about the consequences of dental disease on their children's quality of life. The impact of tooth

caries in relation to appearance was very prominent. The most prevalent impact related to difficulty eating, but other aspects of daily life, such as sleeping and smiling, were also affected. A previous study on a sample consisting also of young children has also shown that poor oral health affects smiling patterns (Tsakos et al., 2012, Patel, Tootla & Inglehart, 2007). It seems that oral diseases impact not only on the functional but also the psychosocial dimensions of life, even at 5 years old.

The majority of this sample consist primarily of middle and lower socioeconomic status children. All associations were significant and in the expected direction with higher SOHO-5 scores, indicating worse quality of life, for the groups reporting worse perceptions and having worse oral health. These consistent findings provide strong support for the validity of the new measure. Furthermore, clinically diagnosed dmf-t was greater than 5 were associated with worse SOHO-5 scores. In contrast, trauma did a negative impact both on children's and on parents OHRQoL, but did not statistical difference. This may be due to the trauma not occurring in their permanent teeth. This indicates that dental caries may play an important role in shaping the overall perception of OHRQoL in very young children, in line with an earlier study (Tsakos et al., 2012).

Our study results, both parents and children knew or suspected that they had a dental problem. There are also important particularly in analysis for determining the impact of oral diseases and disorders on the child's OHRQoL considering both child and parent proxy reports, as different impacts can be reported (Abanto et al., 2014b, Watt et al., 2006). Thus, in case the children are unable to complete the

SOHO-5, the parents may be used as good proxies. Furthermore, even if the child is able to respond, the additional reports of parents concerning their young children's OHRQoL are important for obtaining both perceptions and to avoid lost valuable information, to obtain a broad basis for clinical decisions and for guiding oral health policies.

This study also demonstrated that 5- to 6-year-old children in Turkish are capable of providing their own perceptions concerning their OHRQoL, and studies should no longer depend solely on parental proxy reports. SOHO-5 could also potentially be a valuable outcome for evaluating oral health promotion programs and/or service initiatives for this age group.

5. Conclusion

This study has developed a new OHRQoL both self-reported and parents measure for 5-year-old children in the Turkey. This study provides strong evidence supporting the reliability and validity of the Turkish SOHO-5 to be used as an OHRQoL measure for 5- to 6-year-old Turkish children. Dental caries was associated with worse OHRQoL of 5- to 6-year-old children in terms of perceptions of both children and their parent, but TDI was not associated. Families with higher income report better OHRQoL.

Conflicts of interest

No conflict of interest was declared by the authors.

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