Focus group methods in dental research

Précis

A structured integrative review of focus groups, their use and complexity, as a methodology for dental research.

Abstract

Introduction: Focus group methods have been increasingly used in dental research. However, although focus group methods appear quite simple and easy to carry out, there are a number of complexities that need to be considered.

Method: The present integrative review was carried out to assess the usability of focus group methods for dental research.

Results: Three key themes were identified from the qualitative review: the complexity of the method; benefits of focus group research for dentistry; and, the nature of the quality controls employed.

Conclusion: A key strength of using focus groups is that they can enhance qualitative and quantitative methodologies by helping to clarify, extend, qualify, or challenge what has been found.

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Introduction

Focus group methods have been used in qualitative research, especially in healthcare in areas such as medicine[1-4] and nursing[5-7] and, more recently, in dentistry. To inform the research, focus group methods use the format of a guided group discussion. In healthcare, the method has been found to be useful in designing health interventions, in pre-testing intervention materials, and in establishing adequate procedures for delivering an intervention.[8,9] Furthermore, the method has been used to elicit perceptions, ideas, opinions and thoughts about specific health areas of concern, thus providing rich data from multiple perspectives.[10] Focus groups provide an understanding of areas where quantitative probing would not be applicable. For example, in the case of patients diagnosed with burning mouth syndrome, the researcher, in the absence of measurable, observable symptoms, has to use a qualitative data collection method, such as that of a focus group, to elicit the experience of the patients.

The beneficial use of the focus group method for dentistry has not, as yet, been reviewed in depth. It is important, given the current focus on evidence-based practice research, that the review be systematic and rigorous. The strength of the integrative review, in contrast to the systematic review, is that it summarises past theoretical and/or empirical literature, and allows for the inclusion of diverse methodologies (for example, experimental, non-experimental and qualitative), as well as not overvaluing hierarchies of evidence, to provide a more comprehensive understanding of the particular phenomenon or healthcare problem, which can also include expert evidence.[11,12] The integrated review therefore provides a myriad of perspectives on a phenomenon, which researchers had previously viewed as mutually exclusive. Furthermore, it has the possibility to build dental science by informing research, practice and policy.

In relation to dentistry, there is no comprehensive review of focus groups. Given the beneficial uses that have been identified in the general healthcare

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Table 1: Level 1 search strategy.

Concept 1	Concept 2	Combined search concepts 1 and 2	Combined search with limits applied
Focus group/s In the article, title or key words Date range: 2004-2013 Document type: article, or review Not physical science Life health, social science, and humanities 80,337 articles	Method, methodology, research method, qualitative research In the article, title or key words Date range 2004-2013 Document type: article or review Not physical science Life health, social science, and humanities 7,704 articles	1,394 articles	Limited to dentistry 16 articles 5 relevant articles included in review (Level 1 search strategy)

literature, there is now a need for research to explore and identify the applicability of focus group methods to dentistry. This integrative review, based on a five-stage process,[13] seeks to begin this process of exploration. The review process involved is rigorous, and draws on qualitative methods such as constant comparison, so as to enhance analysis and the synthesising of results.

Method

The integrative review followed the five-stage method as outlined by Whittemore and Knafl.[13]

1. Problem identification

The purpose of this review is to explore the beneficial use of focus group methods as applied to dentistry.

2. Literature search

The specific focus on the search is on focus group methods as applied to dentistry.

Level 1: search strategy

First, key words were selected that related to both focus groups (concept 1) and to method (concept 2). SciVerse 'Scopus' was the search engine used, as it draws on a wide range of journals. Only peer-reviewed publications from a substantial period (2004 to 2013) were considered because this elicited the greatest proportional relevant articles. Any articles published in the physical science area were excluded from the search, as these were not relevant to dentistry. This combined Scopus search (concept 1 and 2) generated 1,394 articles. Second, limits were then applied to the combined search. Thus, only articles related to dentistry were included. Sixteen articles in all were hand reviewed to assess relevance. The result of the Level 1 integrative review search was that five articles were deemed relevant (**Table 1**).

Level 2: additional search strategy

We hand-reviewed the references in the five main articles (Level 1 search strategy) so as to include only the articles dealing with focus group methods as applied to dentistry (one was deemed relevant[14]). This article was added to the five already identified by the integrative review (Level 1 search), making a total of six articles.

3. Data evaluation

Six theoretical articles formed the basis of this review, as they appraised the methodological issues in conducting focus groups applied to dentistry; no empirical articles reviewing focus group methodology were found. The Level 1 eligible primary sources were reviewed before the Level 2 articles. No other criteria were applied because of the limited number of articles obtained. However, it is interesting to note that from the 11 articles that were excluded from the integrative review (**Table 1**), focus group methods had been used in relation to the following areas: examiners' views of the use of intra-oral photographs to detect dental caries; delivery of oral health information; parents' perceptions of oral health; professional career choice in dentistry; clinical teaching (problem-based learning); and, clinical trials (factors influencing or preventing engagement). Furthermore, the use of focus groups in these studies was as a single focus group method (four studies), a mixed method (four studies), or a mixed qualitative method (three studies).

4. Data analysis

A thematic analysis using the constant comparison method was used. This method involves the researcher comparing similarity and contrasting difference in the data at the level of interview, statement or theme, to identify the main themes in the five articles (Level 1 eligible primary sources). Once themes were identified from the Level 1 search, the one article from the Level 2 search was incorporated.

5. Presentation

Key themes that emerged from the thematic analysis were displayed in a table format.

Results

From the thematic analysis, three key themes and sub-themes were identified (**Table 2**).

Theme 1: different focus group methods

Focus groups are categorised as a type of group research method. However, it is important to identify and acknowledge how the method differs from other group methods, such as leaderless, nominal group technique, brainstorming, Delphi technique, or panel. Doing so will generate a greater understanding of what focus group methods can achieve.

Table 2: Integrative review of focus group methodology: themes.

	Themes	Sub-themes	Authors
Theme 1	**Complexity of the focus group method**	Varies from other group methods	Ayala *et al.*, 2011[15]; Stewart and Gill *et al.*, 2008[16]; Edmunds and Brown, 2012[17]
		Myriad of focus group designs	Brodani, 2008[14]; Ayala *et al.*, 2011[15]; Stewart and Gill, 2008[16]; Edmunds and Brown, 2012[17]; Gill *et al.*, 2008[18]
Theme 2	**Benefits of focus group research for dentistry**	Applications for dentistry	Brodani, 2008[14]; Edmunds and Brown, 2012[17]; Gill *et al.*, 2008[18]; Nelson *et al.*, 2009[19]
		Benefits for dentistry and healthcare research	Brodani, 2008[14]; Ayala *et al.*, 2011[15]; Stewart and Gill, 2008[16]; Edmunds and Brown, 2012[17]; Gill *et al.*, 2008[18]; Nelson, 2009[19]
Theme 3	**Quality controls**	Advance preparation	Ayala *et al.*, 2011[15]; Edmunds *et al.*, 2012[17]; Gill *et al.*, 2008[18]; Brodani, 2008[14]
		Moderator as skilled expert	Edmunds and Brown, 2012[17]; Gill *et al.*, 2008[18]; Brodani *et al.*, 2008[14]
		Credibility/trustworthiness	Ayala *et al.*, 2011[15]; Gill *et al.*, 2008[18]; Brodani *et al.*, 2008[14]

Focus group methods can elicit an understanding of a topic for the purpose of research, and thus they are data oriented in their emphasis, needing to be moderated by a facilitator(s), as compared, for example, to a leaderless discussion group, in which the main focus is on group dynamics. Focus groups are based on group discussion, and may be influenced by group dynamics, whereas in the nominal group technique the participants do not interact directly, but are individually interviewed, after which their feedback is shared with the other participants. Focus groups usually employ a face-to-face technique, which allows for all participants to interact with each other, under the guidance of the facilitator(s), who can help to explore contrary opinions or new areas of understanding, and can help to enlarge the picture of the topic. In contrast, the group interview process is one in which the participants interact individually with the interviewer. Furthermore, the focus group discussion has generally a wider focus on the participants' views, experiences, beliefs and values, in contrast, for example, to the Delphi technique, which has a very specific focus: that of predicting trends by a panel of experts. Focus groups can involve collective brainstorming, but the main goal is not exclusively to identify new ideas or solutions; it may also involve understanding the experiences and views of the participants. The panel series design is a variation on focus group methods, which requires the participants (e.g., individuals, dyads, families) to attend several sequential focus group meetings. This may extract richer data than the traditional focus group method, and be more cost-effective, as fewer participants are required. Not only do focus group methods vary from other group methods, they have their own internal variations, which need to be considered.

Myriad of focus group designs

Focus group methods can have a stand-alone or a multi-method approach. The benefit of the stand-alone approach, where no other qualitative or quantitative method is added, is that it can increase insight into the group's norms, meanings and processes. However, to facilitate this approach, exercises, vignettes, and games can be useful in order to help group adhesion. Exercises and games can encourage engagement and dialogue, and vignettes can help cohorts from diverse backgrounds to discuss sensitive and/or personal issues. Furthermore, vignettes can allow the participants to distance themselves from a sensitive topic (e.g., when recording dentists' opinions about dental negligence and abuse[20]), and so be able to express their opinions on the sensitive matter without feeling personally exposed. A recent technique, photo-voice, could also be used so as to provide understanding, given that the technique can enhance group discussion through the use of photographs.

Focus group methods can be a useful adjunct to other data collection methods, whether quantitative (e.g., questionnaires and surveys) or qualitative (e.g., individual interviews) are employed. In regards to enhancing quantitative research, focus group methods can be used to: explore the meaning of quantitative data in more detail; explore data that is conflicting or unexpected; evaluate participants' perception and/or acceptance of programmes and interventions; and, develop hypotheses in newly emerged or under-researched areas. Furthermore, focus group methods can enhance both of the methodologies by helping to clarify, extend, qualify, or challenge what has been found. Their benefits extend to many healthcare areas, including dentistry.

Theme 2: benefits of focus group research for dentistry

Focus group methods have been used in dental research on a diverse range of topics, such as: patients' views; patients' and clinicians' views, and evaluation of dental services; attitudes and views of the dental profession and dental education; and, perceptions of oral health by various groups of people such as drug users, ethnic minorities, children, and people with special needs.

Focus group methods can generate a rich source of data on subjective and personal views, attitudes, knowledge, experiences, understanding, and beliefs. As they are group methods, their strength is in collating collective views, meanings and perspectives, as well as emphasising conflicting, supporting or alternative points of view. Furthermore, they can bring about a 'synergistic effect', as issues and solutions to a problem can be brainstormed by the group. In addition, focus group methods, as compared to other qualitative data collection methods, are more cost-effective in terms of time and resources. They are valuable also as the initial step in research, for example, when designing health interventions or when establishing acceptable procedure for these interventions.

Theme 3: ensuring quality

A. Advance preparation

In order to get the full benefit of focus group methods, there is a need for advance reviewing and planning. A number of considerations need to be taken into account here, including factors such as the composition of the focus group, the interview schedule, the recording devices, and environmental considerations. In regards to composition, the time allocation is generally an hour to an hour-and-a-half for the focus group discussion. The size of focus groups varies, ranging from a minimum of four to a maximum of 14 participants, with the optimal number being between six and eight. A rule of thumb would be to over-recruit so as to ensure that there is an optimal number of participants, and to circumvent the effect of any cancellations. If the group is too small, there is a risk of a limited discussion and/or of a discussion being dominated by one or two individuals. However, large groups can also have risks, both for participants and facilitators, in that such groups can be hard to manage, even chaotic at times, and may lead to participant frustration at inadequate speaking time. Generally, it has been recommended to run at least two focus groups per topic. Also, the age, sex, and professional status of the group need to be given due consideration. Whether or not the participants know each other is an important consideration here as the dynamics between a pre-existing or a stranger group will differ. For the facilitator, the advantages of an established, pre-existing group is that recruitment is easier, the group is likely to interact well and may find it easier to disclose sensitive issues. From the participants' perspective there is a familiarity and comfort with the other group members. However, some of the researchers suggest that disclosure may be easier in a stranger group, as strangers are less likely to be probed or challenged. Another important consideration is whether the group should be homogenous or heterogeneous. The benefit of the homogenous group is that it can generate more open discussion, especially if the members are unfamiliar with each other. This is especially true in relation to gender and ethnicity as it creates a more comfortable environment, particularly when sensitive topics need to be explored. Moreover, homogenous groups can be used for case control comparisons between groups. The strength of the heterogeneous group is that it provides insight into individual differences.

B) Preparing the interview schedule

In this case a step-by-step question guide is essential, and should be done in advance by the researcher and/or facilitator. Prior to the write-up of the interview schedule it is vital to refine the research objectives. The key principles involved here are: to order the questions in terms of their importance to the research agenda, moving from general to more specific or more sensitive; and, to restrict the number of predetermined questions to 12, because the focus of a semi-structured interview is to elicit rich data from the participants. Furthermore, at the initial stages it is worth considering the benefit that group rapport exercises and/or introductory questions may contribute.

C) Recording devices

The recording devices can be either audio or video, and should be of high quality, which can be helped by having an external microphone to capture the variation of pitch and tone in speakers' voices. They provide accurate recordings, which can be transcribed verbatim. The observer's notes will not provide as full and accurate an account. In particular, videos can capture non-verbal post-hoc data. However, they can be conspicuous and this can affect the naturalness of the group's behaviour.

Finally, in regards to environmental factors, the researchers should select an accessible, private and central location, which can facilitate attendance and participation.

D) Facilitator as skilled expert

Facilitation of the focus group process is quite complex and thus a skilled expert is needed here. A theoretical understanding of group dynamics, along with good communication and facilitation skills, is needed to help actively engage all the participants in this group discussion, thus enhancing the opportunity for richer data. At the same time, the facilitator needs to be mindful of any ethical issues that may arise. Knowledge of group dynamics, including power issues, provides a strong understanding for the facilitator about what might happen and how to intervene. As well as a theoretical understanding, the skilled facilitator needs to have the requisite communication skills in order to help stimulate interaction, build rapport, and encourage participant engagement.

They also need to keep a watchful eye that the group discussion doesn't wander too far from the topic being discussed and, if needed, to gently but firmly nudge the discussion back on track. A blend of skills is needed, for example the skill of asking open-ended questions to encourage discussion. At times, however, the facilitator may need to use closed questions so as to obtain very specific information, or to seek clarification. Furthermore, the facilitator needs to be able to probe and respond, while also being respectful and empathic to the participants. Being able to challenge is a crucial skill to help prevent the discussion being dominated by one individual. For example, the facilitator may need to challenge a 'power talker' who could sway the expressed view of the group, and thus ensure that all participants have ample opportunity to contribute, allowing differences of opinion to be discussed fairly, and reticent participants to be encouraged.

However, it is important to recognise that the facilitator role is to moderate, not participate, and to support, not to lead group discussion. Furthermore, the facilitator must be able to handle views that they might personally find unpalatable in that they conflict with their own research interest. It is also noteworthy that the facilitator's individual characteristics have a role to play; not all facilitators work well with all groups. The selection of a facilitator who has previous experience with the group may help to develop trust among members who are then more likely to contribute to the group discussion. On the other hand, familiarity with the group participants can also inhibit discussion for a variety of reasons.

It is crucial that the facilitator should have a good awareness of ethical issues. A key factor here is that participants be fully informed about the research before the focus group begins. This includes, for example, ensuring participant confidentiality, offering an opportunity to withdraw from the research at any stage, and giving clear information about audio recording or other equipment to be used.

The presence of an unscrupulous facilitator, one who, for example, might manipulate the group and engage in unprofessional behaviour, is dangerous. This is particularly dangerous if the focus group discussion is highly sensitive for the participants. A suggested solution is to recruit two facilitators so that that they may help each other to observe, support, and review their practice. It is important to select facilitators not only on the basis of their competence but also on the strength of their ethical practice. Apart from the ethical viewpoint, a second facilitator can strengthen the skill set of the facilitator role. For example, one facilitator may guide the group, and the other may observe the group dynamics, intervene if needed and control the length of discussion. An observational note-taker role may also be important. This role may be undertaken by a second facilitator or a researcher to capture the non-verbal behaviour of the group, which will give extra rich data for the analysis.

E) Creditability/trustworthiness

The trustworthiness or the credibility of the research is important, and some considerations to be made in this regard relate to: 1) sampling strategy; 2) research design; 3) coding; and, 4) analysis of the focus group data.

1. Sampling strategy

A purposive sampling strategy, one used to serve a specific need or purpose, is often the main strategy employed, the key purpose of which is to ensure that participants have the relevant rich experience of the research topic. The researcher will continue sampling until they have reached what is called a theoretical saturation point, which is one where the interviewing has ceased to bring in new ideas.

2. Research design

An inductive or deductive research design can be used within focus group research, and this brings different priorities to bear in the coding and analysis of the research. Deductive research is a theory-driven, top-down approach and so, when coding, the researchers need to judge the degree to which the discussion topic or process fits with the theoretical framework proposed *a priori*. Specifically in relation to coding, psychometrically sound systems have been developed to measure health-related behaviours and social processes.

Inductive research, in contrast, is a bottom-up approach: particular individual patterns are noted and from these general themes are created.

3. Coding

Reliable coding in inductive research should involve two coders, who are well informed about the topic, who evaluate the transcripts independently (both working to a standardised coding scheme), and with some procedure for resolving disagreement. This is a form of inter-rater reliability. The final stage in this process is when the coders meet after coding is complete to make comparisons. More recent research has used data analysis software to manage theme extraction and quotes (atlas.ti/NVivo).

4. Analysis

The richness of the data can be improved by including analysis of the observational notes, which pick up on the non-verbal behaviour of the group, as well as the verbal comments made by the participants as recorded in the transcript of the focus group discussion. When analysing focus group data, it is important to note that the participants' contribution may be influenced by the group context, for example, one participant may challenge the comments made by another member of the focus group, which may add another layer of understanding and provide a collective view.

Conclusion

Focus group methods are quite complex, overlap with other group techniques, and are some of the most common methods used in qualitative research. If used appropriately, they can generate rich data based on participants' perceptions, ideas, opinions, and thoughts on a specific issue or topic. The key strength of these methods are that they can enhance both quantitative and qualitative methodologies by helping to clarify, extend, qualify or challenge what has been found. They are valuable methodologies when initially designing, for example, oral healthcare interventions in dentistry, or creating adequate procedures on which to base these interventions.

In order to ensure good standards of practice, it is vital that the researcher/s engage in advance planning and preparation, and that the facilitators have sound theoretical and experiential knowledge of the process of group facilitation and group dynamics, along with excellent communication skills. This is supported by Shaha, Wenezel, and Hill,[6] who reported that critical attention needs to be placed on planning and on the conduct of moderators, when reviewing focus groups as a research method in nursing. Another factor to consider is to ensure the credibility/trustworthiness of the data collection method. Freeman,[5] for example, places value on good practice but goes further to suggest that the researcher's epistemological assumptions also need to be considered, as they have implications for the general study design. Currently, we are seeing an increase in the use of this methodology in dentistry for hypothesis generation, evaluation, and to help explore areas that are not well understood. However, more empirical research is required to examine the effectiveness of focus group methods across a variety of clinical settings. Incorporating an integrative review can further strengthen the quality of the dental research enquiry.

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