

Issues of Theoretical Sampling: A Narrative Review

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Abstract

Context: Theoretical sampling is the hallmark of grounded theory methodology, but there seems to be little information accessible to researchers regarding process and guidance concerning theoretical sampling. The current study aimed to have a comprehensive and thorough review of the related studies on theoretical sampling and examine definitions, challenges, differences and applicable tips about this type of sampling to provide a comprehensive and clear picture of the sampling process and its probable challenges as well as explaining its practical aspects.

Objectives: The ultimate goal of all the explorations is to provide practical sources for researchers to answer their questions about theoretical sampling.

Data Sources: Databases such as ProQuest, Scopus, Pubmed, Science Direct, Wiley, Ovid, Google Scholar, and also Magiran, SID and Iran Medex (Persian databases) were searched from 1967 to 2015 using keywords of theoretical sampling and qualitative sampling.

Study Selection: A total of 562 Persian and English studies were found. According to the inclusion and exclusion criteria thirty articles and nine books were examined thoroughly.

Data Extraction: The narrative literature review was used as the most appropriate method to manage the data.

Results: Definitions and characteristics of theoretical sampling; theoretical sampling of data archive; the difference between theoretical, purposeful and selective sampling; saturation and credibility in theoretical sampling were discussed in results.

Conclusions: The current study indicated disagreements about some theoretical definitions and operational applications of theoretical sampling; however, the general consensus was that researchers explicated the decision making process in detail. Researchers should justify the selection and the sequence of sampling process to explain the complicated process of analytical abstraction and theory development by empirical data. Hence, the credibility of their theory and research is enhanced.

Keywords: Theoretical Sampling, Qualitative Sampling, Qualitative Research, Qualitative Method, Grounded Theory

1. Context

Human beings are complicated and partly unpredictable. Their individual differences and special needs make it impossible to form a universal law of human behavior. Qualitative researchers emphasize the importance of detailed and exact description of social actions. They attempt to understand how participants experience their world. To explicate the individuals' experiences, researchers try to present a thorough understanding of human behaviors (1), and create a word picture of today's multi-faceted and complex life. To this end, qualitative data collection should be thorough to answer the research questions in depth (2).

There are some similarities in qualitative paradigms, although sampling and qualitative data analysis involve a wide range of research traditions and techniques. Qualita-

tive sampling is naturalistic since it is done in normal and natural and not artificial situations (3). Qualitative sampling is based upon context which means it considers individual's characteristics, the effect of time, location and situation (4). Sampling is therefore the key element of qualitative research (1, 5) and determines the quality of a qualitative research (6). As Patton noted, selecting participants should be congruent with the research conceptual framework. In other words, which and how many participants relate to what researcher strives to know, what the research purpose is, what proves useful and what has credibility (7), all should be taken into account.

The sampling method in qualitative research is also determined by methodological procedures. The qualitative research in health sciences is typically focused on grounded theory, phenomenology and ethnography (8). Among them, grounded theory is one of the most popu-

lar and common qualitative research methods (9). This general methodology attempts to develop a theory that is 'grounded' in the data from which it is derived. Therefore, sampling in grounded theory is directed toward producing and developing an emerging conceptual theory (10).

Reviewing recent qualitative studies indicates that despite most writers' agreement on definition of theoretical sampling, its process remains largely vague and contradictory. Therefore, employing theoretical sampling can lead to specific challenges for novice researchers who are conducting their first grounded theory study (10). Draucker et al. reported that despite the fact that theoretical sampling is the hallmark of grounded theory, there is little practical guidance accessible to researchers regarding the process of theoretical sampling. The reason is that the researchers who used this method provided little descriptions on how they applied the sampling in response to the emergent findings (11). For example, in the studies conducted by Vandecasteele et al. and Ward et al. the processes of theoretical sampling were not explained, and if yet so, researchers used different interpretations of theoretical sampling and its application method (12, 13). Also, in two recent grounded theory studies, Moudi et al. and Mirzaee Rabor et al. used purposive sampling to select the study participants; however, they did not mention the employment of theoretical sampling in their studies (14, 15). In the study by Masoudi Alavi et al. through grounded theory, some sentences showed that selecting participants during the study was merely purposive and was not theoretical. For example they said that: "the participant selection process deliberately selected patients at different ages and with various physical conditions" or "after collecting data from the patient group, fifteen health professionals with at least five years of experience working with persons with diabetes were selected" (16). In another grounded theory study, although researchers did not mention the employment of theoretical sampling, it seems that this approach was used to select participants along with the progress of the study (17).

Hence, the current study aimed to have a comprehensive review of related studies on theoretical sampling and examine definitions, challenges, differences and applicable tips about this type of sampling to provide a comprehensive and clear picture of the sampling process and its probable challenges as well as explaining its practical aspects.

2. Objectives

The ultimate goal was to provide a practical source to answer the questions during their qualitative researches.

Accordingly, the current study major questions were as follows:

- How is theoretical sampling defined? And what are its specific characteristics?
- What are the practical phases of theoretical sampling?
- What are the issues of its applications? And what are the strategies to confront these issues in practice?

3. Data Sources

In the current study, relevant databases were searched to find appropriate resources and studies. Databases such as Science Direct, Pubmed, Scopus, ProQuest, Google Scholar, Ovid, and Wiley were searched to examine published studies. Keyword of theoretical sampling and qualitative sampling were searched. To achieve a wide range of studies and not missing related studies, AND/OR operators were not used while searching and the keywords of theoretical sampling and qualitative sampling were not put into the brackets. Furthermore, the search in the databases was not confined to only review articles, since by doing so there was the possibility of missing some of the studies.

4. Study Selection

The criteria for inclusion in the study were as follows:

- Keywords in the title of articles: considering the aim of study, keywords were searched in the title of articles (not in the abstracts); therefore, the researcher can access theoretical articles rather than methodological ones about the concept under study.
- To be published from 1967 to 2015 (history of theoretical sampling refers to the simultaneous discovery of grounded theory by Glaser and Strauss in 1967. The reason for the selection of this time period was the ability of researchers to have a comprehensive review for definitions, challenges of theoretical sampling from its emergence up to now as well as to clarify and monitor them in case of any changes in the traits).

The exclusion criteria were also as follows: Being E-books; not being in English or Persian; not being relevant to the aims of the study, being duplicated; and full text not accessible. Hence, the process for the selection of articles was based on this protocol: A) Assessing the relationship of title to the goals of the study; B) Examining the relationship of abstract to the aims of the study and C) Exploring full text (in case of availability) according to its consistency with the aims of the study.

In addition to searching the databases, all relevant books accessible to the researchers in the library of school of nursing and midwifery in Tehran University of Medical

Sciences were also included in the study. Flowchart of the review process is presented in [Figure 1](#).

5. Data Extraction

The narrative literature review was used as the most appropriate method for the study. This type of review article tries to summarize a huge volume of information in a specific field and provide findings in a clear and explicit manner (18). Review of studies using narrative method can cover a wide range of topics in various levels in a comprehensive way. The method can either undergo a comprehensive searching or not, and quality assessment of articles can either be done or not. Synthesis in such studies is generally narrative and analysis may be chronological, conceptual or thematic (19).

6. Results

It seems vital to note differences between quantitative and qualitative sampling as they provide a better understanding of theoretical sampling. Therefore, after explaining the differences, other findings were discussed under the following titles:

- 1- Definitions and characteristics of theoretical sampling, including definitions and some of its characteristics.
- 2- Issues of theoretical sampling, including theoretical sampling of data archive; the differences between theoretical, purposeful and selective sampling; saturation and credibility in theoretical sampling.

6.1. Differences Between Qualitative and Quantitative Sampling

The methodology of qualitative and quantitative research differs in their underlying assumption which leads to differences in sampling objectives and strategies, reliability and validity related issues, generalizability and repeatability (3, 20, 21). Quantitative research assumptions are concerned with distribution and statistical power. These assumptions are the cornerstones of sampling decision-making and support designing stronger causal inferences. The underlying assumptions are based upon statistical theories and central limit theorem in particular, which describes the distribution of variables among the population (20). It is assumed that the population parameters are normally distributed. But qualitative researchers are not looking for representativeness; they usually make no assumption regarding normal distribution of individuals' experiences or interactions and settings (4).

Sampling in quantitative research is a random selection of a part of the population. Researchers generalize results respecting the target population which is representative of the larger population. Therefore, how to choose the target population from the larger population is of prime importance as it should represent the main characteristics of a larger population. Researchers employing qualitative sampling place more emphasis on concepts and seek incidents related to them (22). Consequently, it can be asserted that qualitative research emphasizes the saturation and quantitative research emphasizes the generalization (23-25).

Sampling techniques in quantitative research are used to reduce bias and enhance generalization, whereas qualitative researchers contend that their primary goal is creating a mirror or window-like prospect of a particular situation or phenomenon being investigated (26).

Moreover, the nature of a proper sample differs in qualitative and quantitative research (27). Cases and not variables are examined in qualitative research. Qualitative researchers seek people, events or experiences with rich and specific information. Participants in qualitative research are selected not to represent the population distribution, but to provide a unique vision for the phenomenon (20, 28). Qualitative researchers, considering concepts, seek differences and not the similarities. They assert that variations would expand the broadness of concepts and scope of the theory (22). Qualitative researchers take negative and extreme cases into consideration for their unique insights, but quantitative researchers tend to exclude outliers by random sampling (3).

In addition, in quantitative sampling, researcher measures sample size before the study. The sample size is considered as a constant goal throughout the study. Quantitative researchers can use others' studies and find clues regarding the sample size and by analyzing them provide appropriate power to track down effects. Qualitative sampling is an iterative series of decisions in the research process. Therefore, samples in qualitative research are not necessarily constant, their nature is emergent. A thoughtful and reflexive researcher makes some revisions concerning his/her interpretation and explains the sampling consequences (8, 29). The information richness of each case in qualitative research explicates the reason for a smaller sample size in contrast with quantitative research (20).

On the other hand it is believed that in qualitative research, since the phenomena are studied and interpreted in their natural setting, the context affects the meaning of events. Researchers tend to interpret and understand the phenomena with respect to the meanings presented by people (27). However, this is not the case in quantitative sampling.

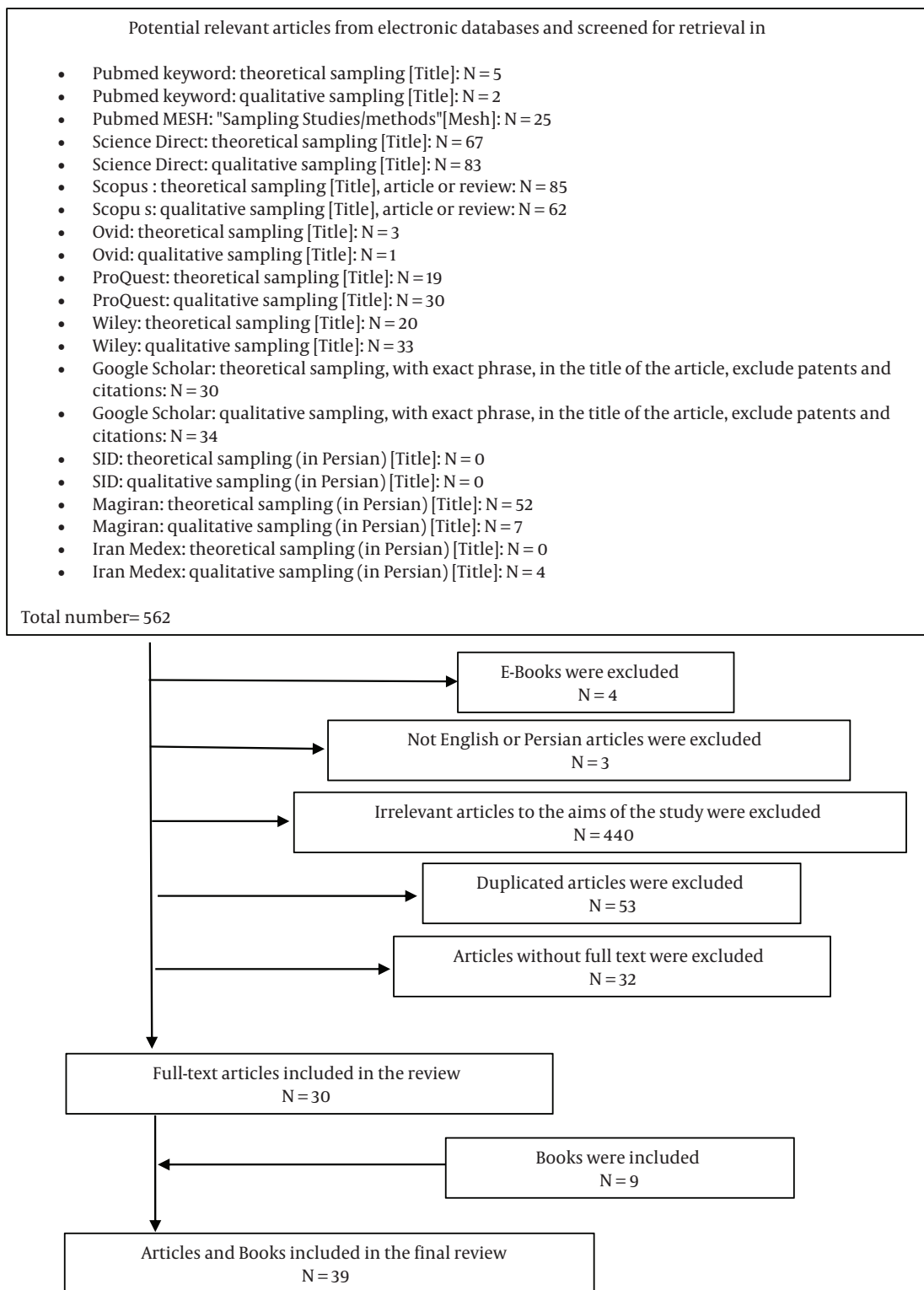


Figure 1. Flowchart of the Review Process

6.1.1. Definitions and Characteristics of Theoretical Sampling

6.1.1.1. Definition of Theoretical Sampling

Despite improvements in grounded theory, the basic definition of theoretical sampling is almost unchanged. Glaser defined theoretical sampling as “the process of generating theory whereby the analyst jointly collects, codes and analyses his data and decides which data to collect next and where to find them to develop his theory as it emerges” (30). Despite different epistemological assumptions, Charmaz presented a similar description for theoretical sampling, highlighting data collection, increasing analytical abstraction of theory by clarifying variation and identifying gaps which need interpretation (31). Strauss and Corbin believed that theoretical sampling is meant to maximize opportunities of discovering variations in concepts and it is used to densify categories in terms of their properties and dimensions (32). According to Polit and Beck, a theory based sampling is the process of selecting incidents, slices of life, time periods, or people on the basis of their potential manifestation or representation of important theoretical constructs (33).

6.1.1.2. Some Characteristics of Theoretical Sampling

Researchers mentioned some characteristics of theoretical sampling each of which is explained in full detail:

- At the beginning of a study, theoretical sampling is open-ended and as the study progresses, it emerges (26).

- Theoretical sampling is grounded in the concepts in which their theoretical relationship with the emerging theory is confirmed (34). In fact, it can be said that theoretical sampling is directed by concept. Concepts are sampled in the data and participants provide data which inform us of the concepts. Therefore, in theoretical sampling, researchers refer to locations, persons and situations which provide information respecting their selected concepts (22, 35, 36).

- It is essential to employ theoretical sampling as a major feature of grounded theory in the inductive-deductive process. Inductive process includes the emergence of theory from data and deductive process includes purposeful selection of samples to test the emerging theory (37).

- Given that guided interviews or selecting the best strategy for data collection is determined by the emergence of theoretical concepts, researcher relies on the ability of the initial participants to demonstrate the elements of the research topic (38).

- Theoretical sampling is indeed a kind of triangulation and is used to confirm research findings. This method helps researchers to correct or add interview questions, change the observation method, select new informants and change the selection criteria to elucidate data obtained through analysis (39).

- Theoretical sampling uses the constant comparative method (39). As the process of data analysis is applied, each event is compared with other events in terms of similarities or differences. This comparison allows researchers to distinguish between categories and themes and identify their dimensions plus properties (22). According to Patton as cited by Suri, researchers who apply constant comparative method can utilize theoretical sampling. Hence, theoretical sampling is used to systematically elucidate and refine the variations found in manifestations and meanings of the emergent concept (40).

- Studying new and unexplored area reveals the importance of theoretical sampling. It allows researchers to explore, discover and benefit from accidental events (22).

- As the time passes, theoretical sampling is planned and researchers check back their assumptions. Given that participants are selected in different situations and their presence is needed to clarify researcher’s understanding, then the research process should be explained in depth for budget agencies (41).

6.1.2. Issues of Theoretical Sampling

6.1.2.1. The Possibility of Theoretical Sampling From Data Archive

Researchers can sample available collected data concerning the concept. Reviewing analyzed data, and regarding them with a new perspective is not exceptional. Since events related to a concept may have already been overlooked and their significance not valued. Documents such as newspapers and books may be used as data sources. Sampling is exactly the same as when data are collected through interviews, observations or field notes by coding and sampling. Documentary data may be found in several libraries, organizations, populations or regions. Consequently, the researchers should reason where the relevant events can be found and sampled. Some documents may consist of interviews or field notes that were collected by another researcher (22).

6.1.2.2. The Difference Between Theoretical and Purposeful Sampling

There are different opinions concerning the differences between theoretical and purposeful sampling. Some researchers assert that all sampling methods in qualitative research are purposeful (42), or can be placed under a broad umbrella of purposeful sampling (43). Since they all tend to achieve a specific and defined objective (37, 42). In addition, theoretical sampling is considered as a form of or synonymous with purposeful sampling by some researchers (20, 44, 45). They contend that purposeful/theoretical sampling attempts to select participants respecting these items: determined criteria by research pur-

pose, under the guidance of a theory, with the purpose of refining and elucidating the emerging theory (10, 46). Based on this feature, when a researcher applying a theoretical sampling notices an emerging process, he/she will purposefully seek new data. Hence a more appropriate term for theoretical sampling can be “analysis-driven purposeful sampling” or “analysis-governed purposeful sampling” (37).

Moreover, other researchers pointed out the application of purposeful or selective sampling at the beginning of theoretical sampling and argued that it is inevitable to apply some degrees of judgment in the early stages of sample selection (47). For example, Thompson believes that data collected via selective sampling as “tentative theoretical jumping off points from which to begin theory development” (48). Therefore, phenomenal or demographic characteristics can be the starting points (49). According to Glaser, “initial sampling decisions are based on a general sociological perspective and a general problem, but once data are collected and coding begins, the researcher is led in all directions which seem relevant and work” (30). Therefore, in the process of employing theoretical sampling, the researcher can start with selective sampling and when the concepts emerge, he inclines toward theoretical sampling (11).

However, some researchers state that theoretical sampling differs from other sampling strategies of purposeful or selective sampling, which are applied in qualitative research (50). Purposeful sampling involves identification and selection of individuals or groups who possess a particular knowledge or experience regarding a phenomenon. In addition to the knowledge and experience, Spradley as cited by Palinkas et al. believes that purposeful sample in a qualitative research should have the following features: noticing the importance of availability, willingness to participate in research, and the ability to share experiences and ideas in a detailed, expressive and reflexive way (23). Strauss and Corbin mentioned that purposeful sampling points to a strategy that researcher evaluates his judgment related to participants who provide the best perspective for the phenomenon and then purposefully invites those particular perspectives into the research (32).

Moreover, to ensure selecting the richest information provided by participants, the researcher determines a set of inclusion and exclusion criteria. These criteria are grounded in research questions designed comparatively regarding prior knowledge of subject matter or initial study of related articles (10), but theoretical sampling is understood in context (37), since sampling criteria and its size in this method emerge as the study progresses (37, 51) and researchers applying theoretical sampling do not know exactly where and what sample they are directed to

(10). Glaser suggests that in theoretical sampling, the researcher should always be ready to change the interview approach, data collection sources, and participants as data patterns emerge (30). Hence, researcher waits for the sample selection to be formed by concurrent data collection and analysis (5), while a purposeful sample is selected by a predetermined aim at the beginning of the study (10).

In this field, the exploration of various studies showed that grounded theorists, in some cases, applied purposeful sampling instead of theoretical sampling in their studies (52-54). In addition, in some studies, they started the study using purposeful sampling (and a mention of inclusion and exclusion criteria), but as the study headed forth and developed, theoretical sampling was employed (12, 13, 55).

6.1.2.3. Saturation in Theoretical Sampling

Since qualitative studies do not aim at statistical generalizations, many of qualitative researchers state that sample size and sampling designs are not issues and challenges in qualitative research (27); though a novice researcher is concerned with where to start a research and where to stop data collection (10).

The term “saturation” in qualitative research is an ambiguous concept and is frequently misinterpreted (10). Researchers have a few disagreements over its definitions and applications, which are as follows:

Some researchers believe that in a qualitative research, stopping data collection relates to saturation or information redundancy. Redundancy is the continuous process of conducting and analyzing interviews which last until all concepts are repeated several times. When researcher concludes that the conceptual wellspring is dried up, interviewees repeat each other’s ideas and no new concept or theme emerges in the following interview, he stops being redundant. But saturation is achieved when all questions are explored thoroughly and in detail (6, 21). In this regard, some researchers assert that theoretical saturation (in grounded theory) and qualitative saturation differ essentially. A qualitative researcher pursues descriptive saturation, but a grounded theorist pursues saturation at a conceptual level (10). Roy contends that descriptive data saturation happens when researchers can predict things they have seen or heard frequently (5). But theoretical saturation in grounded theory is not purely descriptive redundancy. According to Glaser and Strauss as cited by Breckenridge and Jones, the purpose of theoretical sampling is not descriptive coverage. Dense categories provided by descriptive redundancy do not necessarily indicate an understanding needed by theoretical saturation (10). Theoretical saturation is an inductive process that indicates category development. This presents properties and dimen-

sions of categories, including variation and possible relationships with other concepts (22). Consequently, theorists saturate categories with more explanatory power and integrate them around a core variable. Therefore, the theorists are capable of acting beyond the typical descriptive level of a qualitative research and present the theoretical essence of a substantive area. In grounded theory, saturation is not related to confirming hypothesis and describing a specific situation at a specific time. In theoretical saturation, researcher is interested in creating a theory that can overcome changing situations. In grounded theory, theoretical sampling and the sampling end point are controlled by the emerging theory (10). When there is no valuable and/or new idea concerning the theory development, sampling can be stopped. Regarding the quality of the developed theory, researchers can recognize when saturation has taken place (42, 51). Despite these descriptions, some researchers believe that data saturation and redundancy are closely related to theoretical saturation; hence, the richness of data clarifies the theoretical development (5).

In general, concerning sampling end point, researchers should be aware not to conclude soon. Sometimes when the researchers use the term saturated categories, they truly mean “they” are saturated with the process of data collection. In such circumstances, their time, money, and energy are finished and research is called off very soon and some gaps remain. It is unlikely that five or six interviews lead to saturation (22). Ryan and Bernard showed that saturation is connected with researcher’s experience and fatigue and the number of analysts who review the data. In other words, theoretical saturation relates to the researcher or research team’s skills (56). Therefore, for those who apply grounded theory for the first time, understanding the concept of theoretical saturation is probably difficult. Then, they never experience reaching the saturation point (10).

A review of studies indicated that grounded theorists’ researchers have different conceptions and understandings of ‘saturation’; for example, Ashghali Farahani et al. considered their data as saturated when the new data could not provide any new theoretical insight or new characteristics for categories (57). Similarly, Heidari et al. also reported that they considered their data saturated when by increasing the number of samples, new data were not achieved (58). Other researchers believe that data saturation means that no new concept which needs creation of a new code is gained (53, 54). Seidi et al. wrote on saturation as the time when there are no new data emerging and clarification of interrelationships between concepts and sub categories with no emergence of new category, evolution of axial categories and gradual emergence of theory

(55). Furthermore, Silva et al. pointed out that theoretical saturation happens when collecting new data makes no changes in the consistency and theoretical density of the emergent concepts (59). Vandecasteele et al. believed that saturation means when you cannot glean any new information and the interrelations between concepts are observed clearly (12). As it can be observed in the review of such studies, the researchers frequently use the concept of “data saturation” interchangeably with “theoretical saturation”.

6.1.2.4. Evaluating the Credibility of Theoretical Sampling

In the past decades, despite the growing popularity of qualitative research, it is criticized for its ambiguous process and procedures. Many published qualitative researches provide little information regarding features of studied sample, sample or process type and sampling techniques (8). One of the major problems of applying theoretical sampling is using this method without adequate understanding of grounded theory which leads to inability to clarify sampling strategy. Inappropriate application of grounded theory is harshly criticized, since it seems that with a sleight of hand, researchers create a set of themes. Thus, with no step by step explanation of how to achieve this theoretical insight, people are invited to believe their theory (10). Sampling is essentially needed to determine research quality. Providing an exact description of participants is one of the credibility elements in qualitative research (6, 10). It is recommended that novice grounded theorists avoid a separate, on-off, and static description and instead concentrate on the theoretical sampling development, justification and decision making. Their explication should reflect the complex process of theory development (10). Researchers should explicate, in detail, the decision making process for sampling and systematic procedures to achieve research samples. If research findings cannot explicitly connect to the research process, it is difficult to determine research credibility (8, 24, 25).

On the other hand, qualitative researchers believe that the adequacy of theoretical sampling should be judged regarding the process of theory production. Glaser and Strauss as cited by Breckenridge and Jones, acknowledge that an inadequate theoretical sampling leads to creating a theory that has lots of gaps and lacks integration and comprehensiveness. Given that the credibility of a theory or any part of a research cannot be separated from its production process, the researcher should present evidence that the final theoretical products are really grounded. The researcher should pay attention to theoretical sampling process and indicate how theoretical insights turn into an abstract theory. Therefore, he can reveal the complexity of theory development (10).

Corbin and Strauss pointed out that the evaluation and judgment criteria respecting the quality of grounded theory involve the evaluation criteria of theoretical sampling. They suggested that in research evaluation, the following factors should be taken into account:

- How were the original sample and its following sample selected?

- Which categories was theoretical sampling based on?

- How did theoretical formulation direct data collection?

- How did descriptions related to theoretical sampling determine that categories were obtained from the data? (22).

A review of literatures using grounded theory indicated that in some of the studies, researchers sufficed only to defining theoretical sampling and did not mention any practical realities of theoretical sampling process in their studies. For example, in the studies by Ward et al. and Shirazi et al. the process of researchers' access to theoretical insights was unclear for the readers (13, 60).

7. Conclusions

Theoretical sampling is the process of data collection for theory generation. The review of literature indicated that despite disagreements and challenges regarding some operational application of theoretical sampling, there were agreements and general consensus respecting the significance of theoretical sampling and its influence over quality of theory. Therefore, it is recommended that researchers explicate the decision making process in detail, since they apply theoretical sampling in their studies. Researchers should also justify the selection and the sequence of sampling process to explain the complicated process of analytical abstraction and theory development by empirical data. Consequently, the credibility of their theory and research is enhanced.

Footnotes

Authors' Contribution: Study concept and design (Nayyereh Davoudi, Nahid Dehghan Nayeri); searching databases and selecting the articles: (Nayyereh Davoudi, Afsaneh Raiesifar, Sarieh Poortaghi, Shamsi Ahmadian); interpretation of data: (Nayyereh Davoudi, Nahid Dehghan Nayeri); drafting the manuscript: (Nayyereh Davoudi); critical revision of the manuscript: (Nahid Dehghan Nayeri, Afsaneh Raiesifar, Sarieh Poortaghi, Shamsi Ahmadian); all authors read, revised and approved the final copy of the manuscript.

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