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Sampling for qualitative research using quantitative methods. 1. Measuring GPs' attitudes towards discussing smoking with patients

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Background. Interview studies which employ qualitative methodology are often concerned with classifying behaviours or attitudes and an ideal sample of research subjects displays variety in the attitudes or behaviours under scrutiny.

Objective. This paper describes the development of a questionnaire which measures GPs' attitudes towards discussing smoking with patients with the intention of using this instrument to select GPs with diverse views for a qualitative interview study.

Method. Thirteen attitude statements with an accompanying Likert-type scale were completed by 327 GPs in one FHSA area. Factor analysis of responses produced two subscales: 'perceived efficacy' and 'enthusiasm'. Reliability and validity of these were examined.

Results. Each subscale had good internal reliability and preliminary exploration of construct validity supported the notion that the subscales were valid.

Conclusion. The use of this type of instrument in sampling GPs for qualitative studies could be effective for selecting subjects with a diversity of views towards the research topic.

Keywords. GPs, health promotion, questionnaire construction, research methodology, smoking cessation.

Introduction

Studies which employ qualitative research methods are often concerned with classifying different behaviours or attitudes and attempting to distinguish 'typical' and 'atypical' research subjects.[1] Sampling for qualitative studies is, therefore, not necessarily driven by statistical methods and is usually non-probabilistic. Random samples are not usually required and subjects are chosen in the hope that they will allow investigation of particular aspects of the attitudes or behaviours which are under scrutiny.

There are no concrete guidelines which state how sampling should be undertaken for qualitative studies. Researchers have to decide for themselves which method(s) is/are most appropriate to the questions they hope to answer. When selecting GPs for interview studies, researchers have used a variety of sampling approaches including random samples,[2] choosing GPs who work in practices with varied characteristics[3] and selecting GPs who work in practices with characteristics reflecting the heterogeneity of all practices within a defined area.[4] There are, however, many factors which influence where GPs work,[5] so choosing GPs because of the characteristics of the practice to which they belong provides no guarantee that those selected will exhibit the required diversity. An alternative approach would be to select GPs for qualitative studies by differences in their beliefs or attitudes instead of choosing them because they work in a particular type of practice.

A qualitative interview study exploring the ways in which GPs discuss smoking with patients during routine consultations was planned. This required a sample of GPs with diverse attitudes towards giving advice on smoking, so a questionnaire measuring GPs' reported attitudes towards discussing smoking with patients was designed. It was intended to use this instrument to select GPs with diverse reported attitudes to participate in the study. This paper aims to:

(i) describe the process of designing a valid and reliable questionnaire to determine GPs' attitudes towards giving advice on smoking cessation;
(ii) discuss the potential use of this type of instrument as an aid to sampling GPs for qualitative studies.

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Methods

Generation of dimensions of GPs' attitudes towards giving anti-smoking advice

The first stage of questionnaire design was the generation of a limited number of dimensions exploring GPs' attitudes towards giving anti-smoking advice. A literature review revealed only one study dealing with GPs' attitudes towards smoking cessation,[6] so articles concerned with attitudes towards preventive medicine were also utilized. Four potentially important dimensions were identified and 13 attitude statements[7] examining GPs' attitudes to these were devised. Figure 1 shows the statements relating to each dimension.

Generation of attitude statements relating to each dimension

The literature search provided conflicting evidence of whether GPs feel they are effective with smokers. A recent Scottish survey suggested that lack of perceived effectiveness was an important constraint to GPs' anti-smoking activity.[6] An earlier survey,[8] however, suggested that the vast majority of GPs felt they were 'probably effective' when giving anti-smoking advice. Similarly, an interview study investigating GPs' attitudes towards preventive medicine[2] concluded that GPs' generally believed they were effective at promoting life-style change, whereas two others[9,10] reported GPs having concerns about their efficacy. Consequently, statements 1–5 (Fig. 1) explored a range of GPs' perceived efficacies with smokers. Time constraints were reported as a problem in many studies,[6,8–10] so statements 6 and 7 (Fig. 1) covered GPs' attitudes towards broaching the topic of smoking with all presenting smokers. There was evidence that GPs' advice giving is influenced by the clinical situation,[6] with GPs reporting themselves as being more likely to give anti-smoking advice to people with symptomatic illness caused by smoking. Accordingly, statements 8–10 investigated respondents' propensity to give anti-smoking advice. Finally, GPs appeared to differ in their orientation towards preventive medicine[9] and statements 11–13 dealt with some of the beliefs articulated by them.[6,8–10]

To minimize 'acquiescence bias' and 'positive skew',[11] attitude statements were placed in a random order and neutrally worded. Respondents were asked to choose one response from strongly agree to strongly disagree on a six-point Likert-type scale placed alongside each statement. The scale had no neutral point, forcing respondents to make a tentative choice for each item. Points were awarded to responses to statements on the scale of 1–6 with 1 representing a strongly negative attitude towards giving anti-smoking advice and 6 strongly positive (see Appendix for fuller explanation).

Data requested to provide construct validity checks

Respondents were asked whether they had received any training in how to help patients stop smoking and to provide an estimate of the number of smokers advised to quit during their last surgery. These data were used to establish construct validity of attitude scores derived from responses to attitude statements (see Results section for full details).

EFFECTIVENESS

1. My anti-smoking advice is more effective than any other anti-smoking education that my patients receive.
2. When patients continue to smoke despite repeated advice to stop, my anti-smoking advice can still have a worthwhile effect.
3. My anti-smoking advice is more effective when it is linked to an individual's presenting problem.
4. I can be very effective in persuading some of my patients to stop smoking.
5. My anti-smoking advice is equally effective whether the smoker is ill with a smoking-related problem or well.

TIME

6. Discussing smoking with all presenting smokers is not an appropriate use of my time.
7. Discussing smoking with all presenting smokers is likely to do more harm than good.

PROPENSITY TOWARDS ADVICE-GIVING

8. I prefer not to discuss smoking unless the patient is ill with a smoking-related problem.
9. I don't discuss smoking with all smokers, but prefer to select out those smokers who I feel will respond to my advice.
10. I prefer not to discuss smoking with my patients unless they raise the subject.

ENTHUSIASM TOWARDS ANTI-SMOKING ADVICE

11. I dislike discussing smoking in my routine consultation.
12. Giving anti-smoking advice during routine consultations should not be part of my job.
13. Discussing smoking with my patients can be very rewarding for me.

FIGURE 1 *Questionnaire items relating to each dimension*

Piloting and distribution of questionnaire

Initially the questionnaire was piloted within the Leicester University Department of General Practice. This was to check that attitude statements could easily be understood and resulted in minor wording alterations. The revised questionnaire was sent to 20 randomly-selected GPs from the Nottinghamshire Family Health Services Authority list. This confirmed that service GPs endorsed a variety of response categories. The final survey instrument was posted to all 468 GPs on the Leicestershire FHSA list.

Results

Of the 468 questionnaires sent 327 (69.9%) were returned after two reminders. Details of differences between respondents and non-respondents are described elsewhere.[12] Briefly, GPs holding the MRCGP qualification, younger GPs and women were more likely to respond. Of the 325 respondents who replied to the question about anti-smoking training, 111 (34.2%)

answered positively. Three hundred and seven GPs gave an estimate of the number of smokers advised to quit during their last surgery and 288 (88.6%) reported this surgery as being typical of their usual practice. Details of responses to attitude statements have been reported already.[12]

Factor analysis of attitude statement responses

A principal components analysis (PCA)[13] was run on attitude statement responses to indicate which statements could be grouped together on subscales. This initially suggested that a three factor structure could best represent the data. The third factor extracted, however, explained only 10% of the variance and had only one statement (statement number 5, Fig. 1) loaded strongly on it. This statement had factor loadings of below 0.36 on both other factors. Consequently, this item was discarded from the analysis and the remaining 12 items were explored with a second PCA. A two factor solution best represented the responses to the remaining 12 attitude statements. The subscales were named 'enthusiasm' and 'perceived efficacy' based on the nature of the statements loading on each one. The enthusiasm subscale explained 33% of the variance in GPs' responses to attitude statements and the perceived efficacy subscale, 17%.

The sum of points awarded to all attitude statements which loaded on each subscale formed one attitude score. The scoring method ensured that a high perceived efficacy score represented a strong personal belief in the effectiveness of the respondents' anti-smoking advice and a high enthusiasm score represented a positive orientation of the respondent towards giving anti-smoking advice during routine consultations. Table 1 shows the seven statements loaded to the enthusiasm subscale and Table 2 the five statements loaded to the perceived efficacy subscale. Table 3 shows that a large proportion of respondents' scores are concentrated around the median.

Internal reliability and validity

Cronbach's alpha coefficients for the subscales were: enthusiasm 0.60 and perceived efficacy 0.72, demonstrating good internal consistency.

Construct validity of subscales was investigated by comparing attitude scores of GPs who reported giving different amounts of anti-smoking advice in their last surgery (where stated to be typical). GPs' reported practice was, therefore, being compared with their reported attitudes. GPs who recalled discussing smoking with more than the modal number of smokers (two) had higher enthusiasm scores [median score = 32 (range 18–39) based on 101 GPs versus 30 (range 14–40) based on 186 GPs. Mann-Whitney U = 7285, $P = 0.002$]. These GPs also had significantly higher perceived efficacy scores [median score 22 (range 12–28) based on 95 GPs versus 20 (range 10–29) based on 182 GPs. Mann-Whitney U = 7187, $P = 0.0002$].

TABLE 1 *The seven enthusiasm statements showing mean scores, standard deviations (SD) and factor loading values*

Attitude statement	Mean score (SD)	Factor loading value
Discussing smoking with all smokers not an appropriate use of time	3.87 (1.51)	0.652
Prefer not to discuss smoking unless patient is ill with a smoking-related problem	4.50 (1.13)	0.710
Dislike discussing smoking in routine consultations	4.64 (1.08)	0.742
Giving anti-smoking advice during routine consultations is not my job	4.64 (1.13)	0.729
Prefer not to discuss smoking with patients unless they raise the subject	4.86 (0.90)	0.725
Discussing smoking with all patients is likely to do more harm than good	4.62 (1.15)	0.726
Don't discuss smoking with all smokers but select out those I feel will respond to my advice	3.42 (1.21)	0.700

TABLE 2 *The five perceived efficacy statements showing mean scores, standard deviations (SD) and factor loading values*

Attitude statement	Mean score (SD)	Factor loading value
My anti-smoking advice is more effective than any other anti-smoking education my patients receive	3.78 (1.12)	0.662
Anti-smoking advice still has a worthwhile effect in patients who continue to smoke despite having had repeated advice to stop	3.74 (1.19)	0.661
Anti-smoking advice is more effective when linked to an individual's presenting problem	5.03 (0.86)	0.625
Can be effective in persuading some patients to stop smoking	4.50 (1.01)	0.780
Discussing smoking with patients can be rewarding	3.80 (1.15)	0.718

TABLE 3 *Distribution of enthusiasm and efficacy scores*

Score	No. of respondents for whom score calculated	Range of possible scores	Median score	Interquartile range (25–75%)	10th percentile	90th percentile
Efficacy	305	5–30	21	18–23	16	26
Attitude	316	7–42	31	27–35	25	37

A further test of construct validity was a comparison of the attitude scores of GPs who reported having received anti-smoking training with those of GPs who did not. GPs who reported having received anti-smoking training had significantly higher perceived efficacy scores [median = 22 (range 15–28) based on 104 GPs versus 21 (range 9–39) based on 201 GPs. Mann-Whitney U = 8480, $P = 0.007$]. No difference was found in the enthusiasm scores of these two groups of GPs.

Discussion

Using close reference to the literature, the Attitudes to Smoking Advice Questionnaire has been designed. This has validity and reliability for measurement of GPs' attitudes towards discussing smoking with patients. Both subscales of this 12-item instrument appear to be able to differentiate between groups of GPs who report different levels of anti-smoking advice-giving activity. The perceived efficacy subscale also appears able to differentiate between groups of GPs who report having received anti-smoking training and those who have not.

Higher scores on the perceived efficacy and enthusiasm subscales are associated with GPs reporting greater anti-smoking activity in their previous surgery. This provides construct validity for the subscales. GPs who are more enthusiastic about giving anti-smoking advice or who have a greater belief in the efficacy of their advice would be expected to report more advice-giving. Additionally, it is expected that higher scores on the perceived efficacy subscale are associated with GPs having received training in how to help smokers quit. Perhaps the training could have convinced GPs that they were more effective with smokers or those who considered themselves more effective might be more likely to undertake anti-smoking training.

As the two subscales have good internal reliability and initial tests of construct validity indicate their validity, they have potential for use in selecting GPs with diverse views on the subject of giving advice about smoking. Given the clustering of perceived efficacy and enthusiasm scores around their medians it seems logical that any sampling of GPs should be done by selecting those from the tails and central portion of each distribution. A further paper describes how the scores were used in this way[14] to achieve a sample of GPs with diverse reported attitudes towards discussing smoking with patients. The concept of utilizing this type of instrument to sample GPs with diverse attitudes for qualitative studies is important. For example, standard instruments like the depression attitude questionnaire, which differentiates between psychiatrists' and GPs' attitudes towards depression,[15] could be used in a similar way to select a sample of GPs with varied attitudes towards depression. Choosing GPs with variation in their reported attitudes could be more effective for selecting GPs with diverse views on the subject of research than merely picking GPs because they work in different types of practices.

The process of deriving the Attitudes to Smoking Advice Questionnaire has two main drawbacks. Firstly, the content validity of the two subscales may not be completely addressed. There could be factors which influence GPs in their use of routine consultations for anti-smoking discussions which are not covered by the attitude statements. Rigorous, qualitative exploration of these issues with GPs during questionnaire design would have been preferable to help maximize content validity. Secondly, starting with a much larger bank of attitude statements and refining the questionnaire over a number of mailings would have also been preferable. Unfortunately, this was beyond the scope of this study, but a recently-published review[16] has suggested how researchers can mix qualitative and quantitative methods to produce similar scales for use in health services research.

This paper shows that with limited resources it is possible to design a survey instrument which is valid and reliable for measuring GPs' attitudes towards giving anti-smoking advice. The Attitudes to Smoking Advice Questionnaire appears to be appropriate for use in sampling GPs with diverse reported attitudes towards discussing smoking with patients. Researchers should consider using this type of instrument when GPs with varied attitudes on specific subjects are required for qualitative studies. Well-validated questionnaires which categorize GPs by their reported attitudes may be more effective than other methods of systematic sampling[1] in the selection of research subjects with diverse attitudes or behaviours.

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Appendix

Attitude statement scoring

Below are two examples of questions with scoring explained:

Key

SA = strongly agree; A = agree; TTA = tend to agree; TTD = tend to disagree; D = disagree; SD = strongly disagree

1. Discussing smoking with all presenting smokers is not an appropriate use of my time.	SA	A	TTA	TTD	D	SD
2. I can be very effective in persuading some of my patients to stop smoking.	SA	A	TTA	TTD	D	SD

Responses to individual questions on each scale scored up to 6 points. A high score was intended to measure strongly positive attitudes towards giving anti-smoking advice and a low score the opposite. Question 1 above would be awarded 1 point for a response of SA, up to 6 for SD. This would be reversed for question 2, with SA scoring 6 points through to SD scoring 1.