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Articles

Qualitative Research Designs, Sample Size and Saturation: Is Enough Always Enough?

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Abstract

Qualitative research is currently growing in acceptance, especially within the health research scope. Notwithstanding this positive trend, issues about the adequacy of sample size have been a contention among qualitative and quantitative-based researchers. Our paper seeks to address some of the issues facing popular qualitative designs in human research with this backdrop. Our article explains the five key qualitative designs (case study, narrative inquiry, ethnography, phenomenology, and grounded theory). Based on the existing studies, we reported their respective sample size ranges that supported their data adequacy points. Our paper posits that sample size concerns for qualitative designs revolve around their extensiveness and appropriateness. Therefore, qualitative researchers' judgement for data adequacy for a particular method should not only rely on data saturation or a rule-of-thumb. Instead, they should also be guided by their research goals, sampling approach, and research participants. Furthermore, we recommend that qualitative researchers always verify the quality of data saturation by conducting additional interviews and be more open in reporting their selected methodologies.

Keywords: case study, ethnography, grounded theory, narrative inquiry, phenomenology, qualitative studies, sample size, sampling.

1. Introduction

Sample size determination in qualitative research is a topic of concern (Marshall, 1996). The debate revolves around acceptable sample size and how representative the selected samples are (Kuzel, 1992). Other scholars have also argued whether researchers can decide on the number of participants sampled in a given study a priori or not (Sim et al., 2018). The sample size of any research work is crucial in satisfying the scientific quality and ethical standards (Francis et al., 2010). For instance, over-sampling and under-sampling wastes research funds and participants' time. However, the use of inadequate samples that are needed carries ethical and scientific

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challenges as participants may only reflect a limited worldview that may not necessarily reflect the general population of interest. Such data produces non-generalisable results and also wastes research funds and time. The burden of offering adequate sample sizes in research has been one of the major criticisms against qualitative studies.

One of the most acceptable standards in qualitative research is to allow the data to reach data saturation (Creswell, 2013; Creswell, Creswell, 2018). Data saturation is a data adequacy point where no new information could be obtained from participants in qualitative research (Creswell, 2013). Researchers like Morse (1995, 2007) argue that data saturation is 'theoretical' as the idea that 'true saturation' of information may only be assumed. Thus, the claim that theoretical data saturation point has arrived during qualitative research is relative to space and time. Amid all these arguments, qualitative researchers are required to address how many participants are enough to reach data adequacy and possible theoretical saturation. Failure to reach data saturation could influence the quality of research and the study's trustworthiness (Fusch, Ness, 2015).

In practice, data saturation can be problematic given the many research designs. As evident in qualitative studies, data saturation for one study is not enough for another (Fusch, Ness, 2015; Marshall, Rossman, 2011). For instance, the point at which data saturation is attained in a phenomenological design differs from a case study or an ethnographic study (Creswell, 2013; Creswell, Creswell, 2018). Also, data saturation could be determined by the available number of participants in a target population and not necessarily the amount of information. Arguably, as low as six interviews may provide saturation in a population of six women with a particular lived experience. Thus, data saturation is not about the number per se but the depth of data (Fusch, Ness, 2015). Essentially, data saturation is about the quality of data and not the quantity of data, although some rules of thumb for qualitative sample sizes suggest best practices for specific designs (Creswell, 2013).

2. Methods and Materials

The materials used in this study were obtained from scholarly publications and monographs of researchers such as Creswell, Fusch, Ness, and others. Furthermore, we consulted the official websites of several qualitative research experts worldwide to determine best practices for sample size determination.

The study was conducted mainly using the systematic review approach for literature analysis. According to Molchanova (2019), this method comprises "a variety of general research methods such as analysis, synthesis, comparison, specialisation, etc." (p. 20). Scholars like Fusch and Ness (2015) have used this approach in their study.

3. Results and Discussion

Qualitative research designs can be seen as a rough sketch to be filled in by the researcher as the study proceeds (Devers, Frankel, 2000). The sample size for qualitative studies has been argued from different perspectives. Researchers like Bernard (2000) suggests that between ten and twenty knowledgeable participants are sufficient to uncover and understand the fundamental categories in any distinct cultural domain or study of lived experience. Similarly, Ritchie et al. (2014) advise an upper limit of fifty for interview studies because the quality of data collection and analysis may suffer from larger sizes. Nevertheless, Boddy (2005) suggested an upper limit of twelve focus groups or thirty in-depth interviews if researching a relatively homogenous population.

Notwithstanding the general assertions, Onwuegbuzie and Leech (2007) did not recommend sampling specific numbers for qualitative research. Nonetheless, they proposed examining sample sizes in previous studies of similar design in which saturation was reached and using a figure within the range of such sample sizes. We analysed some five key qualitative designs (case study, narrative inquiry, ethnography, phenomenology, and grounded theory) and their respective sample sizes based on this argument.

Case Study

Case study researches aim at exploring specific phenomena, comprehensive in a contemporary context (Crowe et al., 2011; Rashid et al., 2019). As such, case study researchers do not usually focus on the cases to a larger population. As applicable in most qualitative study

designs, sample sizes in case studies are typically small (Hammarberg et al., 2016; Vasileiou et al., 2018). Sample size determination in qualitative case studies is mostly, if not always, inherent in researchers' definition of what a case is and the boundaries of the case (Gerring, 2004; Hyett et al., 2014). Yin (2018) referred to this as 'bounding the case'. By bounding the case to determine the sample size, a researcher first clearly defines the specific unit of analysis. Available evidence on qualitative case studies reveals that researchers who conduct case studies may decide to either recruit a single unit of analysis or multiple units of analyses; this defines the sample size (Crowe et al., 2011; Rashid et al., 2019; Schoch, 2016).

The sample size for a case study depends on the research question and the epistemological assumption behind the research (Mills et al., 2009). For example, a single case approach may be adequate when the researcher is interested in formulating an in-depth contextualisation and an idiographic explanation of a research problem. As the name implies, a single unit case study mainly focuses its interest on an individual case. Most researchers use it, operationalising a case study to a sample of one. Contrary, Mills et al. (2009) proposed that when the researcher is interested in using contrasting observations to provide more insight into propositions and replication of the findings, a multiple case approach is recommended. In a multiple case study approach, cases should be added until theoretical and information saturation. All the same, no specific rule dictates the number of participants in a multiple case study (Paré, Elam, 1997). However, some literature recommends using four to fifty cases for a multiple case study. Considering the focus of case study design, too many cases in a multiple case study may lose the depth of information required (Mills et al., 2009).

Narrative Inquiry

As applicable in most qualitative designs, there is no single or strict rule for determining the appropriate sample size for a narrative inquiry (Francis et al., 2010; Vasileiou et al., 2018). Primarily, narrative inquiry utilises purposive sampling techniques, where researchers focus on obtaining detailed and rich information from 'fit-for-purpose' participants (Nigar, 2020; Palinkas, 2014). Since narrative inquiry seeks to learn more about the narrator's culture, historical experiences, identity, and lifestyle, the emphasis is not on large sample sizes. As such, many narrative studies focus on one individual, and this individual is selected based on his or her ability to provide an understanding of the issues being addressed in the survey (Haydon, van der Riet, 2014; Moen, 2006).

Based on the nature of information required, some researchers may consider the need to involve more than one person in a narrative inquiry. Vygotsky (1978) argued that the researcher goes beyond interviewing the isolated individual when the study aims to understand human development and functioning. Specifically, a systematic review revealed three studies reporting specific sample sizes between one and twenty-four in education studies and sample sizes ranging from one to fifty-two at an average of two sites in health science (Guetterman, 2015).

Ethnography

Like other qualitative designs, a researcher using ethnography is not bound by the use of specific sample sizes (Morgan-Trimmer, Moser, Korstjens, 2018; Wood, 2016). Most ethnographic studies focus on offering a detailed description of a culture. Since the complete picture of the definition of culture is complex, it may be impossible to derive almost all the essential information from one person. This approach accounts for more than one participant recruitment, although one participant may be used in some cases. Most importantly, when a researcher desires to obtain information that is truly representative of a larger sample, the determination of overall sample size in ethnographic studies is influenced by the culture sharing group (Jaimangal-Jones, 2014; Jones, Smith, 2017). When the culture sharing group has an adequate number to be interviewed or may constitute a size appropriate for focus group discussion, ethnographic researchers may include the entire group within the sample (Davis, Johnson, 2008). The review of sample sizes with an emphasis on qualitative designs by Guetterman (2015) expounds on specific sample size ranges utilised in most ethnographic studies both within education and health sciences. Guetterman found that ethnographic studies conducted in education had sample sizes ranging from six to thirty-three with an average of twenty-three. The smallest sample was nineteen in health science, with 586 being the largest sample size.

Phenomenology

Phenomenological research describes the shared meaning of multiple people's lived experiences with a topic or phenomenon. According to Husserl (2012), phenomenology recognises the underlying logic of human experiences and communicates that logic accurately. Typically, phenomenological investigations begin with a query concerning a phenomenon. Hence, a phenomenological study is an explanatory method that comprehensively explains what it means to be human by studying the lived experiences of individuals or groups to build concepts (Creswell, 2013; Husserl, 2012; van Manen, 1990). The phenomenological researcher's job is to "build" the investigated object based on its manifestations, structures, and components (Creswell, 2013).

According to Morse (1995), participants in phenomenological research are interviewed by researchers to provide a considerable amount of data. Consequently, fewer individuals, typically between six and ten, are employed. Guetterman (2015) noted an average sample size of fifteen, ranging between eight and thirty-one in educational research, while participants between eight and fifty-two, with a mean sample size of twenty-five, were seen in health studies. Similarly, five to twenty-five participants are suggested as adequate for phenomenological studies by Creswell (2013). Although small sample sizes are common in phenomenological studies, it is essential to emphasise that the researcher may need to keep adding individuals until saturation to fulfil the study's goal.

Grounded Theory

The ground theory aims to create a 'theory' about a phenomenon using interviews and other data collecting methods such as observations, documents, and audiovisual material (Creswell, 2013; Guetterman, 2015). According to Strauss and Corbin (1998), a critical concept in grounded theory is that it is indicative, and theories are developed based on evidence from people who have gone through the process. As a qualitative research design, the grounded theory study attempts to uncover a theory rather than focusing on individual stories and shared experiences. According to qualitative research academics, the issue of "how many" in determining the sample size is one complex topic to answer directly. It is a crucial aspect in assessing the quality and validity of qualitative research (Spencer et al., 2004). Generally, data saturation as a principle guides data adequacy in grounded theory design. This principle usually occurs after the theory is formulated.

Determining saturation points across most qualitative studies is fluid. Some authors have proposed that data saturation for grounded studies could be reached at nine interviews. In contrast, others suggest sixteen and twenty-four interviews (Aldiabat, Navenec, 2018). Specifically, Creswell (2013) recommended twenty and thirty informants for a grounded theory study, while Morse (2000) indicated twenty to thirty participants with two or three unstructured interviews per person. Similarly, Marshall et al. (2013) recommended that the sample size for grounded theory should generally include between twenty to thirty interviews following an analysis of eighty-three studies. On the other hand, Thomson (2010) suggested that the average sample size for grounded theory is twenty-five. Nevertheless, thirty interviews allow the researcher to ultimately construct patterns, ideas, categories, characteristics, saturation, and the dimension of a particular phenomenon. According to Thomson (2010), while saturation is expected to occur around the tenth interview, it is good to verify saturation by doing more interviews.

4. Conclusion and Recommendation

Our paper study provides an understanding of 5 qualitative designs, their goals and sample size issues. It is important to note that sample size concerns for qualitative designs revolve around their extensiveness and appropriateness (Guetterman, 2015). Thus, the norm in terms of the minimum number of interviews for a specific design should not only be judged by data saturation or a rule-of-thumb alone. Given the research goals, purposive sampling during qualitative research enhances selected groups' understandings to develop theories and concepts. It is always safer to verify the quality of saturation by conducting additional interviews for any reviewed designs. Qualitative researchers should always be guided that the appropriate sample size depends on several factors specific to the study concerned.

5. Declaration of Competing Interest

The authors of the manuscript declare that there is no interest in conflict, and all reference materials were dully acknowledged.

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