REVIEW ARTICLE

Designing and validation of questionnaire
Sandesh Jain¹, Saumya Dubey¹, Sandhya Jain²

¹Sri Aurobindo College of Dentistry, Indore, Madhya Pradesh, India, ²Department of Orthodontics, Government College of Dentistry, Indore, Madhya Pradesh, India

Abstract
A designing questionnaire which is worthwhile and easy to interpret and generalizable is an art, and it requires careful planning. The usefulness of questionnaire lies in quantifying the findings of initial exploratory phase. Questions may be open ended (descriptive answer type) or close ended (Y/N type). For a questionnaire to be valid, it should be understood by subjects/participants correctly to answer. Thus, the relevant answer is sought. Questions should be simple and unambiguous. Questions should be devised using all concepts related to aim, and validity and reliability of the questions should be checked by pilot study before conducting the main study.

Keywords
Designing, questionnaire, validity

Correspondence
Dr. Sandesh Jain, Department of Orthodontics, Sri Aurobindo College of Dentistry, Indore, Madhya Pradesh, India. Phone: 91-9425045455. Email: researchothodontics@gmail.com

Received 04 December 2015; Accepted 23 January 2016
doi: 10.15713/ins.idmjar.39

Designing
The questionnaire provides us objective means of collecting information about people’s beliefs, knowledge, attitude, and behavior.

The designing questionnaire which is worthwhile and generalizable is an art, and it requires careful planning.

The usefulness of questionnaire lies in quantifying the findings of initial exploratory phase. It is not helpful in cases where subjects may withhold information due to some or other reasons such as ignorance or subjects may perceive stigmatizing as they may think they are being judged by others.

Types of sampling for questionnaires for research are different according to the type of study of population. Sample should be sufficiently large and representative of the entire population. Opportunity/convenience sampling is used for canvassing a known group of participants. It is avoided where we wish to generalize results to a wider population.

Random sampling is used for wider homogenous population every 9th person in contacted. All have an equal chance of selection. For much wider population stratified sampling is preferred where homogeneous groups are identified and the sample is drawn from groups. Cluster sampling is used for heterogeneous groups. In cases where are wish to select randomly but can contact only limited number of people, while quota sampling used for a different group of social class (Hindu, Muslims, etc.) age, gender, etc. A definite number of social class is included in the study.

Snowball sampling is preferred where confidentiality of disease in required. Subject/participants identify other similar subjects.

Questions may be open ended (descriptive answer type) or close ended (Y/N type). Close-ended questions are quick to answer and complete does not require much thinking process, but they do not allow subjects to expand the answer or offer alternative views. Moreover, subjects may tick at random to answer the close-ended questionnaire.

Open-ended questions allow subjects to answer with creativity and allow for expression. However, the responses/answers are difficult to analyze requiring coding and interpretation. Advance Planning is required (for time, skill, etc.) for open-ended questions. Questions poorly designed (close-ended question) include words such as sometimes and frequently. Frequently implies frequency, so a frequency based rating (once/twice a day, etc.) is more appropriate. Avoid using questions with words such as commonly, usually, many, some, and hardly ever. It is advisable to provide introductory information regarding survey and question filling, etc., to all participants. The questionnaire should be formally approved by specialists.

Validity refers to accurately measuring what it claims to measure while reliability is an assessment of reproducibility and consistency of a measurement or instrument.

Different dimensions of validity are:
A. Apparent validity
   Question is generated in consultation with opinion of experts and subjects themselves. All questions should be logical.
B. Content validity
   Question should envelop most dimensions of the concept under study. Content should be adequate. Composition of instrument
   To evaluate its content judgment or advice is sought from medical literature review, expert opinion, pilot studies, or by factorial analysis.

C. Constructs validity
   It evaluates the degree to which the instrument reflects the concept to be measured.

D. Face validity - should be judged by subjective assessment and relevance of the questionnaire to the participants, face validity is determined by a review of the items and not through the use of statistical analyzes.

   To maintain good construct validity, it is important to define what trait researcher is measuring (definition sb clear). It is an assessment of questionnaire, how well it is constructed. So, as to measure the concept correctly construct validity has two subjects.

   a. Convergent validity how well construct is related convergent validity tests that construct that should be theoretically related show high correction.

   b. Discriminant validity mean that constructs that have no theoretical relation show low correction coefficient.

   Discriminant validity tests whether the unrelated construct are in fact unrelated or not by the poor correction coefficient.

   E.g., If we are injury to develop on measure of self-esteem along with self-worth (SW), social skill (SS) confidence (C), and self-appraisal (SA) convergent validity would test that four other constructs (SW, SS, and C<SA) are in fact related to self-esteem discriminant validity ensures that non-overlapping factors do not overlap.

   To estimate the degree to which any two measures are related to each other then we typically use correction coefficient. We look at the pattern of intercorrelation among measures. Correction between theoretically similar measures show high whole correction between theoretically dissimilar measure show low.

   For the questionnaire to be valid, it should be understood by subjects/participants correctly to answer. Thus, relevant answer is sought. Questions should be simple and unambiguous.

   To ensure this pilot study is required. Questions should be simple and unambiguous. This questionnaire is then piloted on few subjects for any reason, we modify a validated questionnaire we have to rewrite it to increase its clarity. This new questionnaire is now used in surveys. Before using it, its reliability is checked. If for any reason, we modify a validated questionnaire we have to revalidate it.

Summary

Thus, questions are created after discussing with concerned personnel. This questionnaire is then piloted on few subjects for its legibility and comprehensibility. If any question is ambiguous, it is rewritten to increase its clarity. This new questionnaire is now used in surveys. Before using it, its reliability is checked. If for any reason, we modify a validated questionnaire we have to revalidate it.
Flowchart 1: Stepwise designing of a questionnaire

References
