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The use of conversation mapping to frame key perceptual issues facing the general dental practice system in England.

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Objective: To demonstrate the use of a novel qualitative methodology namely conversation mapping, which can be used to capture differences in stakeholder perspectives and give a root definition of the problem in a complex policy area. The methodology is used in the context of the changes introduced in the English general dental practice system in April 2006, to investigate the key issues facing the system, as perceived by general dental practitioners (GDPs). ***Basic research design:*** From a broad trigger statement, three transformational statements were produced. Each participant recorded their contribution on a hard diagrammatic form as a 'map', with others responding with their own written comment, thus generating three conversation maps. Thematic analysis resulted in the generation of a preliminary model summarising key perceptual issues. ***Results:*** The five emergent themes identified were: financing, dentists' wants/needs, the role of the public and patients, system goals and policy level decision making. Financing was identified as the core category to which all other categories were related. ***Conclusions*****:** Conversation mapping, a methodology arising from a systems approach, can be used to develop a 'rich picture' of an oral health care system in order to define the core problem within this policy area. Findings suggest that GDPs identify the financing of the system as a fundamental source of problems within the general dental practice system. This appears to be at variance with the perception of policy makers, who report a more limited view, identifying the system of remuneration as the 'heart of the problem'.

Keywords: Financing, General Dental Service, policy, qualitative research

Introduction

General dental practices are the bedrock of the primary dental care system in the UK. More than 90% of the 17, 363 WTE dentists working in primary dental care in the UK, work in general dental practice (Department of Health, 2004). In April 2006 a fundamental reform of the English general dental practice system was implemented. Previously working as independent contractors to a centrally administered NHS system, general dental practitioners (GDPs) now work to locally negotiated contracts with Primary Care Trusts (PCTs). The system of remuneration for these dentists also changed at the same time; shifting from a centrally administered fee-per-item, to one based on Units of Dental Activity targets (Department of Health, 2006). This policy change has been accompanied by much debate in the dental profession in the country. After a period of initial optimism, with general support for the need to change, there has been widely publicised conflict, anxiety and frustration expressed by many involved in the system reforms (Ellman, 2005).

That these reforms have brought controversy is hardly surprising. The popular media is littered with examples of how policy initiatives concerning public management, and most notably education and health care, are festooned with problems (Davis, 2005; Grace, 2006). The press constantly admonishes policy makers over their lack of understanding around the key issues and their failures to engage with the various stakeholders within a policy problem area. In many cases, it is a clash of ideologies that underpins such a divergence of views and the differences in opinion are often portrayed in terms of one set of vested interests or another. However, many of these problems are complex and rarely, if ever, open to a solution by a single approach.

What is important within these debates is the sheer diversity of opinion, as the fractures that these generate are often areas where the root-cause of the policy problems can be seen to occur. What is needed is a means of capturing the subtle (as well as the not so subtle) differences in perspective that can exist within the various stakeholder groupings within a policy problem area. Even within the same stakeholder group a multiplicity of perspectives may exist and this ambiguity can be confusing. For example; even amongst English GDPs as a stakeholder group there may be a range of perspectives generated from different age profiles, whether there is the responsibility for and financial investment in dental practice ownership, the extent to which their dental practice currently operates within the National Health Service system as opposed to the private sector, and whether there is previous experience in contracting with the Primary Care Trust as part of a Personal Dental Service pilot (Barker and Dixon, 2000). What is needed are tools that will allow us to capture the worldviews held by people within an organisation and, perhaps more importantly, to capture the areas of ambiguity and misunderstanding that exists

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across these worldviews. One such technique is that of conversation mapping.

Our aim in this paper is to demonstrate the use of a novel qualitative methodology namely conversation mapping, which can be used to capture differences in stakeholder perspectives and give a root definition of the problem in a complex policy area. In this paper the methodology is applied to one particular policy problem area – the changes introduced in the general dental practice system in England in April 2006. The paper should be seen as exploratory and as a means of outlining the use of the methodology in practice rather than a report of a study generating findings related to the views of GDPs which is widely generalisable without further work. Thematic analysis of the data generated allows the construction of a preliminary model which summarises the key issues facing the general dental practice system in England, as perceived by GDPs. The analysis culminating in summarising findings in a model demonstrates how conversation mapping might be carried out and used; although further work would need to be undertaken to refine and test the model as being representative of the views of GDPs concerning the English general dental practice system.

A systems approach to health care: is the problem greater than the sum of the parts?

Part of the reason behind difficulties often experienced in arriving at an appropriate definition of the problem in the midst of a turbulent implementation of policy change, is because of the complex nature of the issues that are under consideration – a situation that is particularly evident within health care (Gattrell, 2005). One way of framing such complex issues is through a description of the 'system' within which the policy problem is located.

The notion of a systems approach has proved itself to be somewhat ambigious due to the different disciplinary 'origins' of the various strands of the literature. There is a large body of work that has come out of an engineering tradition that looks at systems in a 'hard', heavily quantified process. In contrast, there is a growing research base in what has become known as 'soft systems' (Checkland, 1999; Checkland and Scholes, 1990). In dealing with elements of health care, it is important to ensure that there is a balance taken between both approaches to the definition of 'systems issues'. Invariably, government favours a hard approach to examining systems performance - working on the assumption that if you can measure something then you can manage it (Brookfield and Smith, 2006). In order to explore the richness that lies beneath the resultant statistics concerning performance, it is important to consider the 'softer' issues around people, perceptions and behaviour.

For our present purposes, a system can be considered as a set of elements that interact together and are considered in a holistic way. They also operate within a dynamic environment (where the interaction with that environment is important), and they have important cognitive processes that operate at their core (Jackson, 2000; 2003). A key aspect of such an approach, and one that systems research shares with more recent research in complexity and systems, is that the interactions between elements of the system can generate 'properties' that had not been designed into the process and which will cause problems for the operation of the 'system in practice'. This is an issue that is particularly relevant for health care due to the diverse nature of the activities that fall under its remit, the number of intervening variables, the political (and social) context in which expectations around performance are contextualised, and the emergent nature of both disease and intervention(s) (Smith 2004a; 2004b).

In broad terms, it is possible to categorise systems as simple, complicated, complex or chaotic. Simple and complicated (as opposed to 'complex') are related to separate entities or discrete activities. In practice, simple systems are rare, as most systems are interconnected with others across both space and time. Complex systems are based on relationships, and have properties of self-organisation, interconnectedness and evolution. General medical practices, and indeed general dental practices are examples of complex systems, that are interconnected with their communities, bureaucracies, and other practices (Martin and Sturmberg, 2005). Most of their practice activities occur in the context of human relationships.

Wilson (2001) captures the nature of the problem relating to complex systems by observing that "An organisation unit containing people represents a much more complex situation than one which does not" and "the people who are incumbents of the many roles within the organisation have their own interpretation of what the role is and what it is they are trying to achieve. They will have their own interpretations of the relationship of their role to the organisation mission and they will have their own interpretation of the organisation's mission itself" (p. xiv)

In many respects, we rarely if ever seek to capture these interpretations that people have, even though the difference in worldview of those within the system will be important in causing the system to fracture at key points.

Conversation mapping is a technique used to explore complex adaptive systems through critical systematic discourse. It allows the complexity created by different perspectives, and the range of interrelated issues impacting on the system to be captured in a hard copy diagrammatic form as a 'map'. A conversation map is generated through engaging people with different perspectives of a nominated situation to have a 'conversation' concerning a salient aspect of the situation (called a trigger), but instead of talking to each other, they record the essence of their contribution by writing it on a 'map'. Others can reflect on the contribution and if appropriate may subsequently respond with their own written comment. The technique therefore has the added benefit of data collection without recourse to tape recording or lengthy transcribing processes. The technique enables all participants to be involved simultaneously, and captures the evolution of the sharing process. It therefore results in a large amount of material being captured within a short period of time. Unlike focus groups where the whole group is involved in the same conversation at the same time, conversation mapping allows discussion between combinations of participants on different themes at the

same time. It also ensures that views are captured from quieter members of a group and avoids the situation which may occur in focus groups where the conversation is dominated by more outgoing personalities who may steer the topic of discussion towards their own interests.

Method

Twelve general dental practitioners were invited, and nine agreed to participate in an evening discussion at the University of Liverpool School of Management. They were selected as having a range of experience of work within the general dental practice system. Some were identified through their previous involvement with committee work representing practitioners, and others identified on the basis of the profile of their dental practice (e.g. fully private practice, either a large or a small practice). Some practitioners were those working in private dental practices, others were working under GDS arrangements operating previous to the change in April 2006, and some were working under Personal Dental Service arrangements (where contractual changes had already been made to move away from a fee-per-item and a contract with the PCT was in place). Practitioners came from six different PCTs in the North West of England. The session took place in September 2005.

The 'trigger' statement put to the group was: 'What are the six main issues that you feel will impact upon dentistry over the next 12-18 months?' This trigger statement was deliberately broad to avoid pre-determining the focus of the subsequent discussion. The practitioners were given a small note pad with an adhesive backing strip ('post-its'), and asked to, without consulting colleagues, write each issue on a separate sheet. These were then gathered by the research team, who collectively laid them out and then grouped around three main emergent themes. Practitioners were then divided into three groups and each group was given the set of notes which appeared to be linked to one theme. Without any feed-back from the research team concerning how they felt the statements were linked, practitioners were asked to study the statements and compose a 'transformational statement' which would form the basis of a conversation map. This took the form of a question to stimulate discussion, and three such questions were thus produced from the emergent themes. Each was written within a circle in the centre of a large sheet of paper, and each sheet placed on a separate table within the room to form the basis of the maps.

Practitioners were each given a different coloured pen and asked to contribute any views or ideas to the maps which they felt were relevant. In this way the contribution of each participant could be traced through the conversation, and any clarification could be sought subsequently, if needed. Contributions were recorded by writing a response on the paper, circling it and linking this to the initial statement with a single line. The lines and contributions gradually branched out in different directions from the centre as the theme was explored, in the same way as a larger branch divides into large twigs and then into smaller twigs. Fig. 1 shows one of the transformational statements produced placed in the centre of the map, with the lines of discussion emanating from this in different directions. The participants were encouraged to visit each of the maps and then to circulate in order to contribute freely to each. The researchers were allowed to stimulate conversation or seek clarification by short questions or statements written on the maps which could be identified later as having originated from the research team. Practitioners were told to avoid making connections between different branches since this would move the process on from divergence to assimilation – a process undertaken later in the analysis of themes.

Analysis

Approaches to qualitative data analysis vary in terms of basic epistemological assumptions about the nature of the enquiry and the status of the researchers' accounts. Distinctions are not always clear cut, however and qualitative traditions and indeed individual studies often cross boundaries (Spencer *et al*, 2003). What is required in high quality qualitative research, is that the philosophy and the position of the researcher within the analysis is apparent, and a clear account of how early systems of classification evolved into more sophisticated coding structures and thence into clearly defined concepts is provided (Mays and Pope, 2000).

A fundamental principle underlying conversation mapping is that it is a method in which key issues arise from the analysis of the data contributed by the participants rather than being pre-determined by researchers. It is therefore appropriate that an inductive (where analytical categories to describe and explain social phenomena are obtained gradually from the data) rather than a deductive approach to analysis is used. Thematic analysis was therefore undertaken using an interpretive method using elements shared from grounded theory methods (Walker and Florence, 2006) and interpretive phenomenological analysis (Crist and Tanner, 2003). The grounded theory approach is appropriate for social research which focuses on human interaction, particularly where the researcher wishes to investigate the subjective meanings that people use when interacting with others in specific settings (Denscombe, 2003). Interpretive phenomenological analysis is also an iterative approach in which the researcher seeks to identify phenomena through the perception of the actors in a situation (Lester, 1999).

The processes involved in the analysis are outlined in Table 1. The statements within the conversation maps demarcated into 'bubbles' by the participants leant themselves to a 'line by line' or in this case 'bubble by bubble' open coding procedure. Concepts reflecting the substance of the data were identified independently by members of the research team, and concepts with similar content were grouped together to form higher order categories (main themes) after discussion with team members. These were reflected back to the participants by e mail correspondence, and their further comments incorporated into the analysis discussion.

Through a process of axial coding, connections between individual statements and thus between themes were sought. In grounded theory analysis this involves searching for patterns, relationships and comparing and contrasting different pieces of data. Within the data set generated by conversation mapping, axial coding was

Figure 1. *Conversation map*

Table 1. Summary of the main elements of the analytical process for emerging interpretation of the conversation maps

Elements of data analysis	*Activity*	*Involvement of the research team and participants*
Transcribing	Entire maps transferred to electronic files as Word documents	Shared with entire research team
Open coding	To identify main themes	Carried out by individual researchers and the discussed collectively by the team. Reflected back to participants.
Axial coding	To identify linkages between individual statements and themes	Carried out by individual researchers and the discussed collectively by the team
Selective coding	To identify a central theme and relationship to other themes	Developed through discussion between members of the team

assisted by the fact that in many cases the original statements were connected by participants on the map itself. In the mapping process individuals are able to identify linkages across threads of the conversations as they progress, which may be recorded as the same (or similar) comment or statement recurring in a number of places on the map(s). In this way the participants themselves contribute to the analysis directly in terms of identifying linkages between statements as the maps progress. Conversation mapping brings in multiple perspectives from the outset, facilitating the 'comparative analysis' of statements from individual participants in the data as they form part of a flow of dialogue from multiple participants relating to a theme. This simplifies, strengthens and speeds the analysis as factors can be seen to recur across participants much more readily than if individual interviews were being systematically analysed.

Further connections by the researchers were also made at this point, between the lines of conversation, and between issues raised in the three conversation maps. Often at this stage when grounded theory methods are used, more data is collected to test the new emergent ideas, stopping when data is saturated. In this paper however, the study was limited to the collection and analysis of data generated from conducting a conversation mapping exercise on one occasion in order to demonstrate the technique of conversation mapping as clearly as possible. The final step of analysis involved selective coding in order to identify the conceptualised story. This involved looking for a core category, or central theme which linked all the categories together. All other higher order categories (main themes) were then related to the core category in order to develop a preliminary theoretical model.

The team involvement in this analysis reflects similar methods used in interpretive methods elsewhere in healthcare, including Crist and Tanner (2003) who describe an iterative process of analysis through an 'interpretive team' who may rename and refine themes through discussion within the team. They suggest that it might be helpful to include experts in analysis as well as people who have experience of the phenomenon of interest, and the team in the present study included individuals who were dentally qualified as well as those experienced in qualitative research. However, a non-dentist was selected to lead the conversation mapping session in order to reduce potential bias in the process.

Results

Although the GDPs were given a broad trigger statement, the transformational statements produced by the GDPs indicated that the key issues of concern to them were in relation to implementation of the forthcoming reform of the general dental practice system.

The transformational statements produced by the practitioners were:

- How can a system be designed to satisfy the needs and expectations of dentists and patients? (Fig 1).
- What service does the government want to buy and what should it cost?
- Are the Department of Health telling us exactly what they want to achieve?

The first conversation map is seen in Fig. 1 and illustrates the divergence of participant views from a single transformational statement. In the analysis, five themes were developed and labelled: financing, dentists needs/wants, the role of the public and patients, system goals, and policy level decision making. Table 2 sets out these five themes alongside their lower order descriptive categories.

The first theme 'Financing' was related to three lower order descriptive categories. Firstly, whether there were limits on the level of funding of the general practice system (1a). Some participants perceived that the funding in the system could be infinite, when patients' willingness to pay was taken into account, whereas others put forward the view that there was also a limit in the extent to which patients were willing to pay. This issue was therefore interconnected with the issue of rising expectations on behalf of patients, and the pressure this put on the overall system which had limited financing.

A second lower order descriptive category was the relationship between level of financing and the overall goals of the system (1b)

'Access', 'Core service',
'Both',
'All singing + dancing',
'Limits imposed by finances'

A third descriptive category within the financing theme concerned: the impact that limits on financing have on being able to address the needs of dentists (1c)

'What are the needs of dentists?',
'Rewards',

Table 2. Five main themes with lower order descriptive categories

Main Themes	*Lower order descriptive categories*
1. Financing	a) Is there a limit on the level of funding of the general practice system?
	b) How does the finance in the system relate to the goals of the system and vice versa?
	c) Does finance play a role in the system being able to satisfy the needs of dentists?
2. The needs and wants of dentists	a) The wants of dentists: freedom, choice
	b) The needs of dentists
3. The role of patients and the public	a) Uncertainty concerning what patients/the public want in terms of service to be provided
	b) The role of patients/the public in determining system goals
4. System goals	a) Debate about why the system was being redesigned
	b) Are the goals of the system based on long term dental care provision for patients and improvement of the oral health of the population, or are they short term goals of giving access to dental care for patients with acute problems?
5. Policy- level decision making	a) Short-termism in policy making
	b) Lack of trust in policy makers

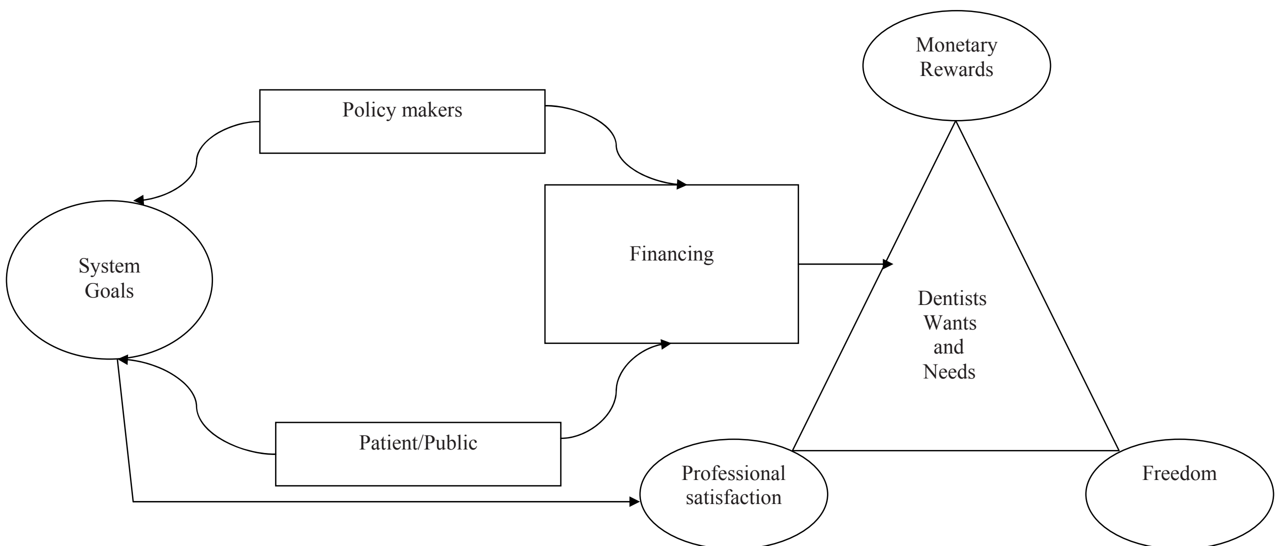

Figure 2. *Preliminary model of key issues facing the general dental practice system in England*

'Professional satisfaction', 'Monetary',
'Are these compatible?',
'Yes, if funding is adequate'.

The second main theme 'the needs/wants of dentists' (2a) identified separately the a) 'wants' of dentists as '*Freedom, Choice*', with '*Dentists free to choose patients*' perceived as important and b) the 'needs' of dentists as the various elements of: '*Variety*', '*Quality of Life*', '*Security, pensions etc*', '*Job satisfaction*', '*Rewards*'. A 'want' to help patients was also identified, with a caveat that there needed to be some sort of reward for the dentist. '*We also want to help people, but not for free*'.

Success was seen as '*Going home happy with a clear conscience*'.

'The role of the public and patients', emerged as a main theme with three lower order descriptive categories: whether there was an clarity about what patients/public wanted from a National Health Service – whether they just wanted the cheapest service possible (3a), whether the dental service defined by the Department of Health was in line with what patients wanted (3b) and whether dentists should have a role in influencing what the patient/public want by marketing dentistry (3c).

The theme 'system goals' encapsulated the debate as to why the system was being re-designed (4a), and whether the goal of the system was based on long term dental care provision for patients and improvement of oral health of the nation, or access to dental care for patients with acute problems (4b). Under the first of these lower order descriptive categories GDPs questioned why the current changes to the dental practices systems were being introduced.

'*Do we know why we are redesigning the system? Who was unhappy? With what? Does the new system address these answers?*'

There was some perception that the system was being redesigned to improve the mechanism for payment of dentists rather than for other reasons:

'*Department of Health have a system designed to pay dentists not treat patients needs or improve health*';

'*Service should be defined by patients' needs not the government need to pay NHS dentists*'.

Secondly, several elements of the debate concerned whether the system should be set out to achieve oral health for the population:

'*Oral health for the nation',*

'That's what (the government) should want, but does it really win votes?'

'*It (the government) should want investment in longer term prevention*.

Several comments emerged concerning policy-level decision making, and so this became a main theme. There was a perception that policy decisions were taken for short term reasons (5a) and were politically driven by a wish to please the electorate and a lack of trust in those making the decisions (5b). The first of these themes was seen in statements such as:

'*There is no longer a commitment to care. Only crisis management for political expediency*'.

The lack of trust category (5b) was seen in participant statements such as:

'*Government are 'non starters' as business partners. Untrustworthy.*

'*GDPs must trust paymasters and vice versa. Until this is achieved we will get nowhere*'.

A preliminary model is given in Figure 2. 'Financing' was identified as the central theme, to which all other themes were related. The ability of the system to both satisfy dentist wants/needs in respect of monetary rewards and professional satisfaction which is related to the quality of care that they can provide for their patients, is limited by the capacity of the finance within the system to support this. The central theme of financing is in turn influenced by the values and attitudes of both policy makers and the public/patients. Policy makers and the public/patients also influence the determination of the overall system goals. The system goals, for example, in placing emphasis on long term continuing care for patients and improvement in the oral health of the population also contributes to professional satisfaction.

Discussion

A key element of policy change is the ability of policy makers to effectively capture the views, needs, and task elements associated with the various elements of the system as it is currently configured, as well as to make some assessment of the impact that the future policy state will have upon system performance. In complex areas such as health care, the core task of system description has often proved to be a major problem for both policy makers and practitioners. This study maps the various elements impacting on the dental practice system from the GDP point of view. They generally include interconnecting elements removed from the day-to-day business of dentistry, and this demonstrates why a systems approach is so useful in defining this complex policy area. It is interesting to note that within the conversation, the questions 'Why are we redesigning the system? Who was unhappy, with what? '

'Does the new system address the problem?' were raised, indicating that even in the midst of a fundamental change in policy governing the system, there was some unease that the root problem with the system is not clearly identified.

A regulatory impact assessment (RIA), was published by the Department of Health in December 2005, (Department of Health, 2005) prior to the implementation of the changes to the English general dental practice system. The document briefly describes the issue which has given rise to a need for regulation and compares various possible options for dealing with that issue. It quotes the findings of the 2001 Health Committee inquiry on 'Access to NHS Dentistry' and identifies the general dental service remuneration system as the 'heart of the problem'. It concludes that the current fee structure was encouraging the move of dentists out of the NHS, and also discouraged preventive dental care and the continuing maintenance of good oral health. This perspective seems

at variance to the perceptions of general dental practitioners identified in the conversation mapping exercise. They identified the root problem as the financing of the system, rather than the more limited issue of the system of remuneration for dental practitioners.

Does this apparent diversity of opinion represent an area giving rise to conflicts between various stakeholder groups? It would be interesting to also undertake this exercise among those involved in different levels of policy making, and even among groups of patients/the public. Mixed stakeholder groups would also provoke useful conversations in which the preliminary model could be developed further. Validation or 'trustworthiness' of the developing theory is based on constant comparison (Strauss and Corbin, 1990). Conversation mapping as a technique lends itself particularly well to validation through additional data collection, for the conversation map is neither time nor geographically bound in its creation. The map can be moved from location to location to ensure many separated perspectives are captured. New participants can quickly engage with the conversation that has gone before, adding their contributions, be they new themes or additions to themes already presented. The map may even be displayed in a public place for two or three weeks so that potential participants can contribute and re-contribute as they are able.

Conclusions

This paper has sought to outline a technique that is thought to have validity in terms of helping to frame discussions around complex policy issues. The technique of conversation mapping is thought to provide a useful means of framing the worldviews of practitioners around complex policy debates. The development of the conversation maps also provide researchers with a useful means of helping to shape the root definition of the problems that is essential to a soft systems approach (Checkland and Scholes, 1990).

The use of the technique needs to be explored further, ideally in conjunction with other means of data collection, and in other policy contexts. What is clear from this initial study is that the approach has merit within policy analysis and should be tested further. One of the obvious benefits of this approach is that the information that is being analysed is transparent and open to scrutiny. It is possible for others to question the nature of the interpretation made by researchers and the maps also provide a useful starting point for focus group discussions with a wider group of respondents. As such, it is suggested that the technique of conversation mapping should be used more extensively within health-related research as a means of framing policy problems.

This paper also provides an interesting insight into the world view of dental practitioners working within the English dental practice system. Their perceptions of issues impacting on the system appear to extend beyond the immediate confines of the dental practice setting and systems of payment and contracting. The way the system is financed, the role of policy makers and the aspirations of the patient and public are also seen as important factors. More work to explore these issues from the perspective of different stakeholder groups would provide further insight into the complexity which exists in this policy area.

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