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REVIEW ARTICLE

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A scoping review of qualitative research in peer-reviewed dental publications

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Abstract: *Objectives:* Qualitative research designs are being used increasingly in dental research. This paper describes the extent and range of dental research in which qualitative methods have been employed as well as the techniques of data collection and analysis preferred by dental researchers. *Methods:* A scoping review was conducted to locate studies published in dental journals, which reported the use of qualitative methods. Data concerning the focus of the research and the reported qualitative techniques were extracted. *Results:* Studies included in the review totalled 197. The majority of qualitative research captured in this scoping study focussed on three main areas: dental education, professional dental and dental educators' activities and experiences and the patient/public perceptions. Interviews and focus group discussions were the most commonly selected techniques for data collection. *Conclusions:* The majority of the studies included in the scoping review had a focus on education of dental professionals the activities of dental professionals or the reported perceptions of or experiences with dental services by patients or members of the public. Little research was located, which explored peoples' personal experience of dental conditions. Research reported in dental publications has a heavy bias towards the use of focus groups and interview data collection techniques.

Key words: dental research; qualitative research; scoping review

Introduction

Traditionally, research in dentistry and oral health has been largely quantitative in its approach. Like much other biomedical research, it has engaged techniques that are empirical, experimental and deductive and lead to generalization. These approaches have served physical and biological sciences well but, as notions of health have changed to encompass factors beyond pathophysiology (e.g. quality of life), serious limitations in purely quantitative approaches to answer important questions about health have been identified (1, 2). To a large degree, qualitative strategies of enquiry have arisen in response to a need for more appropriate ways to research non-biological impacts of health.

The term 'qualitative research' refers to a wide range of methodological approaches that aim to generate an in-depth understanding of people's experiences. Focussed on the social world, researchers use a variety of techniques to explore the subjective experiences of individuals. Sometimes referred to as the 'word science', this approach to research relies heavily on the stories that people tell which can assist in exploring

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people's perspectives, motivations and attitudes (3). Qualitative methodologies are particularly suited when we are interested in researching experiences from the standpoint of those who are living them (4). Ontologically and epistemologically grounded in an interpretive paradigm, qualitative research is a flexible science with a focus on meaning and understanding. It enables researchers to gain information about areas in which little is known (5, 6).

In some health science fields, qualitative techniques have gained equal standing with traditional quantitative techniques to the point where authors no longer feel they need to spend a significant amount of time justifying their selection of these techniques. Further, qualitative studies are now routinely published in many of the major medical journals signalling a growing acceptance of the legitimacy of qualitative approaches in healthcare research and practice. Working from an Evidence-Based Practice (EBP) framework, the randomized controlled trial (RCT) has become widely accepted as the gold standard of research evidence; however, it has become increasingly understood that not all clinical questions can be answered by this method (7, 8). With its roots in the social sciences, qualitative research has been acknowledged as being necessary and complementary to the more traditional quantitative designs (9, 10).

As with other health disciplines, qualitative research can broaden the evidence base for dental practice and is slowly beginning to appear more often in the dental and oral health literature (11–13). Whilst quantitative methods have been widely used to quantify the effects of dental interventions, using qualitative methods, we may be able to improve patient outcomes as we ask questions about the patients' experiences of the dental encounter (14–16). A cursory survey of the literature suggests that focus groups and interviews are being used increasingly in dental research to explore a wide range of topics [see for example Newton *et al.* (14); Robinson *et al.* (17); Amin *et al.* (18); Gussy *et al.* (19)].

Qualitative research should be equally rigorous, transparent and credible when compared to traditional quantitative approaches. There has been a recent publication critically appraising published qualitative dental research in a manner that has parallels with the systematic review process (20). This paper has applied a published quality appraisal tool. Using this approach with qualitative research, the authors have used exclusion and inclusion criteria, meaning that only a small proportion of the total research is appraised. Although these techniques are useful to gain a sense of the degree to which qualitative methods are being applied appropriately, it does not allow the development of an understanding of the way in which techniques are being applied and where they are being used. For example, what are the fields or topics within dentistry to which qualitative methods are being applied? What are the qualitative techniques that dental researchers prefer? What are the areas that qualitative methods could be more effectively used?

This paper reports the results of a scoping review of qualitative research published in peer-reviewed dental journals. The scoping review is a technique for exploring the breadth and extent of research being conducted in a particular field with similar rigour and transparency to systematic reviews and are being used increasingly in the social sciences (21). Scoping studies aim to systematically search and locate literature on a particular topic with the intention of 'mapping the territory' (21). Although the search process should give scoping reviews a reliable, replicable and unbiased picture of the existing research, unlike systematic reviews, they do not typically report analysis of the quality of such studies. There may also be varying degrees to which data are extracted from each of the included studies and subsequently reported in the scoping study depending on the purpose of the study (21). Scoping studies can be particularly useful for discipline or topic areas where the extent of qualitative research activity is largely unknown.

Method

Scoping reviews provide flexibility to progress through a series of stages and repeat steps where necessary (22). Given the breadth of the study, and mindful of difficulties of searching for qualitative research noted by Shaw *et al.* (23), this study followed a number of progressive steps, some of which were repeated with modifications. The development of the search strategies was an iterative process.

Because the focus of the present study was to identify the way that qualitative research was being used and published within the professional discipline of dentistry, only research published in peer-reviewed dental journals was included. Research pertaining to dentistry and oral health but published in non-dental peer-reviewed publications was not sought [for broader review see Masood *et al.* (20)].

Inclusion criteria:

1 Empirical primary research.
2 Primary technique for data collection is qualitative.
3 Published in English.

Exploratory searching using various databases was conducted to determine the most efficient and inclusive search. The search strategy adopted was broadly defined to encompass both dentistry and oral health. Initially, the search terms ('Dent* or oral) and (qualitative and research)' together with the time criteria of between 1999 and 2010 were used. A low initial yield and failure to identify qualitative research known to the authors resulted in a broadening of the search by including the following search:

1 Qualitative and research.
2 Qualitative and research or interview*.
3 Qualitative and research or interview* or focus group.
4 Interview* or focus group.

This preliminary process identified various limitations according to the database and also to the search terms employed. After discussion within the research team, the decision was made to use only those dental journals included in the Australia Research Council's (ARC) Ranked Journal List. The ARC Ranked Journal List consists of over 20 000 unique

peer-reviewed journals and is used to rank journals for use in the Excellence in Research for Australia (ERA) process (24). In 2010, the list contained 179 dental journals.

The final search identified 235 papers of which 219 met the inclusion criteria. Two screening questions were then applied to all remaining studies. The two screening questions are those proposed by the Public Health Resource Unit in the Critical Appraisal Skills Program quality appraisal tool (25). The questions are the following: (i) Was there a clear statement of the aims of the research? and (ii) Is a qualitative methodology appropriate? Studies where the answer to one or more of the screening questions was no were excluded (see Fig. 1). This left 197 papers for inclusion in the review.

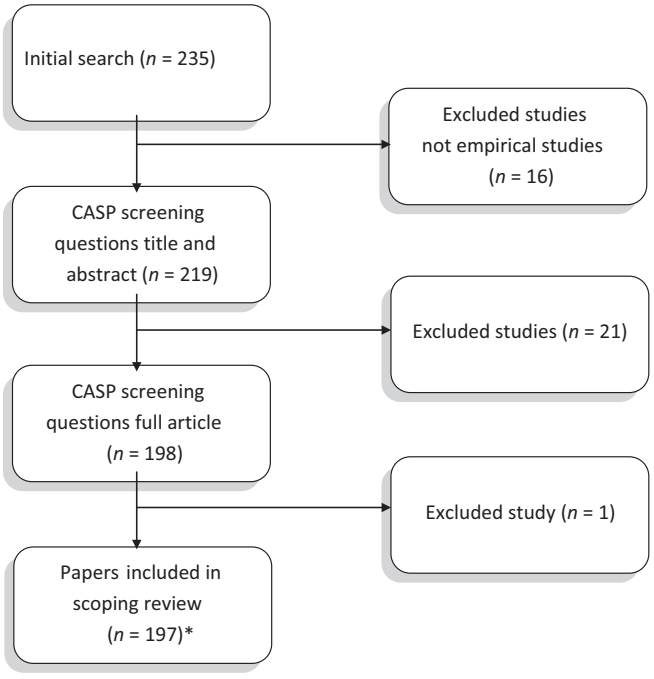

Fig. 1. Flow diagram showing the retrieval of papers.

Following the inclusion process, the included studies were imported into an Endnote database and were classified into (i) area of investigation, (ii) method of data collection and (iii) method of data analysis. Initially, the research team developed 11 areas of investigation. The data collection technique and the data analysis technique were assessed and recorded in the following way. If the authors specifically reported a technique, this was recorded; if this was not explicitly stated, the paper was read in full and data collection and/or analysis techniques were classified by the reviewer; and lastly, where it was unclear even after reading the whole paper what the techniques were, they were classified as 'not specific'.

The initial classification was carried out by a single author (JA) using the agreed classification system (see Table 1). A subgroup of papers (10%) was then classified by a second author (MG) and then assessed for level of agreement. It was found that there were high levels of agreement for both data collection and analysis techniques. Agreement for 'area of investigation' was lower (≈66%) although this could be considered a good level of agreement. The authors met to discuss the lower level of agreement in this area, and through this process, it was determined that some of the initial definitions of inclusion and exclusion for the 'areas of investigation' were somewhat ambiguous. The categories and definitions were then collapsed into eight categories (see Table 1), and the definitions were tightened. Ten percent of the papers were then reviewed by the third author (VD-S) and achieved an 89% agreement.

Results

The purpose of the study was to describe the use of qualitative research in dental publications. The overall patterns are reported below. The results are presented according to (i) the main area of investigation of the paper, (ii) the reported method and (iii) the reported analysis technique.

Table 1. **Definition for categorization of studies**

Area of investigation	Definition
Child/adolescent	Qualitative research describing the perceptions and actions of children (aged 0–12), adolescents (aged 13–18) and/or their parents in relation to dental health and access to services (with the exclusion of particular social groups)
Dental education	Qualitative research describing the experience of dental tertiary education from the perspective of undergraduate and postgraduate students and academic staff
Dental management	Qualitative research where the primary focus is on management and/or organization of a dental practice, system or service
Dental/oral condition	Qualitative research that describes the experience, perception and access to services in relation to specific dental/oral conditions
Elderly/disabled	Qualitative research describing the perceptions, actions and experience of the elderly and disabled in relation to dental health and access to services (with the exclusion of particular social groups). (For the disabled, this includes studies describing the experience of carers/family members)
Patient/public perception	Qualitative research that focuses on the experience and perception of adults in relation to general dental health issues and appropriateness of services
Dental professional	Qualitative research describing the activities, perception and experience of dental health professionals
Social group/position	Qualitative research with a primary focus on a particular social group (ethnic/cultural/SES position)

Table 2. **Identified data collection methods**

		Identified methods								
Topic category	Total records	Int	FG	MM	DA	OB	CIT	NGT	DM	Oth
Child/adolescent	20	14	6	3	1					
Dental education	28	16	5	4	5		2	1	1	
Dental management	22	15	7	7	2	3				2
Dental/oral condition	20	18	2		1					
Elderly/disabled	13	12	2	4						
Patient/public perception	30	20	10	7		1		1		
Professional	44	32	12	9		1				2
Social group/position	20	13	11			1				
	197	140	55	34	9	6	2	2	1	4
Total	253*	Nominated methods								

*More than one qualitative method was used in some studies.
CIT, critical incident technique; DA, document analysis; DM, discourse method; FG, focus group; Int, interview; MM, mixed method (where a qualitative method is used in combination with quantitative methods); NGT, nominal group technique; OB, observation; Other, conversation mapping, delphi technique, case study, not specific.

Area of investigation

Table 2 presents the results for the areas of investigation, which were the focus for the included papers. Three areas of investigation dominate the included studies; dental education (n = 28, 14%), dental professional (n = 44, 22%) and dental management (n = 22, 11%) categories. As a result, almost half of the included published research dealt with the experiences of dental professionals themselves and the structure and nature of the service delivery systems in which they work. Within the 'dental professional' category, the major areas of investigation were dental practitioner's views of dental procedures, their decision-making processes, factors influencing or constraining their practice and their experience with particular population subgroups. The dental education papers mainly focused on undergraduate experiences or the evaluation of courses offered at this level. The remaining eight were classified as educational described issues concerning academic staff, postgraduate activities and post-qualification vocational training. The majority of those included studies classified as 'dental management' were conducted in the United Kingdom and looked at national-, regional- and practice-based dental service delivery primarily related to the National Health Service. Studies included in this latter category, not surprisingly, were published mostly in the British Dental Journal.

The other substantial area of investigation (n = 30, 15%) is adult patients' perceptions of general dental health issues and the way they perceive dental services. This category contained studies covering a wide range of issues as perceived by patients and the public. At a public level, the areas of investigation included community water fluoridation, the evaluation of dental services and oral health-related quality of life. At an individual level, the areas of interest were consent, dental anxiety and the use of dental services.

The personal experiences of dental illness and those of population subgroups make up a small proportion of the total included studies. Specific dental conditions examined varied widely but included oral cancer and periodontal disease. These studies were reported in a range of journals and across a range of countries. Population subgroup classifications include the child and adolescent, elderly/disabled and social group/position. Together these classifications accounted for 53 studies (27%) in total. Within the child/adolescent category, the children studies (aged 0–12) chiefly examined the experiences of the parent/carer rather than the child. With adolescents, they themselves were the focus and the studies were predominantly concerned with self-image, orthodontics treatment and services access and acceptability. In the category relating to elderly/disabled, 11 of the 13 studies related to the self-reported experiences of the elderly themselves including food/nutrition, tooth loss and the perception of oral care in the home or community settings. The two remaining studies included in this category involved the perspectives of the carers/parents of people with Down's syndrome.

The final category includes studies that had a primary focus on a social, cultural or social grouping. This category was mixed in other characteristics (i.e. children and elderly). In relation to cultural groupings, the included studies worked with Chinese, Latino (Puerto Rican), Nepalese, Nigerian, Albanian, Sudanese and Indian communities. Other studies focussed on a range of social indicators including socio-economic status.

Reported method for data collection and analysis

Interviews were clearly the most commonly reported data collection technique, being reported more commonly than all other techniques combined (see Table 3). Two other approaches, focus-group discussions and a combination of qualitative and quantitative techniques (mixed methods), were commonly reported. Other techniques were reported at a much lower rate.

In contrast to the reported method of data collection, the strategy employed for data analysis was not well reported. One third of studies (n = 69) did not report how they analysed the qualitative data. Of those studies where data analysis was

Table 3. **Identified data analysis methods**

Topic category	Total records	CC	CA	CIT	DA	DM	FA	GT	MM	NS	PH	TH
Child/adolescent	20	1	5		1			5	2	6		3
Dental education	28	1	2	1			2		2	11		11
Dental management	22	3							2	12		5
Dental/oral condition	20	2	1				1	7		5		4
Elderly/disabled	13		2				2	2	2	3	1	2
Patient/public perception	30		2				2	3	7	11		6
Professional	36	3	2			1	6	1	5	12		16
Social group/position	20	1	2					2		9	1	6
	197	11	16	1	1	1	13	20	20	69	2	53
Total	207		Nominated forms of analysis									

CA, content analysis; CC, constant comparison; CIT, critical incident technique; FA, framework analysis; GT, grounded theory; M, discourse method; MM, mixed methods; NS, not specific; PH, phenomenological hermeneutical; TH, thematic.

reported or identifiable, thematic analysis was the most commonly reported ($n = 53$). Other techniques more commonly reported were grounded theory (20), constant comparison ($n = 11$) content analysis ($n = 16$) framework analysis ($n = 13$). A combination of qualitative and quantitative methods was reported for eight studies.

Discussion

The majority of the qualitative research included in this scoping study had a focus on the dental profession itself: the development and experiences of students of dentistry; the experiences of dental practitioners; or the systems/settings in which they worked. Where patients or the public were the focus of attention, the large proportion focussed on their reported views and experiences in relation to dental services provided or to dental public health issues. Very little of the included research was expressly interested in personal experiences of dental health or illness. We acknowledge that there may be literature outside that published in dental peer-reviewed journals that does provide insight into these important issues. However, it is less likely that dental health practitioners will be exposed to this unless they have a special interest. This means that these important issues are not being seen by dental practitioners.

A cursory examination of the qualification and affiliations of the authors of papers in the dental journals included in this study seems to indicate the authors have dental or oral health qualifications and that they may feel more comfortable or familiar with dental publications. Non-dental authors conversely may feel the opposite, although this remains speculation without further investigation.

Like Masood *et al.* (20), we found a heavy reliance on interviews and focus group studies for collecting/generating data. This may have been influenced to some extent by the search strategy used; however, this finding is consistent with other reports (26). The preference for interviews is interesting but not surprising. This is a preferred method in the health sciences (26). This could be because of its efficiency in collecting data or that it allows the individual perspective on issues. It may also be a technique that is similar in many ways to the manner in which dental professionals practice, that is, one-on-one information gathering by the practitioner. Focus groups are the next most commonly used technique. Practical reasons for selecting this technique may be that they are more efficient at capturing more participants in a shorter period of time and with potentially less resources than other techniques including interviews. They also have the advantage of the influence of the social interaction (combined words and observation of interaction). They are appropriate in some studies if the data collection is about the way people speak and interact in social settings such as mothers groups or sporting clubs and when the subject area is not sensitive. However, they may be used inappropriately if views being sought are more personal or of a sensitive nature. It is beyond the scope of this paper to assess the quality of the studies with regard to the appropriateness of the methods applied. We did not attempt to determine whether the reported technique was indeed what the authors actually did. Regardless, as with any quantitative or qualitative research, the method selected should be determined by the research question or objective.

Most interesting was the way in which the analysis technique was reported or in many cases not reported. There are many different ways to analyse qualitative data reported in the literature and many would argue that to assess the rigour of any research, the data collection, analysis and interpretation must be robust and transparent; however, few qualitative studies in health sciences detail the process of analysis (27, 28). If we are to advocate for the importance of qualitative studies in understanding complex health issues, then it is important for published studies to be explicit about how the data were collected and analysed. If we do not have this information, judgement regarding the quality and usefulness of the research to our practice is questionable (29).

Conclusion

It appears as though the largest focus in dental qualitative research seems to be the dental profession itself. This is legitimate as the results could better inform dental education and service structure and delivery to ultimately benefit the public. However, the gaps in the research suggest that the personal

and subjective experiences of individuals as they experience dental conditions require further work, this is particularly the case in special subgroups of the population. Dental researchers and/or those publishing in the dental literature must improve the reporting of data collection and analysis.

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Supporting information

Additional supporting information may be found in the online version of this article.

Data S1. Scoping review of qualitative research in peer-reviewed dental publications