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Introducing a Valid Questionnaire for Assessment of Perceived Oral Health Care Needs, Barriers to Accessing Oral Health Care Services and Its Utility

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Abstract

Background: Need assessment plays a key role in promoting oral health care delivery system. Also by understanding the perceived barriers to dental care access, more effective steps can be taken to overcome these challenges. The aim of this study was to prepare a comprehensive valid questionnaire to evaluate the perceived oral health care needs, barriers in oral health care access and it's utility.

Methods: After reviewing the related articles a questionnaire including questions about demographic characteristics, perceived oral health care needs, barriers to oral health care access, service preferences was designed. In order to standardize and validate the questionnaire, both qualitative and quantitative methods were used. Qualitative assessment of the content and face validity was done by a panel of experts. Quantitative approach (Including Content Validity Ratio (CVR) and Content Validity index (CVI)) were used to measure the content validity. Reliability assessment was done by test-retest method and use of Cronbach's alpha.

Result: Based on the validation results, the questionnaire was modified and revised. According to the CVR, two questions were deleted and other questions achieved minimum acceptable CVR scores. According to the CVI, all the questions achieved minimal necessary score for relevancy, clarity and simplicity. The result of Cronbach's alpha coefficient and Spearman's rank correlation coefficient implied acceptable reliability.

Conclusion: The final questionnaire is a comprehensive, valid and reliable instrument for assessing perceived oral health care needs, barriers to oral health care access, its utility and preferences.

Keywords: Validation; Questionnaire; Perceived need; Oral health care

Introduction

Oral health is one of the key elements of overall health and quality of life [1].

Promotion of health care system is an important task and appropriate use of resources is a moral obligation. Meanwhile, awareness of the population's health care needs, is very important for better planning and designing delivery of health care services [2]. Need definition, according to Oxford Dictionary is circumstances in which something is necessary. The use of community health needs assessment can be summarized as follows: Measuring the burden of disease, determining patterns of need in the population, the needs and priorities of populations with an emphasis on areas with unmet need, setting goals to respond to these needs, quantitative estimation of all health care needs of populations and deciding on how to use resources [3]. According to Bradshaw's view, need is divided into three categories as follows: Normative need, determined by experts and professional staff. Perceived (felt) need, is a reflection of individuals assessment of health care need. Expressed need, is a perceived need that has led to action for receiving services [3].

Previously, expert opinions were the common assumption and usual method in need assessment. According to, normative need was a base for health care interventions and programs. But evidence has repeatedly pointed out deficiencies in relying solely on this approach and considering it as the best and most comprehensive need assessment tool, including to: Defects in the reliability and objectivity, neglecting the psychosocial aspects and concepts of quality of life, lack of patient acceptance, lack of attention to consumer rights, and unrealistic estimation of treatment plan [3,4].

Furthermore, measures of need should include the impact of ill health upon individuals, the degrees of dysfunction and the perceptions and attitudes of patients [5]. Therefore, attention to demand and perceived need, have become increasingly important. Numerous studies have been conducted worldwide on this subject, even indicating out higher priority of perceived need than professional assessment [3].

In addition to the importance of awareness of perceived needs, by understanding the barriers to oral health care access, we will be able to take necessary actions to overcome them. Knowing the different views in the society about preferences and utility of oral health care services, such preferential services in terms of prevention or treatment, methods of paying the dental fees, and preferable gender of dentist, can be helpful for policy makers in accurate planning of oral health care services delivery.

Despite the growing emphasis on evidence-based decision-making, there was not a comprehensive and validated questionnaire for assessing perceived oral health care needs, barriers to oral health care access, and its utility. Furthermore, no study has been done yet to survey perceived oral health care needs in the Iranian society. The aim of this study was to develop a comprehensive, standardized and validated questionnaire to assess perceived oral health care needs, barriers to oral health care access, and it's utility.

Methodology

In reviewing the literature, we found that a standard and comprehensive questionnaire to assess the perceived oral health care needs, barriers to oral health care access, and its utility does not exist; therefore, a questionnaire was designed in the following steps [6] (Figure 1):

First step: identifying the domains of the questionnaire

According to Lawshe's view, the content domains must be identified before the next steps for determining content and construct validity [7]. Considering the objectives of preparing the questionnaire, three main domains identified: Perceived oral health care needs, barriers to oral health care access and oral health care service preferences.

Second step: question preparation

According to identified domains, the questions were designed using related literature and a quality of life measure regarding oral health (oral impact on daily performance questionnaire) as well as the personal opinions and comments of the authors [8-13].

Beside demographic data (age, sex, employment, last level of education completed) the questionnaire included questions about perceived oral health care needs including dichotomous questions about perceived need for 12 most common oral problems in the past year with "yes, no" response, extent of individual perceived needs for oral health care based on the numeric rating scale question from 0 (not required) to 10 (Extreme need) and multiple choice questions about history of last dental visit and place of receiving the dental service. Domain of barriers to oral health care access included a filter question about meeting all the oral health care needs with "yes, no" response and seven questions of possible barriers to meet the oral health care needs including: high dental cost, fear of dental procedures, fear of infection transmission in dental visit, lack of sufficient time for dental visit, not caring to go to the dentist and feeling no need, with the rating scale "somewhat agree, somewhat disagree, strongly agree, strongly disagree, no idea" and numeric rating scale question about extent of dental fear from 0 (no fear) to 10 (extreme fear). The last domain was four multiple choice questions about service utility and preferences in terms of paying dental fees, gender of dentist, kind of services received in terms of prevention or treatment, and general dentist or dental specialist.

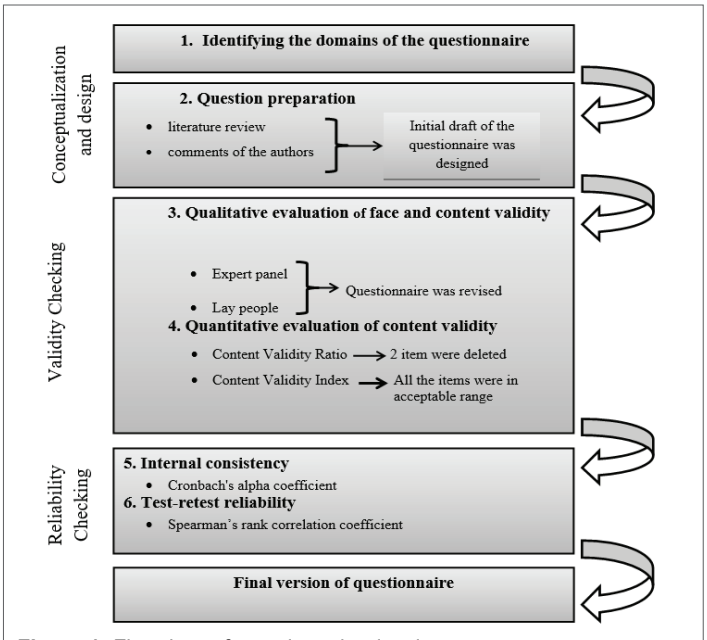

Figure 1: Flowchart of questionnaire development process

Third step, checking the validity and reliability of questionnaire

Qualitative evaluation of questionnaire validity: In the next step, questionnaire validity was assessed. For qualitative evaluation of content and face validity, the questionnaire was presented to seven expert university professors in oral public health and oral epidemiology, community medicine, periodontics, pediatrics and public health who are acquainted with the topic.

They submitted their opinions in writing form on the accuracy, completeness, scoring system, length of the questions, and use of the suitable words and position of the items in the proper place. Then the questionnaire was presented to another sample of 10 lay cases from the target population, they were asked to review the questionnaire and help us modify it.

Quantitative evaluation of questionnaire validity: For quantitative assessment of validation, the content validity ratio and content validity index were used. The questionnaire was sent to email address of all the experts in oral public health and oral epidemiology from different Iranian dental schools who were members of Iranian oral health association and they were asked to classify the necessity of each question based on Likert three-part scale into three categories: "necessary", "useful but unnecessary", and "unnecessary". The content validity ratio was calculated based on the following formula:

$$CVR = (n_e - n/2)/(n/2)$$

"n_e" is the number of panelists indicating "necessary" and "n" is the total number of panelists.

The other most widely used method of quantifying content validity for multi-item scales is the content validity index (CVI) based on expert ratings of relevancy, simplicity and clarity. To calculate CVI, experts were asked to rate of each item in a four scaled grading into four categories: "not relevant", "somewhat relevant", "quite relevant" and "highly relevant" for relevancy, "not simple", "relatively simple", "simple" to "quite simple" for simplicity, and "not clear", "relatively clear", "clear" to "quite clear" for clarity [14]. Then, for each item, the CVI was calculated as the number of experts giving a rating of either 3 or 4, divided by the number of experts.

Then the questionnaire was presented to separate sample of 5 lay cases of target population, they were asked to review the questionnaire and help us modify it.

Checking the questionnaire reliability: Finally, the questionnaire reliability was assessed. Since the questionnaire is prepared for telephone interview, a random sample consisting of 70 phone numbers was selected from phone numbers of Mashhad city in North East of Iran. Among these phone numbers, 29 calls were answered and these individuals participated in the telephone interview, they were asked to reply to the questionnaire again two weeks later. Internal consistency was evaluated with the Cronbach's alpha coefficient. Repeatability or test-retest reliability was evaluated by the spearman's rank correlation coefficient.

Ethics

The research was approved by the Ethics Committee of Kerman University of Medical Sciences (decision number IR.kmu.REC.1394.549). Informed consent was obtained from the participants at the beginning of the interview.

Results

After receiving comments of the expert panel, the questionnaire was reviewed and revised.

For quantitative validation method, email replies were received from nine experts who were members of Iranian oral health association. Based on the results of the CVR, the scores of two items related to the perceived needs for tooth abrasion and oral ulcers were less than the acceptable value and were deleted. Other items achieved the Lawshe's CVR minimum acceptable value (Table 1). According to CVI, all the items achieved the minimal acceptable value to imply relevancy, clarity and simplicity. The final modified questionnaire with the CVR and CVI scores is presented in table 2.

Table 1: Lawshe's table for acceptable CVR values based on the number of panelist

Number of panelist	Value CVR	Number of panelist	Value CVR	Number of panelist	Value CVR
5	0.99	11	0.59	25	0.37
6	0.99	12	0.56	30	0.33
7	0.99	13	0.54	35	0.31
8	0.75	14	0.51	40	0.29
9	0.78	15	0.49		
10	0.62	20	0.42		

To evaluate questionnaires reliability, among 29 persons who participated in the first stage of the telephone interview 19 responded to the questionnaire again. All the respondents were female. The respondents age was between 22-58 years old (mean age=42.26, SD=9.89). Cronbach's alpha coefficient is applicable only for Likert type scale questions. Cronbach's alpha coefficient for domain of barriers to oral health care access was 0.67. Also spearman's rank correlation coefficient was 0.58 (p value=0.01).

Discussion and Conclusion

For understanding perceived oral health care need, a valid and comprehensive questionnaire is one of the main requirements. We did a systematic review of the questionnaires on perceived oral health care needs [6]. We found out despite the numerous studies done on this subject, majorities of these studies made an overall evaluation of perceived need by use of limited questionnaires and without identifying the types of needed dental services. So we included perceived need of the 12 most probable oral problems in the questionnaire. In the next step this questionnaire will used in target population. Molete and colleagues evaluated the perceived oral health care needs by a question about feeling a problem in the teeth, tongue or gums [8]. Also Heaton and colleagues evaluated unmet dental needs as a report of one or more occurrences of being unable to receive necessary dental care or having experienced a delay in receiving necessary

Table 2: Final modified questionnaire for assessment of perceived needs for oral health care services, barriers to oral health care access and service utility with CVR and CVI score

Questions		CVR*	CVI**
In the past year, which of the following problems have you had? (Yes, No) Type of oral problem	(If the answer is yes): Did you go to the dentist to get treatment for the problem? (Yes, No)		
Examination and check-up		1	1
Tooth sensitivity to heat, cold, sweets		1	1
Tooth decay or tooth cavitation		1	1
Bad breath		0.78	1
Defective tooth fillings or crowns		0.78	0.88
Inappropriate and loose dentures		1	1
Trauma or fracture to natural or artificial tooth		0.78	1
Tooth mobility		0.78	1
Toothache		1	1
Problems in tooth appearance: size, color, space, alignment		0.78	0.92
Gum problems: dental calculus, gingival bleeding, swelling, recession		0.78	1
Space due to missing teeth		1	1
If you rate your severity of need for dental treatment, what point do you give from 0 (no need) to 10 (extreme need)?		1	0.96
Where do you go for dental care? Private office, Private clinics, charity clinic, organization clinics, public health centers, educational clinics of universities		1	1
When was your last dental visit? one year ago, 1-2 years ago, 2-5 years ago, I never had dental visit , I cannot remember		1	1
During the past year, do you think your dental needs were met? yes, no (If the answer is no):		1	0.96
Why haven't you gone to the dentist to treat your problem? High cost of service: Somewhat agree, somewhat disagree, strongly agree, strongly disagree, no idea		1	0.96
Fear of dental procedures: Somewhat agree, somewhat disagree, strongly agree, strongly disagree, no idea		1	1
If you rate your dental fear from 0 to 10 what point do you give from 0 (no fear) to 10 (extreme fear)?		1	1
Fear of infection transmission in dental visit: Somewhat agree, somewhat disagree, strongly agree, strongly disagree, no idea		1	1
Not having enough time to go to the dentist: Somewhat agree, somewhat disagree, strongly agree, strongly disagree, no idea		1	1
I don't feel the need: Somewhat agree, somewhat disagree, strongly agree, strongly disagree, no idea		1	1
I don't care to go to the dentist: Somewhat agree, somewhat disagree, strongly agree, strongly disagree, no idea		1	0.96
Would you prefer a general or specialist dentist? General dentist, specialist dentist, It does not matter		0.78	1
Would you prefer to prevent or treat the oral problems? Prevention, treatment, both of them		0.78	0.88
Would you prefer a male or female dentist? Male, female, does not matter		0.78	1
How would you prefer to pay dental fees? Insurance , personal payments , both methods ,other		1	1

*Content Validity Ratio
**Content Validity index

dental care [15]. Maharani investigated perceived need for dental care by a single question about their self-perceived need for dental care within a one month recall period [16]. A few studies which have examined the specified types of perceived dental needs have used a limited and incomplete list of oral problems. Jones and colleagues surveyed unmet needs for five dental services including oral surgery, prevention, restoration, prosthesis, and specific problems (infection, injury, and pain) [13]. Marino and colleagues assessed the perceived need for dental care by a list of seven dental services, without validation methods [17]. None of these studies have not been evaluated the perceived need for tooth mobility, bad breath, dental trauma, and defective restoration, which were considered in the current questionnaire.

Beside perceived oral health care needs, other important domains such as most probable barriers to oral health care access and services utility were included in the questionnaire that can definitely be useful for health care policy makers. Molete and colleagues evaluated barriers to dental care access by the following: lack of finances, lack of insurance coverage, fear of dental procedures and transportation problems [8]. Jones and colleagues used a list of barriers including: inability to afford care, lack of insurance coverage, transportation issues, fear of visiting a dentist, and lack of time to seek dental services [13]. In the developed questionnaire, items about not feeling the need, not caring to go to dentist and fear of infection transmission is also considered.

The advantage of this study, in respect to studies without validation process or with purely qualitative validation method, is both qualitative and quantitative assessment of validity. Åstrøm and colleagues assessed perceived oral health care need in Tanzanian adults. The used questionnaire was assessed by professionals only in terms of quality and selection of appropriate vocabulary and culture appropriateness to target population and quantitative assessment was not carried out [18]. Also Hoad-Reddick evaluated perceived dental care needs in the elderly without the validation methods [19]. Rungsiyanont and colleagues evaluated perceived dental needs and attitudes to dental practices in AIDS patients by developing a questionnaire [20]. The proposed questionnaire was not validated.

In summary, the advantage of this study is the use of both qualitative and quantitative validation methods. In addition, beside the comprehensive assessment of perceived oral health need, other domains including barriers to oral health care access and oral health care service preferences have been included. So we can say the presented questionnaire is a comprehensive and valid tool which can be helpful for policy makers in assessing perceived oral health care needs, barriers to oral health care access and its utility.

The limitation of this study is lack of evaluating construct validity, which will be reported after using the questionnaire in the main study.

The authors declare no competing financial interest.

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