

Identifying dentists' attitudes towards prevention guidance using Q-sort methodology

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Objective: To gain insight into the attitudes and motivating factors of dentists working in the English National Health Service (NHS) towards prevention guidance. **Design:** Q-methodology: an established hybrid quantitative/qualitative technique used in the social sciences to categorise subjects based on their views by considering factors as part of their overall decision-making profile. **Setting:** General Dental Practices offering care under an NHS contract. **Subjects and methods:** NHS dentists (n=26) placed 36 statements about prevention guidance derived from an earlier study into a distribution grid that ranked the statements from “most agree” to “most disagree”. Principal components factor analysis was applied to determine the principal patterns in the rankings of statements. **Results:** Analysis indicated a total of six distinct profiles within the responses, of which three profiles had at least six dentists loading onto them. The first profile was strongly characterised by dentists who appear motivated to provide prevention but financial and time constraints prevent them from doing so. The second was characterised by dentists using prevention guidance but restricting its use to only certain patients. The third was characterised by dentists who appeared “health-focused”. They placed importance on working to prevention guidance, but were keen to have greater patient and professional support in achieving this. **Conclusion:** In this group of dentists Q-methodology identified three main profiles to the delivery of prevention guidance.

Key words: health promotion, oral health, general dental practitioners, England, methods

Introduction

Prevention is the cornerstone of clinical care and is fundamental in providing patients with long-term oral health. A comprehensive review of the National Health Service (NHS) in England in 2007 considered how public funds should be spent to enable the delivery of a responsive, high quality health service with a stronger focus on patients. One of the report's key recommendations was to improve health outcomes and the effectiveness of care through evidence-based prevention (DoH, 2008).

Dentists in primary care provide the principal route for individual patients to receive prevention advice and treatment. But despite the importance of prevention little evidence has been found about the motivating factors of dentists for delivering prevention under the auspices of the NHS primary care dental services contract. A published evidence summary found a lack of evidence relating to dentists' perceptions of prevention and its application in practice (Fox, 2010). It recommended greater use of qualitative research to better understand dentists' views in relation to this important aspect of clinical care.

The publication of the evidence-based clinical guideline ‘*Delivering better oral health – an evidence-based toolkit for prevention*’ in England by Public Health England (PHE, 2014) offers an opportunity to study this question as guidance has been available for some time to direct dentists preventive activities. The guideline is an important milestone in the ambition to re-orientate primary care dental services to a more preventive model of care. Despite this an initial literature search revealed no information on

dentists' attitudes to the guideline or information relating to factors which influence its implementation. These are crucial issues to understand if implementation is to be successful and current health policy is to be implemented.

A previous questionnaire study by the authors (Witton and Moles, 2013) investigated the range of ‘barriers and facilitators’ to implementation of the evidence-based toolkit and found that in the dentists surveyed a wide range were reported with no single factor viewed consistently as more important than any other. However, the method used prevented any further exploration of the responses given. Further research was therefore undertaken using Q-methodology with the aim of providing insight in to the common viewpoints or ‘*social perspectives*’ of dentists towards delivering prevention using the toolkit.

Methods

The study was given ethical approval by the NHS South West Research Ethics Committee (H10/HO203/71).

Q-methodology is a hybrid quantitative-qualitative method predominantly used in the social sciences (Watts and Stenner, 2005). It can be defined as ‘*providing a foundation for the systematic study of subjectivity, a person's viewpoint, opinion, belief, attitude and the like*’ (Brown, 1993). It has been used in dental research to investigate motivation for orthodontic treatment, attitudes towards a school-based toothbrushing programme and parental attitudes towards the oral health of their children (Prabakaran *et al.*, 2012; Trubey and Chestnutt, 2013; Vermaire *et al.*,

2010). In a Q-study participants are presented with a sample of statements on cards about the topic of interest. Respondents are then asked to rank-order the statements on a grid (ranging from “*most agree*” to “*most disagree*”) from their own individual point of view (Cross, 2005; Watts and Stenner, 2005). As there can only be a certain number of viewpoints or opinions about a topic, Q-methodology does not require large numbers of participants because the aim is to explore the range and diversity of perspectives on a topic, and not to quantify the number of people who might express them. By Q-sorting, people give their subjective meaning to the statements and by doing so identify their personal profile. The results of Q-methodology are therefore attributable to a population of viewpoints rather than a population of people. In this way the method can be useful in exploring preferences, motives and goals, i.e. aspects of personality having a great influence on behaviour but which often remain unexplored (Cross, 2005; Watts and Stenner, 2005).

The current study used 36 opinion statements (Table 1) derived from an earlier study (Witton and Moles, 2013). Following the method described by Brown (1993) the data generated from the earlier study was grouped into theme areas and through an iterative process the large number of potential statements generated was condensed down to the statements to be presented to participants. The main objective for this part of the study was to generate a miniature concourse about the topic by selecting statements which are understandable and sufficiently different from one another to ensure participants are likely to have an opinion about them. The Q-method is based on the recruitment principles of qualitative research and a convenience sample of 26 dentists working under the NHS primary care dental services contract was recruited to the study. Each participant was given an instruction card explaining the procedure and how to complete the task. Written positive consent was obtained before the task.

Table 1. The 36 opinion statements about prevention (unordered list)

<i>Statement</i>
1 It is difficult to give prevention to patients from different backgrounds to my own
2 I would offer more prevention if fellow dentists did the same
3 The protocols in ‘ <i>Delivering better oral health</i> ’ are too difficult for me to follow in everyday practice
4 I give prevention only if patients ask for it
5 I can only provide the type of preventive care recommended in ‘ <i>Delivering better oral health</i> ’ under private arrangements
6 It is not my role to deliver prevention
7 I find it hard to give prevention to patients who seem healthy
8 It is not worth offering prevention to un-motivated patients
9 ‘ <i>Delivering better oral health</i> ’ does not fit my ways of working in a busy health service practice
10 I believe some of the guidance in ‘ <i>Delivering better oral health</i> ’ is incorrect
11 I want to apply ‘ <i>Delivering better oral health</i> ’ in practice but my dental contract does not allow me to
12 I do not believe that prevention works
13 I would prefer ‘ <i>Delivering better oral health</i> ’ in a different format
14 I dislike clinical guidelines preferring to make my own decisions
15 I have problems following new guidance, instead I prefer to use my experience and do what works for me
16 I want more support from the health service in implementing the recommendations in ‘ <i>Delivering better oral health</i> ’
17 The biggest barrier to me delivering effective prevention are my patients
18 ‘ <i>Delivering better oral health</i> ’ is the first place I look when I have to devise a prevention strategy for my patient
19 ‘ <i>Delivering better oral health</i> ’ is a threat to my clinical autonomy
20 I am paid to treat disease and not to provide prevention
21 It is not my role to give general health promotion advice as recommended in ‘ <i>Delivering better oral health</i> ’
22 I need training before I can work to the guidance contained in ‘ <i>Delivering better oral health</i> ’
24 Delivering this type of prevention can only be achieved with skill-mix in my practice
25 I do not have the resources or space to deliver prevention effectively and efficiently in my practice
26 If I worked to ‘ <i>Delivering better oral health</i> ’ I would be financially disadvantaged
27 I need to see an example of ‘ <i>Delivering better oral health</i> ’ working in practice before I decide if I will apply its recommendations
28 There is not enough time to follow every bit of guidance in ‘ <i>Delivering better oral health</i> ’
29 I would do prevention only if I was properly paid for the time it takes
30 ‘ <i>Delivering better oral health</i> ’ has changed my practice for the better
31 There should be a patient version of ‘ <i>Delivering better oral health</i> ’ to improve compliance with prevention
32 The problem with ‘ <i>Delivering better oral health</i> ’ is that most dentists don’t know about it
33 There are too many prevention guidelines to follow
34 I think some of the guidance in ‘ <i>Delivering better oral health</i> ’ is out of date
35 It is a waste of resources to offer prevention to all patients
36 I think all prevention should be delegated to other staff leaving dentists to do treatments

was started. They were then given a pack of randomly numbered cards, each card containing one of the statements and were asked to place the cards on the Q-grid according to their own point of view about the content of the statement. Each participant was instructed to read through all the statements first, to get an idea of the range of statements presented to them. They were then encouraged to split the cards into three piles; a pile for statements they tended to disagree with, a pile for cards they tended to agree with, and a pile that were either not relevant or not applicable and place them into one of three boxes on the grid. This method helps to improve the efficiency of the Q-process.

The Q-grid simplifies the sorting task by providing a suggested distribution for the Q-sorting. This is in the form of a scoring chart (poster-sized) made up of columns with a space to place each statement in a column. The score was a continuum ranging from 'most disagree', -5, to 'most agree', 5, with the range of the distribution being determined by the number of statements. Each participant was given sufficient time to re-arrange the placement of cards and when each participant was satisfied with their placement they were asked to record the card numbers on a duplicate grid.

Q-data were transcribed to SPSS v17 for factor analysis. Factor analysis is a mathematical technique which involves taking a large set of variables and reducing the data to a smaller set of factors or components to look for patterns in the data. This is done by 'clustering' similar variables under common sub-headings. There are three main steps involved in conducting factor analysis: 1, assessment of the suitability of the data for factor analysis; 2, factor analysis; 3, factor interpretation.

The factor analysis used in the Q-sort method enables groups of people with similar viewpoints to be identified by determining the principal patterns in the rankings of statements by producing a correlation matrix of each Q-sort. To optimise the separation and clarity between these factors, rotation is undertaken. Kaiser's criterion (also known as the Eigenvalue rule) is one of the most commonly used techniques to assist in the decision regarding the number of factors to retain. Eigenvalues reflect the amount of variation accounted for by the corresponding factor, with an Eigenvalue of 1 or more considered significant (Watts and Stenner, 2005).

Results

Factor extraction using principal component analysis initially identified six components in the factor matrix with an Eigenvalue >1. The first three components accounted for 49% of the observed variance. The components with an Eigenvalue >1 were then subjected to rotation to generate a pattern which could be more easily interpreted. Only factors with six or more respondents loading to them were regarded as significant and a composite Q-sort was created for each of these factors representing a typical respondent profile who loads to that particular factor. There were three such factors representing three distinct attitude profiles of respondents. Of the 26 respondents, 11 loaded to factor one, nine to factor two and seven to factor three. The total adds up to more than 26 because some dentists loaded to some extent to two factors while four dentists did not load to any of the three main factors.

Figure 1 shows the Q-grid model of statements associated with respondents who loaded onto factor one. This profile appears to be characterised by respondents who believe that prevention is a worthwhile venture (disagreement with statements 12 and 6) but they do not consider 'Delivering better oral health' to be useful when they need evidence-based guidance on prevention (statement 18). Whilst this profile indicates dentists are motivated to provide prevention, financial and time constraints (*the health care system*) appear to prevent these respondents from implementing any type of prevention guidance.

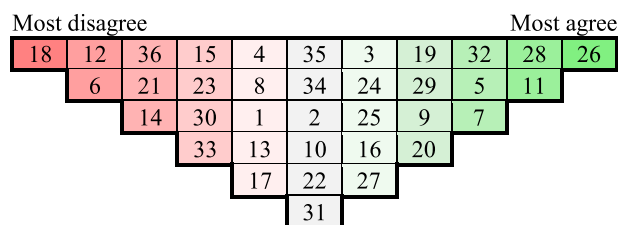


Figure 1. Factor 1 Q-grid model

Note: The numbers refer to the statement numbers in Table 1

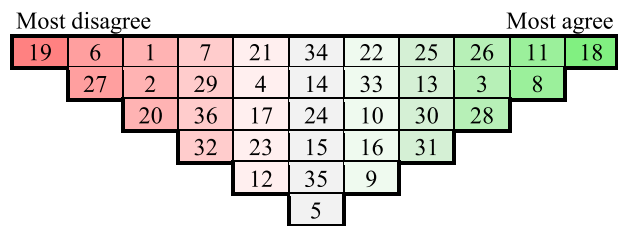


Figure 2. Factor 2 Q-grid model

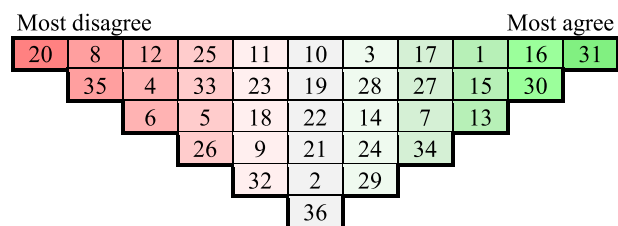


Figure 3. Factor 3 Q-grid model

The second profile (Figure 2) is characterised by respondents who appear to want to work to the guidance in 'Delivering better oral health' (agreement with statement 18) because they believe that prevention works (disagreement with statement 6). Dentists associated with this profile did not see the clinical guideline as a threat to their clinical decision-making, and these dentists appear to accept the guidance is deliverable (statements 19 and 27). However they have concern about implementing it within the NHS contractual system (statement 11), and as a consequence appear selective in their use of the recommendations, restricting them only to patients they perceive as motivated (statement 8).

The third profile (Figure 3) is characterised by respondents who appear motivated to provide prevention as an important part of their health service role (statements 20 and 35) with the appropriate support (statements 31 and 16). In contrast to profile two, dentists associated with this profile appear to value the benefit of prevention for all patients (statement 8). The overall profile appears to be characterised by a motivation to be health-focused which embraces the prevention guideline as a tool for better clinical performance (statement 30) and for the benefit of patients, but they seek additional professional and patient support to fully implement the recommendations from the toolkit.

Discussion

The Q-method was chosen to enable the many viewpoints held by the respondents about the topic to be grouped into a few shared '*social perspectives*'. This enables the individuals' viewpoints to be compared in a very detailed and consistent manner because the same statements are used by each person and they are forced to make a decision about them. It is then possible to explore how much the individuals agree or disagree with these perspectives and in doing so the results reveal their shared attitudes or '*person type*' toward a phenomenon.

Factor analysis produced three distinct profile subgroups based on the similarity of their overall responses to delivering prevention guidance in NHS dental practice. These results are of particular interest as Q-methodology can sometimes return hybrid results, with no significant profiles identified if respondents do not load significantly to a particular factor.

The factor one profile appears to characterise respondents who perceive the financial system in which they function and the time they have available to deliver prevention important barriers to implementing prevention guidance. Of particular note is the most important statement these respondents agreed with "*If I worked to prevention guidance I would be financially disadvantaged*" which exemplifies the tension found in dental practice which has dual functions to be a profitable business as well as providing ethical dental care. These findings correlate well with a postal questionnaire study conducted in Wales shortly before the existing dental contract was introduced. The researchers found that few dentists provided preventive care to adults due to inadequate reimbursement (Tomlinson and Treasure, 2006). Further research is needed to understand the structure and level at which these dentists would be prepared to deliver prevention.

The factor two profile has some viewpoints in common with the first one but typically not regarding the use of '*prevention guidance*'. This subgroup appears motivated to use guidance as a primary resource in their professional practice. This is encouraging and appears to detect a group of dentists who support clinical guideline production and implementation and the intended benefits of following such guidance. This confirms the findings from medical practice which demonstrate that clinicians are generally positive towards clinical guidelines despite the fact they do not always implement them (Cabana *et al.*, 1999). Furthermore, unlike previous dental research

this person-type group does not feel threatened by the guidance limiting their clinical freedom, perhaps a reflection of their recognition of the need to practice in an evidence-based manner (van der Sanden *et al.*, 2003). While this subgroup appears to be motivated to deliver prevention they placed considerable importance on who should receive it. This has been previously reported in the literature. Watt *et al.* (2004) revealed that a perceived lack of concern for oral health by patients affected the motivation to change in a sample of dentists working within the NHS. Similarly, this phenomenon has also been reported in relation to attempts to prevent dental decay in children. When dentists in the North West of England were interviewed about the preventive care they provide to young children, it was apparent they were more inclined to spend time providing prevention if they thought the child's parents were motivated (Threlfall *et al.*, 2007). While this may indicate a pragmatic approach to the deployment of finite resources, dentists are potentially at risk of projecting their personal value judgments onto their patients. This is an area that warrants further research to understand the implications of such actions which may undermine some patients' efforts to improve their oral health.

The third factor to be identified is that of a '*health-focused*' person-type who values prevention, its benefit to patients and the NHS. Unlike factor one, this attitude profile did not agree that finance and time were the most important issues in respect of implementing the guideline. Based on the statements in the most important zone it appears they regard greater professional and patient support as key issues to enhancing opportunities to fully implement the guidance. Unlike the other two main attitude profiles these dentists shared the viewpoint that the guidance '*Delivering better oral health*' had changed their practice for the better. This is a positive finding in light of the guideline's objectives and the evidence-base to date which has demonstrated that guidelines do not always result in improved patient care (Grol and Grimshaw, 2003). Dyer and Robinson (2006) in a mixed-method study investigating the implementation of general health promotion in dental practice found a dichotomous attitude among dentists. The dentists were either disease-orientated or health focused, with the latter adopting a holistic, prevention-focused approach to patient care. Our study has also identified this profile. Interestingly, the participants identified by the third attitude profile in our study rejected the statement that NHS resources are wasted on prevention. This appears to suggest that at least one profile is supportive of a preventive-model of care.

Overall these attitude profiles categorise most dentists into three distinct subgroups. The first factor reinforces what we know from existing research; that is financial considerations and time are significant factors for dentists. The second profile is characterised by a group of dentists who appear to want to work according to the guidance but they are prevented from doing so by projecting their personal social judgments onto patients. Finally, the third attitude profile identifies a prevention focused profile, which has embraced evidence-base guidance but wants more support in delivering it.

Conclusion

Motivation to deliver prevention guidance in this group of dentists working under the NHS contract varied. Each group had distinctly different reasons for deciding when and how to deliver prevention. By understanding the prevalent attitudes and grouping them into a limited number of profiles, this information may aid policy makers in tailoring strategies to improve preventive practice in NHS primary care dental services.

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