การพัฒนาและการตรวจคุณภาพแบบสอบถามสำหรับการประเมินความวิตกกังวลทางทันตกรรมในเด็กไทยวัยเรียนตอนต้น

Developing and Evaluating Questionnaire for Assessing Dental Anxiety in Thai School Aged Children

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บทคัดย่อ

งานวิจัยนี้ได้พัฒนาแบบสอบถามสำหรับการประเมินความวิตกกังวลทางทันตกรรมและตรวจคุณภาพของเครื่องมือในด้านความตรงตามเนื้อหา (content validity) และด้านความเชื่อมั่น (reliability) แบบสอบถามชุดนี้นำคำถามมาจาก Children's Fear Survey Schedule Dental Subscale (CFSS-DS) ซึ่งเป็นภาษาอังกฤษ แล้วได้นำมาแปลเป็นภาษาไทย จากนั้นได้สร้างสื่อภาพและเสียง ประกอบเข้าไปในแบบสอบถาม กลุ่มตัวอย่างในงานวิจัยมีจำนวน 48 คน อายุอยู่ระหว่าง6-8 ปี กลุ่มตัวอย่างได้มาทำการตอบแบบสอบถามชุดภาษาไทยที่มีสื่อภาพและเสียงประกอบ ที่คลินิกทันตกรรมสำหรับเด็ก คณะทันตแพทยศาสตร์ มหาวิทยาลัยรังสิต กลุ่มตัวอย่างดังกล่าวจะเลือกตอบแสดงความรู้สึกวิตกกังวลจากภาพ 1 ใน 5ภาพของแบบสอบถามFacial Image Scale (FIS) ซึ่งเลือกตอบตามความรู้สึกจริงในขณะนั้น การตรวจคุณภาพในด้านความตรงของเนื้อหาของแบบสอบถามชุดภาษาไทยที่มีสื่อภาพและเสียงประกอบ ดูจากค่าดัชนีความตรงตามเนื้อหา (Content Validity Index) ส่วนด้านความเชื่อมั่น ดูจากค่าความสอดคล้องภายใน (Internal Consistency Reliability) ตรวจสอบด้วยสูตรสัมประสิทธิ์สหสัมพันธ์ ผลการวิจัย พบว่า ค่าดัชนีความตรงตามเนื้อหา เท่ากับ 0.80 และค่าความสอดคล้องภายใน เท่ากับ 0.85 ผลของทั้งสองค่าอยู่ในระดับที่แสดงว่า แบบสอบถามชุดภาษาไทยที่มีสื่อภาพและเสียงประกอบนี้ เป็นเครื่องมือที่มีความตรงตามเนื้อหา และมีความเชื่อมั่น นอกจากนั้นยังสามารถนำมาใช้ได้ง่าย รวมทั้งได้รับความสนใจและความร่วมมือที่ดีจากกลุ่มตัวอย่าง

คำสำคัญ: *CFSS-DS, ความตรงตามเนื้อหา ความเชื่อมั่น*

Abstract

The aims of this study were to develop a 'Thai version of the audio-visual CFSS-DS measurement' and to evaluate for its content validity and internal consistency reliability. The CFSS-DS was translated into Thai language and audio-visual media part was added to become the 'Thai version of the audio-visual CFSS-DS measurement'. Then this version of questionnaire was modified to improve its clarity and relevancy of the questions with the audio-visual media. The subject of this study comprised of 48 children aged 6-8 years old, of who were to answer the questions in this 'Thai version of the audio-visual CFSS-DS measurement' at the pediatric dental clinic, faculty of Dental Medicine, Rangsit University. The children were asked to select one facial image from the 5-point pictorial scale [Facial image scale (FIS)] that corresponded best to how they were feeling. Then the psychometric properties of this version were evaluated. The validity of the measuring instrument was determined by Content Validity Index (CVI) and the reliability was assessed by internal consistency reliability with Cronbach's coefficient alpha. The result of the Content Validity Index (CVI) was 0.80 which represented to be an acceptable level of content validity. The internal consistency reliability (Cronbach's coefficient alpha) was 0.85 which also represented to be an acceptable level of reliability. The 'Thai version of the audio-visual CFSS-DS measurement' seemed to be a valid and reliable, measuring instrument to assess dental anxiety of Thai early school aged children. This instrument was simple and easy. Moreover, it was an enjoyable questionnaire.

Keywords: *CFSS-DS, Content validity, Reliability*

1. Introduction

One of the essential factors to deliver an effective dental treatment for the child patient is the cooperativeness during the treatment. However, some child patient may possess dental fear or anxiety, which can lead to uncooperative behavior that may obstruct or delay the treatment.

Dental is fear also known as 'dental anxiety'. Fear of pain has been linked strongly to the development of dental anxiety and the avoidance of dental treatment (Kleinknecht, et al., 1973). People with higher dental fear visited the dentist less often and indicated a longer expected time before visiting a dentist in the future. Higher dental fear was associated with greater perceived need for dental treatment, increased social impact of oral ill health and worse self-rated oral health. Dental anxiety is a multidimensional complex phenomenon, and no one single variable can exclusively account for its development. There are two factors that cause dental anxiety; (1) exogenous etiological factors or dental etiological factors. These factors may be the past dental experience, indirect experience from family members, fear of unknown and lacking of control. (2) endogenous etiological or psychological etiological factors which is not associated with the dental treatment. There are trait anxieties of the children,

general behavior problem of children, the child temperament, and their family socioeconomic status.

As mention earlier, dental anxiety may complicate the delivery of dental treatment. A child's dental fear may lead to neglect of dental care and therefore represents a problem to both dentist and patients. It has been recognized as a problem that affects children for many years until the year of adulthood, which can lead to avoidance in dental treatment and also affect long-term oral health. Therefore, it is important to assess dental anxiety in children, using a reliable measuring instrument. The collected data can add up to the actual behavioral and /or physiological observations of children during treatment in order to help in choosing the appropriate behavior guidance and treatment plan for each individual child. Because the utmost goal of behavior guidance is to ease fear and anxiety.

The most commonly used questionnaire for assessing children's dental anxiety is the Children's Fear Survey Schedule– Dental Subscale (CFSS–DS). It is a well-known instrument for assessing dental fear in children, initially presented by Cuthbert & Melamed (1982). Originally written in English and developed in the USA, the English version of the CFSS-DS has been used in other countries, such as Singapore. This 15-items questionnaire covers a variety of dental stimuli, such as injections, having one's teeth cleaned, and the like. Children rate their fear on each of the 15 items on a 1-5 scale, with 1 meaning 'not afraid at all' and 5 meaning 'very afraid'. Sum scores may range from 15-75, with higher scores indicating higher dental fear. The CFSS-DS has been found to have good reliability and validity.

This instrument has been translated into several languages including Swedish, Dutch, Finnish, Danish, Croatian, Bulgarian, Vietnamese, Chinese and Japanese. It has good internal and test–retest reliability in English and several other languages (Chellappah, et al., 1990; Milgrom, et al., 1994; Klingberg, et al., 1994; Milgrom, et al., 1995; Ten Berge Metal, 2002; Alvesalo, et al, 1993; Klingberg, 1994; Ten Berge, et al, 1998).

Even though CFSS-DS questionnaire is widely used worldwide with good reliability, but because it is an English version, there might be some barrier or restriction to use with Thai children. Such barriers are language understanding, level of word perception or cognitive ability which might lead to inaccurate data. Up to this day, there has never been a measuring instrument that especially developed to assess Thai children's dental anxiety. Therefore this study aimed to develop a Thai version of the audio-visual CFSS-DS measurement, by translating the CFSS-DS questionnaire into Thai language and added an audio-visual part with each question item. The developed of Thai version of the audio-visual CFSS-DS measurement then will be tested for its internal consistency reliability and content validity.

2. Objective

The aims of this study were to develop a 'Thai version of the audio-visual CFSS-DS measurement' and examine for its content validity and internal consistency reliability.

3. Materials and Method

3.1 Subject

There were 48 subjects in this study, the sample comprised of 19 boys (39.58%) and 29 girls (60.42%)

3.2 Development of the questionnaire

The CFSS-DS was translated from English into Thai by two expert translators in Thai and English languages at the Center of translation and language services, Rangsit University. It was done into 2 versions and then was sent to a senior lecturer to choose the appropriate one. A further modification was added by developing an audio-visual part as an aid for the question interviews. Each of the 15 items questions were shown along with audio-visual media lasted about 10-15 seconds, altogether lasted about 5 minutes. This 'Thai version of the audio-visual CFSS-DS measurement' was given to three senior lecturers in the field of Pediatric Dentistry. They would review the questionnaire and rate the relevance of each item to the objectives using a 4 point rating scale: (1) not relevant, (2) somewhat relevant, (3) quite relevant, and (4) very relevant. Then the CVI score were obtained. Researchers then modified the audio-visual media into an acceptable audio-visual CFSS-DS measurement for this study. Furthermore, based on expert's comments on clarity, the sentence's structure of some items had been changed in order to improve the clarity and the quality of the questions.

3.3 Questionnaires

The 'Thai version of the audio-visual CFSS-DS measurement' consisted of two parts. They are:

Part I: This part consists of personal information about the subjects. There are two check listed questions which can only choose one answer. The questions are "Sex" (Nominal scale) and "Age" (Ratio scale).

Part II: This part is the 'Thai version of the audio-visual CFSS-DS measurement' consisted of the CFSS-DS 15 items with audio-visual media and a 5 point pictorial scale [Facial Image Scale (FIS)]. The FIS consists of 5 drawings of a face, displaying affective feature ranging from extremely negative through neutral to extremely positive. Children were asked to select the one best corresponded to their feeling at that moment. The FIS has been found to be a reliable and valid method for children's self- report of dental fear. Total scores could range from 15 to 75.

Score 1: Not afraid at all

1 2 3 4 5

Score 1: Not afraid at all

Score 2: A little afraid

Score 3: A fair amount afraid

Score 4: Pretty much afraid

Score 5: Very afraid

3.4 Procedures

The parents were approached outside dental unit and invite to participate. Interested parents provide consent and interested children assented. The 'Thai version of the audio-visual CFSS-DS measurement' was given to the subjects in the clinic area before the dental treatment. One of the researchers turned on the audio-visual media to the subjects. The subject will select the best FIS image that corresponds to how they are feeling.

3.5 Statistical analyses

The following statistical methods were used in our study: descriptive statistics for age and sex subject distribution and the presence of results obtained with the 'Thai version of the audio-visual CFSS-DS measurement' in the subjects. The measurement validity was determined by the content validity index (CVI) and the measurement reliability was determined by the Cronbach's alpha coefficient of internal consistency.

3.6 Ethical issues

The outline of this study was submitted to the Ethical Committee of Research Institute of Rangsit University for the Approval of human research. Parents provided written consent, and children gave verbal assent.

4. Results

The Content Validity Index. In our study, the content validity index of 'Thai version of the audio-visual CFSS-DS measurement' was 0.80, indicating an acceptable level of content validity. There were three items from 15 items that were rated as 'not relevant' and 'somewhat relevant'. These audio-visual part of the items then were modified by the researchers to be an acceptable measurement for this study. Furthermore, based on expert's comments on clarity, the sentence's structure of some items had been changed in order to improve the clarity and the quality of the questions.

There were 48 children completed the 'Thai version of the audio-visual CFSS-DS measurement'. The mean age of the children was 7.3 years [6 years (21%), 7 years (31%), 8 years (48%)], and 39.58% were boys.

The mean CFSS–DS sum was 26.75 (SD = 5.91; range = 15–75). Minimum score was 15 and maximum score was 45. Gender and total score were found to be related, girls (28.00) had higher fear score than boys (24.79). Age and total score were found not to be related. The descriptive values of the result obtained from 'Thai version of the audio-visual CFSS-DS measurement'-were shown in Table 1

Table 1: Descriptive values of the result obtained from 'Thai version of the audio-visual CFSS-DS measurement'

CFSS-DS Score	Subject	N	Min	Max	Mean	SD
	All	48	15	45	26.75	8.91
	Boy	19	15	45	24.79	8.43
	Girl	29	15	47	28.00	9.13
	6 years	14	15	47	27.31	10.10
	7 years	13	15	41	26.15	8.14
	8 years	21	15	47	26.43	9.08

The Mean item scores and SDs for all items were shown in Table 4.2 for all children and also for boys and girls separately. This table shown the highest average results values in our sample consisted of the following components: 1) injections, 2) choking, 3) having a stranger touch you, 4) the sight of the dentist drilling, 5) the noise of the dentist drilling, 6) Having somebody look at you. Injection was the most feared item for all children.

We used the Cronbach's alpha coefficient of internal consistency to determine the reliability of this measurement. Corrected item-total correlations were between 0.328-0.769 (see Table 3), which was satisfactory.

The internal consistency reliability (Cronbach's coefficient alpha) was 0.85; standardized item alpha was 0.86 and did not increase when any item was deleted.

5. Discussion

CFSS-DS was used in many countries as an instrument for assessing dental anxiety in children (Cuthbert and Melamed, 1982). This instrument has been translated from English version into other languages which it has good reliability (Nakai et al, 2005; Chen-Yi-Lee, 2007; Elmedin et al, 2011). In this study, we have developed 'Thai version of the audio-visual CFSS-DS measurement' for assessing dental anxiety audio-visual in Thai early school aged children. This measuring instrument should be tested for validity and reliability.

According to Davis (1992) for the new measures, the CVI scored at least 0.80 is needed. Therefore, all the items have CVI score less than 0.80 was called from the list. In this research, we found the CVI score was 0.80, which represented that the audio-visual media and the items in the questionnaire were relevant to access dental anxiety in Thai early school aged children.

In other countries such as in the Japanese study, they found that the mean scores of CFSS-DS for 8-15 years-old girls were 26.20 and 23.20 for boys (Nakai et al, 2005). In the Taiwanese study, the mean scores for 6 years-old girls were 31.26 and 28.69 for boys, the mean scores for 7 years-old girls were 29.93 and 28.03 for boys and the mean scores for 8 years-old girls were 30.66 and 27.53 for boys (Chen-Yi-Lee, 2007). In our research, we found that the mean scores for 6-8 years-old girls were 28.00 and 24.79 for boys. From the mean score of these three Asian countries, Japan, Taiwan and Thailand, showed that gender and anxiety score are related, girls had higher anxiety scores than boys.

The three most anxious items in the Japanese study for both boys and girls were injections, choking, and having a stranger touch you (Nakai et al, 2005). In our study also have been found to be the same. In the Bosnian study, three most anxious items were choking, injections, and the noise of the dentist drilling (Elmedin et al, 2011). In the Greek study, three most anxious items were having to go to the hospital, injection and having a stranger touch you (Konstantinos et al, 2008). Chocking and injection have been found to be among the most anxious items in studies in different cultures. These findings that these specific dental concerns of children appear to be

constant across cultures even if the overall level of anxiety varies by culture.

Results of many studies support the good reliability of CFSS-DS scale as an instrument for measuring dental fear and anxiety presence in children. The reliability as internal consistency measure by Cronbach's coefficient alpha in SPSS program version 21, the alpha for the competence scale must be 0.80 which indicated that there is a good internal consistency (Leech et al, 2005). In the Japanese study, the value of Cronbach's coefficient alpha is determined in CFSS-DS scale was 0.91 (Nakai et al, 2005) In the Taiwanese study, Cronbach's coefficient alpha was 0.90 (Chen-Yi-Lee, 2007). In the Bosnia study, Cronbach's coefficient alpha was 0.86 (Elmedin et al, 2011). All of the above studies used original CFSS-DS scale to test the reliability but the 'Thai version of the audio-visual CFSS-DS measurement' has been modified by adding an audio-visual part into the questionnaire. Our Cronbach's coefficient alpha was 0.85 which represent good reliability of the audio-visual measurement.

In our study, additional to the item question, the added audio-visual media is a concrete form of communication. From our observations, all of the subjects could answer the 'Thai version of the audio-visual CFSS-DS measurement' continuously without asking for any more explanation concerning the question. Almost all children preferred participated, regardless of whether the questions were positive or negative. The audio-visual media added seemed to improve their enjoyment.

6. Conclusion

This 'Thai version of the audio-visual CFSS-DS measurement' seems to be a valid and reliable, measuring instrument to assess dental anxiety of Thai early school aged children. This instrument is simple and easy. Moreover, it is an enjoyable questionnaire. Further research could aim to test other psychometric properties such as criterion-related validity with a larger population.

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