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Purposive sampling: complex or simple? Research case examples

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Abstract

Background: Purposive sampling has a long developmental history and there are as many views that it is simple and straightforward as there are about its complexity. The reason for purposive sampling is the better matching of the sample to the aims and objectives of the research, thus improving the rigour of the study and trustworthiness of the data and results. Four aspects to this concept have previously been described: credibility, transferability, dependability and confirmability.

Aims: The aim of this paper is to outline the nature and intent of purposive sampling, presenting three different case studies as examples of its application in different contexts.

Results: Presenting individual case studies has highlighted how purposive sampling can be integrated into varying contexts dependent on study design. The sampling strategies clearly situate each study in terms of trustworthiness for data collection and analysis. The selected approach to purposive sampling used in each case aligns to the research methodology, aims and objectives, thus addressing each of the aspects of rigour.

Conclusions: Making explicit the approach used for participant sampling provides improved methodological rigour as judged by the four aspects of trustworthiness. The cases presented provide a guide for novice researchers of how rigour may be addressed in qualitative research.

Keywords

interview research, novice nurse researchers, purposive sampling, study design, trustworthiness

Introduction

Novice nurse researchers tend to see purposive sampling as either simple or too difficult (Tuckett, 2004) and may therefore default to using a convenience sample for the wrong reasons. Attempting to ensure that nursing research has the right sample is crucial to good processes. This paper came out of the ongoing work of a research group, made up largely of nurses, at the University of Tasmania. The group ranged in experience from PhD students and early career researchers to experienced full professors and the research ranged similarly from PhD studies to funded research. A number of the group were using purposive sampling techniques under different circumstances and with different challenges. The lessons learnt by the individuals and by the group as a whole are interweaved into this paper and the case studies using purposive sampling are used to exemplify the different uses of purposive sampling, and the way in which each context has been handled.

Purposive sampling

In terms of sampling, the strategy for participant selection should be integrated into the overall logic of any study (Punch, 2004) and the rationale for sample selection needs to be aligned from an ontological, epistemological and axiological perspective with the overarching aims of the study. In a qualitative study, a relatively small and purposively selected sample may be employed (Miles and Huberman, 1994), with the aim of increasing the depth (as opposed to breadth) of understanding (Palinkas et al., 2015). Purposive sampling is 'used to select respondents that are most likely to yield appropriate

and useful information' (Kelly, 2010: 317) and is a way of identifying and selecting cases that will use limited research resources effectively (Palinkas et al., 2015).

Purposive sampling strategies move away from any random form of sampling and are strategies to make sure that specific kinds of cases of those that could possibly be included are part of the final sample in the research study. The reasons for adopting a purposive strategy are based on the assumption that, given the aims and objectives of the study, specific kinds of people may hold different and important views about the ideas and issues at question and therefore need to be included in the sample (Mason, 2002; Robinson, 2014; Trost, 1986).

With respect to research involving multiple cases, the most popular forms of purposive sampling are stratified, cell, quota and theoretical sampling. The different nature of these approaches is described in brief below.

Stratified sampling selects specific kinds or groups of participants that need to be part of the final sample. The sample is then stratified by the characteristic of the participant or group, with a specific number allocated to each stratification. (The number allocated to each category is also clearly important, particularly when allocation to separate groups is different.) Categories might be age, size of family, IQ, etc. However, and importantly, there needs to be a clear reason linked to the aims and objectives of the study to show why each group is different. Moreover, in terms of interviews, they must have something to add to the study.

Cell sampling is similar to stratified sampling but differs in that the categories for stratification are discrete, and in cell sampling they can overlap like a Venn diagram (Miles and Huberman, 1994). For example, in a study of children with chronic disease, one cell might be obese children and the other might be children with diabetes and the overlap will be obese children with diabetes.

In quota sampling, there is greater flexibility – rather than fixed numbers of cases being required with particular criteria, quota sampling specifies categories and the minimum number needed for each one (Mason, 2002). As the study proceeds, numbers in each area are monitored for fulfilment of the quota. For example, in a study, again of children with chronic illness, there might be quota for kinds of chronic illness and for kinds of family. The research team would specify a minimum for each of the quota. (A minimum of five children each with diabetes, leukaemia, arthritis, etc., and for the kind of family, 10 from a nuclear family, 15 from a reconstituted family, etc.) The use of minimum quota makes sure that key participants are part of the final sample. It is argued that this approach is also more flexible in shaping the final sample and easier, in recruitment terms, compared with stratified and cell sampling (Robinson, 2014).

Theoretical sampling is different by being part of the collection and analysis of the data, following provisional sampling and analysis of some data (Coyne, 1997; Robinson, 2014; Strauss, 1987). Theoretical sampling originally came from Grounded Theory but is applied to other methods as well (Mason, 2002). The process involves either identifying cases from new groups, which might amount to being a comparison or a contrast with other groups, or reshaping the sample into a new set of criteria as a result of the analysis, and in so doing replacing the original sampling strategy chosen a-priori (Draucker et al., 2007; Robinson, 2014).

This paper now introduces three different research studies in which the processes and challenges of purposive sampling are taken up in each instance.

Research study 1: Co-led redesign of stroke services in North West Tasmania

This example relates to the redesign of stroke services and is reported at the point when all patient interviews have been collected. Co-led redesign initiatives in healthcare service provision rely on experience-based feedback from patients and their families as well as sourcing information from healthcare staff and data collected specifically for the purpose of a service redesign (Prior and Campbell, 2018). The stroke service co-led redesign project utilised a purposive sampling method developed by Reed et al. (1996) based on stakeholder sampling (Ovretveit, 1998), termed the Matrix sampling method. Matrix sampling empowers the stakeholders, allowing them to select categories of participants who they determine to be representative of the service users, essentially creating a trustworthy sample. For example, the stroke patient interviews consisted of 50% of patients over age 65 and 50% of those aged 65 or under. The stakeholder group identified that these two groups of patients require differing types of acute and rehabilitative stroke care in some instances and placed a high level of importance on being able to achieve the levels of care required for different age groups. The stakeholders included senior medical and nursing management, medical consultants, nursing unit managers, the director of allied health and the research team. The research team is then able to perform the interviews with selected patients on behalf of the stakeholders and report the findings to the group via thematic analysis.

Matrix sampling strengthens qualitative research by providing a structured and purposive method for nominating participants. It creates maximum variability based on stakeholder knowledge of the population and the intended research outcomes. Previously utilised in healthcare redesign research in the United Kingdom (Campbell et al., 2004) as part of a patient journey approach, Matrix sampling is a cost-effective and time-efficient method allowing the stakeholders a level of control over the selected sample. This method of sampling was selected to capture a relevant participant group, representing stroke patients in North West Tasmania. A number of clinical and demographic variables were considered when determining the appropriate stroke patient participants, influenced by the local population and a quantitative data analysis determining the numbers and types of stroke patients admitted. Exclusion criteria were set prior to the sampling process; these included mini strokes (transient ischaemic attacks), patients who were living in a nursing home at the time of their stroke and deceased patients. As with other purposive sampling methods, Matrix sampling utilises the specific characteristic of stroke to provide a potential pool of participants. Other characteristics of importance noted during the participant selection phase for this project included the number of risk factors associated with each stroke patient, mode of arrival to the hospital, whether the patient was transferred into or out of a specific hospital and the type of stroke for which the patient was admitted (haemorrhagic or ischaemic). These specific criteria, determined by the stakeholders, allowed the research team to find candidates for the interviews to represent the patient group who could provide the most appropriate input into stroke service redesign for this particular population area.

Although this sampling method fulfils the needs of the stakeholders by allowing them to make the decisions over the sample population, there are also some weaknesses or disadvantages to the Matrix sampling method. If it is not possible to recruit participants to a selected criterion, gaps appear in the data. In the project it was noted that one particular criterion, patients who were transferred between hospitals, was more difficult to 'fill' due to smaller numbers of admitted patients fitting this description, purely due to the population being sampled. The dependability of the data, then, can be difficult to control; however, to overcome this issue, discussions with the stakeholder group suggested other recruitment

methods, such as clinicians identifying patients and requesting consent. If these patients were unable to be identified, the group was satisfied that all was done to ensure the stakeholder view was utilised to the best abilities of the research team and the results delivered still reflected a representative population.

The Matrix sampling method is an easily transferable approach for qualitative research, which allows the input of the stakeholder(s) to determine the output of the research through the provision of local information and knowledge. Matrix sampling is a form of stratified sampling, but it is also quota driven. It is a form of stakeholder sampling where the views of the stakeholders are paramount, as they have to be reassured of the adequacy of the sampling so they regard the evidence as adequate and credible.

Research study 2: Child and family health nurses and safety and wellbeing of young children

This example is from a PhD study (Young, 2020 [unpublished thesis]) focusing on the response of child and family health (CFH) nurses to concerns around the safety and wellbeing of young children aged from birth to 5 years within the family, using Interpretive Description (ID) as the methodological approach. The setting in which the study is situated is that of a CFH nursing service provided by an Australian state-wide health department.

ID methodology, developed by Thorne et al. (1997), is a way of generating increased understanding of clinical phenomena that are complex and experiential. ID studies generate an ID of the themes and patterns captured within subjective perceptions around a phenomena of clinical interest (Thorne et al., 2004) and produce practice-relevant knowledge that can be immediately applied in the clinical context (Thorne, 2016; Hunt, 2009). When using ID methodology, researchers identify who should be included in the study, so the eventual findings allow better understanding of the phenomenon of interest (Hunt, 2009; Thorne, 2016). Purposive sampling is an accepted and often used initial sampling strategy in ID methodology as it allows settings and people to be recruited based on their expected contribution to the study (Schensul, 2011) and by virtue of some angle of the phenomenon that they might help us better understand (Hunt, 2009; Thorne, 2016). Participants are those who are most likely to have in-depth knowledge and experience of the phenomenon being studied. With this in mind, the inclusion criteria developed for this study were that participants must be nurses currently employed as CFH nurses with a minimum of 2 years recent (within the last 5 years) experience working in this specialist area of nursing. This was to help to ensure the opinions obtained were those of experienced CFH nurses with exposure to relevant practice experiences in a range of situations. Excluded from the study were those nurses who did not have at least 2 years recent post-graduate experience as a CFH nurse.

In developing the sample subset, an awareness was maintained of how this might either privilege or silence particular angles or perspectives and thus impact the eventual findings of the study and its credibility (Thorne, 2016). To enhance credibility, care was taken to clearly, transparently and explicitly describe the logic used in selecting the sample subset (Robinson, 2014; Thorne, 2016). Furthermore, a critical awareness of the nature of the selected sample and how this might impact on any findings generated was maintained throughout the study to help ensure claims beyond the sample subset were not made (Robinson, 2014; Thorne, 2016).

Transferability was enhanced by the way in which study participants were clearly identified in terms of inclusion and exclusion criteria and demographic information. This helps others to determine whether the findings are applicable to other situations and population groups (Shenton, 2004; Amankwaa, 2016). A sample that is fully contextualised helps prevent unwarranted generalisation (Robinson, 2014). Dependability was enhanced by the description of participants using clear inclusion and exclusion criteria (Shenton, 2014). In addition, a well-accepted sampling strategy appropriate to an ID study was used (Thorne, 2016). Confirmability was enhanced by the provision of a rationale for the choice of inclusion and exclusion criteria, so that the integrity of the process could be determined by others (Shenton, 2014).

Research study 3: How can mental wellbeing for new mothers be achieved?

This example is from a PhD study (Young, 2020 [unpublished thesis]) about women's experiences after childbirth, where recruitment is about to commence. This research aims to determine what influences mothers' mental wellbeing in the year after the birth of a first baby and asks, 'how can mental wellbeing for new mothers be achieved?' Narrative inquiry involving three or four in-depth interviews with ~10 women will be used to answer this question. The interviews will be conducted longitudinally over a period of 9–12 months and will aim to capture a rich, deep picture of the first year after childbirth. It is hoped that the major influences impacting mental wellbeing will be identified.

To determine which women to include in this study, purposive sampling will be employed. Specific inclusion and exclusion criteria will be indicated, making the inclusion of participants in this study non-probabilistic, and indeed purposive, in nature. Women will be recruited for involvement from the antenatal clinic at the local public hospital by way of response to a posted flyer. Although there is an element of convenience sampling involved in this process, the very specific nature of the criteria for involvement make this design purposive. Inclusion criteria will include considerations such as first-time mothers only, singleton pregnancy, maternal age over 18 years and gestational due date within a specified timeframe to facilitate the longitudinal interview schedule. Exclusion criteria will include anyone who has had a previous mental health issue or a pregnancy-related health complication (e.g., gestational diabetes, placenta praevia, known foetal issues, etc.).

The trustworthiness and rigour of the data will be enhanced by the purposive sampling design. In terms of credibility, this method of sampling supports the likelihood that 'member checking' may occur, which will increase the credibility of the findings (Guba, 1981). Because women will self-select for participation in the study, this degree of interest and investment increases the likelihood of their willingness to remain involved for the duration of the research.

Both the transferability and dependability of the data will be enhanced by the specific nature of the inclusion and exclusion criteria laid out for this research. Transferability will be affected because these detailed criteria will allow readers to develop a clear picture of participants involved. Guba notes the importance of 'full description of all the contextual factors impinging on the inquiry' (1981: 70) and the participants themselves can be considered a 'contextual factor' in the research. In a similar vein, the detailed nature of the criteria will form part of the audit trail that contributes to dependability in a study (Baillie, 2015; Guba, 1981). A risk to trustworthiness in interview-based research is the

role of the interviewer themselves and the influence of their own beliefs and perspectives (Haga et al., 2012; Shenton, 2004).

When determining the sample size for a study of this nature, several factors are considered. Morse notes that the scope of the study, the nature of the topic, the quality of the data, the study design and the use of shadowed data all require consideration (2000). Relatedly, Morse (2000: 4) emphasises that 'the quality of data and the number of interviews per participant determine the amount of useable data obtained. There is an inverse relationship between the amount of useable data obtained from each participant and the number of participants'. This is an important consideration with a longitudinal study where, for example, four interviews with 10 participants would amass data very quickly. With these considerations in mind, a sample size of 10 participants will be the aim.

Implications for research in nursing and health

The sample, particularly for qualitative research, is often not analysed by the nursing reader of practice papers (Gelling et al., 2014). The sample itself, the context and the process are all important issues to consider when reading a paper and considering its impact, particularly when making potential policy changes. Therefore, novice nursing researchers need to ensure the sampling process fits the needs of the study and be clear about the actual process that ensued. For instance: does the sample in the nursing research strategy match the patients who are being considered? The context of sampling in nursing research, as in all research, is a key issue.

Each of these research studies has considered purposive sampling in very different contexts. However, all of them, although purposive, have a convenience element to them given the voluntary nature of all consent processes, where the researcher is at the mercy of the pool of potential participants. However, the voluntary nature of the participation means the researchers can characterise them as fitting not only the inclusion criteria of the study, but also being interested in the topic and motivated to take part out of this interest and their potential to contribute to development of knowledge in this arena.

The Co-Led Stroke Redesign sampling process was about interviewing a representative sample that was persuasive enough to inform change of practice in the stakeholders. The CFH nurse study is the simplest of the designs cited in this paper and has power in this simplicity. However, the analysis of the data is already showing important differences in the nature of the sample. The identification of the right mothers to gain their views of motherhood shows the lengths researchers can go to when considering complex forms of purposive sampling, only to discard them for a simpler process. However, this process of considering options is important in developing high-quality research designs rather than settling for standard approaches.

A continued narrative for all of the research studies that have been exemplified in this paper was whether being purposive in some more complex manner was actually necessary. The only clarity was that all studies were purposive with the intent of recruiting participants who could inform the researchers' aims and objectives. The argument was that the reader of the research would be able to make the judgements about the relevance of the research, if the nature of the sample was transparent. This is another example of the context of research being all important in qualitative research. In combination, the case studies highlight important elements researchers should consider when using purposive sampling techniques to address the four elements of trustworthiness for the research design.

Key points for policy, practice and/or research

- Novice nurse researchers need to ensure purposive sampling is used where appropriate and not default to a convenience sample.
- The context of the data collection is an important consideration in purposive sampling for trustworthiness of data in nursing research.
- Nurse researchers adopt theoretical positions that are reflected in purposive sampling techniques and assist policy makers to understand the relevance of the research.
- The voluntary nature of nursing research supports the purposive sampling approach, it does not mitigate against it.

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