

Appendix 6: Considerations for the development and testing of a questionnaire

Item generation

- Conduct a literature review, use in-depth interviews or focus groups to generate items
- Sample for new questions until no new items are generated (redundancy)
- Group items with similar themes into domains or categories
- Generate a table of specifications

Item reduction

- Target ≤ 25 total items to answer your research question
- Use focus groups (with content experts) or external experts
- Consider statistical analyses (factor analysis) for longer and multidimensional surveys following pilot testing

Questionnaire formatting

Stem format

- Target total of ≤ 20 words for each question stem
- Use clear, succinct, unbiased, appropriate and nonjudgmental language suitable for the education level of respondents

Response formats

- Choose response format (binary, ordinal, nominal, interval, ratio) based on your stem format; this will determine the type of analysis
- Consider indeterminate response options ("uncertain," "don't know," "no opinion") to acknowledge uncertainty or indecisiveness of respondent
- Consider "other" response options for respondents to allow for unanticipated responses, identify new issues or elaborate upon responses to closed questions

Questionnaire composition

- Include a cover letter
- Highlight the rationale for the study and how respondents were chosen
- Consider placing the demographic questions at the end of the questionnaire if the questions are of a sensitive nature

Pre-testing

- Pre-test the full draft questionnaire and the cover letter
- Use personal interviews or focus groups (include experts/nonexperts) to pre-test
- Consider potential users of the information generated from the results of your survey, research colleagues or a cross-section of potential respondents to pre-test
- Evaluate each question and determine a course of action (i.e., accept original question, accept question with a change in its meaning, change question but retain meaning, eliminate question, develop new question)

Pilot testing

- Pilot test the penultimate version of the questionnaire to determine whether you have optimized the question order, relevance of the included questions and general flow of the questionnaire
- Ask this group of respondents to assess the length of questionnaire and ease with which they completed the questionnaire
- Consider using factor analysis to further reduce items following pilot testing (at least 5 respondents per candidate item required)

Clinical sensibility testing

- Conduct clinical sensibility testing to assess the comprehensiveness, clarity and face validity of the questionnaire
- Administer a 1-page assessment sheet to respondents with items posed as questions with either Likert scale or nominal response formats

Reliability

- Choose the specific reliability assessment (test-retest, interrater, internal consistency) based on the survey's objective and the format of the responses
- To assess test-retest reliability, administer the final questionnaire to selected respondents representing the sampling frame on 2 occasions at least 2-6 weeks apart

Validity

- Assess content validity by asking a content expert
- If you have created a *table of specifications*, ask a content expert to review your table
- Ask a content expert to assess construct validity to determine whether key constructs underlying your study question have been addressed by the questions