



## RESEARCH PAPER

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## Researcher as an instrument in qualitative study: How to avoid bias

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### Abstract

This article aimed to identify possible bias and discuss ways to minimize bias in qualitative research. An integrative relevant research review was done following the PRISMA flow diagram. Using keywords recent and relevant databases was searched. One hundred forty-nine articles were selected primarily from nursing, medical, social science, and educational electronic databases and relevant books. Based on relevance, seventy-two articles were selected initially and seventy-seven were excluded. Finally, based on the relevance of the methodology, twenty-three articles were selected for the integrative review related to the researcher's bias. Based on the analysis of the findings, this article proposes that the danger of bias in subjective research as an instrument can be limited to various degrees by consolidating the experience of the subjective research by surveying the research design. To minimize bias as a novice researcher of a qualitative study, one should conduct an in-depth interview with the following (1) Read and get direction from the literary works; seek the rule and criteria to assemble the limit, raising capacity and information of leading qualitative research about how to lead in-depth interview, focus group discussion to maintain a strategic distance from bias (2) Try to include herself/himself into the qualitative research extend with expert researcher. In conclusion, this article showed ways to bias and suggested how to deal with researcher bias by combining the practical experience of a qualitative study as a novice researcher.

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## Introduction

Qualitative research was shaped almost 80 years ago in response to need for advancing knowledge in the social sciences (Simons, 2013) but in all segments of qualitative research, the danger of bias may exist and can initiate from the analyses, the respondents and the mediator. The aim is not to eliminate subjectivity but rather to ensure that inquiries are done systematically and research is reliable. To lessen bias and convey better research, we must investigate its main sources. The concern is that in qualitative research investigator itself a tool, so bias can happen from the planning, information gathering, investigation, and publishing periods of research.

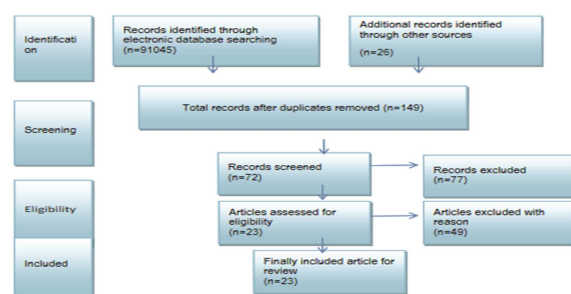
Rigorous understanding of research bias allows researchers to understand and avoid it. Plan to utilize uncommon or exceptional techniques for investigation for the threat of bias (Hombrados and Waddington, 2012). Comprehension of bias and how it influences the results is fundamental for evidence-based practice. For nurse investigators, the recognizable patients of own viewpoints perhaps reliably can help nurses to convey evidence-based practice in light of patients' needs. Accordingly, the objective of this article was to outline types of bias across research plans and consider procedures to limit bias. The methodical differences in gathering information that are inferable from those data collection are more properly referred to as researcher bias (Taherdoost, 2021). Understanding research bias is essential: initially, bias may exist in all investigations, across research design and is hard to eradicate; secondly, at each stage of the research process bias can happen; thirdly, the legitimacy and dependability of study findings and variation of information can have impacts of bias on vital outcomes for practice.

Bias can occur in many stages: the method for choosing subjects may be misleading; the sample size may be too little to assume any firm conclusion from the data analysis, and outcomes may be overstated. Therefore, this article is for investigation and interpretation of bias experienced by the novice

investigator in qualitative research and finding the ways to minimize possible bias in qualitative research study.

## Materials and methods

For this article, electronic databases were searched using three key words; Research bias, Research instrument, and Qualitative research. Based on PRISMA Flow Diagram (2009) (Fig. 1) an integrative survey was performed with significant literature which is prominently being used by researchers in particular objectives, including Science Direct, CINAHL, PubMed and Google Scholar. Focusing on the objective of this article, approach incorporates the plan, setting, sample, inclusion and exclusion criteria, methodological limitations, the information accumulation and information investigation systems in a review (Burns and Grove, 2003). Using integrative survey which getting the information from literary works, past empirical review, organized, hypothetical written works, illustration of the past research, an interview guideline for qualitative paper were utilized to produce an incorporation and refashion of the in-depth interview for discovering the possible bias in the review. Hence, the review utilized the information unification and similar information from investigation to synchronize with my practical experiences in the field work to show how bias in qualitative research is encountered.



**Fig. 1.** PRISMA (2009) flow diagram

### Inclusion and exclusion criteria

An integrative review started with distinguishing the issues and its related ideas of bias so as to encourage information pulling out from the important sources. It then charts in the illustrated writing aspect of methodologies, including seeking terms with

inclusion and exclusion criteria to evaluate the significance of essential sources. However, studies were included into the review related to researcher's bias if the original research was displayed, the review was directed in the subjective procedure, the review focus was the bias or researcher's bias and the language was English. All different reviews were eliminated from the review since there was no connection with the researcher bias or were not appropriate with the methodological approach.

### Results

The primary search recognized 149 reviews along with extra 26 studies distinguished by means of electronic information viewing. At the point when articles were excluded, the aggregate number of important articles was decreased to 72. Titles and abstracts compositions were then checked and assessed for pertinence to the theme considering the inclusion and exclusion criteria. This brought about 23 feasible reviews for integration. Taking after a scrutinizing of the full content of each review, 49 articles were excluded either in light of they were original and offered no new information for thought or on the grounds that they did not include measures of bias in qualitative study. Also, the main subjective review recognized was incorporated on the grounds that it was principally an investigation of researcher bias. Considers around there were incorporated just if researcher bias was a noteworthy concentration of the review. However, the last sample contained with 23 articles on researcher bias in subjective review. Though distinctive review outlines have particular methodological difficulties and limitations for bias that can happen at each phase of the research process for example, Cognitive bias, Design bias, Selection/participant bias, Data collection bias, Analysis bias, and Publication bias. Researcher's choices are frequently influenced by cognitive biases, which sometimes resolve on choices of completely rigorous to inquiry of the subject. It can happen during thinking process of designing, analyzing and interpreting research.

Design bias might occur, when an investigator's beliefs impact of the decision of research question

and technique. Incongruence between purposes and techniques builds the chance of bias. Selecting subjects for the research is the key indicator to meet the investigation. So, study setting and technique of selecting subjects may apt bias along with inclusion criteria. When investigator's individual thoughts and perceived beliefs of the phenomena direct the information gathering, then bias can occur in the method for collecting data. During in-depth interview, making inquiries can impact and guide the subjects to deliver data can make bias. Investigator may normally search for information that affirms their theories or affirms individual experience. Important information might be neglected with individual convictions which information is conflicting. Non-publication of qualitative study may happen in light of an absence of insightful data; in this manner publication may have some level of bias when methodologies and findings are not understandably displayed in the research.

### Discussion

The objective of this review was to analyze and tress out possible bias over the qualitative research progression focused on in depth interview. Therefore, the article expected to observe bias in qualitative research and how to limit the possible bias. To address these points the article used a regard for limiting bias from the planning, information gathering, analysis, and publication stages of research by increasing comprehension for the consideration toward risk identified with bias. The equality or the absence of bias, estimation of instruments should be examined keeping in mind the end goal to get legitimacy of culturally diverse appraisal and examinations (Van de Vijver, 2003 referred to in Harris & Brown, 2019). During the conversation sometime the respondents became confused to answer the question therefore bias can be happened in terms of item bias. On items referring to earlier episodes problems seemed to concentrate on the first questions. These questions had to be repeated several times, leading to uncertainty in the respondents. Some items were observed to lead to embarrassment (Harris and Brown, 2019).

During collecting data it was observed by the researcher that language was the barrier of communication. In a study it was found that the way of Protocol for Language Arts Teaching Observations scores were not influenced by the attributes of students in the classroom recommends purpose for worrying that a certain bias might be intuitive in the classroom assessment scoring system and framework for teaching instruments when utilized as a part of English language arts classes (Gill *et al.*, 2016). In this study, the outcomes showed that the novice researcher can be fruitful in limiting possible risk for bias in qualitative study mentioning the preparation methodology expanded carefulness to danger of bias. Bias may exist in a number of areas in the qualitative study when it is done by a novice researcher. Indeed, even with the utilization of express consideration criteria, choices about incorporation of individual reviews remain mostly subjective and vulnerable to 'commentator bias' (Mc Donnell *et al.*, 2003). The researcher's hands on experience of data collection can propose creative differences of the researcher as an instrument in qualitative study can keep away from a risk of bias having major hypothetical and rational implications. Hence, the cognitive bias for novice researcher is a thing that may happen. It is not really the case that the method is simple or clear, as it requires pushed aptitudes in perception and doing subjective research and a profoundly made ability to be reflexive. In a few cases language understanding was inadequate to see long, complex inquiries. Many inquiries should have been repeated and clarified before respondents could answer (Harris & Brown, 2019).

Objectivity additionally imposes to the best possible separation between investigator and subjects that limits bias and is accomplished through such techniques as instrumentation and randomization (Crano *et al.*, 2014). Without having appropriate training of the researcher, potential bias should occur during data collection. At each site researchers participated in a similar preparation and work on utilizing the real information accumulation instruments to lessen potential researcher bias

(Mmari *et al.*, 2014). The interview should have done in the natural setting where participants feel free to share their opinion without hesitation but practically it was found that they were not spontaneous to speak cheerfully. It may be for the language barrier or for the inconvenient place for them, since they were foreigners and the place was new to them. Therefore method bias may happen. One study showed that the investigating circumstance was new for the Moroccan ladies and a large portion of them felt awkward. In a few cases the questioner watched a suspicious state of mind towards the interviewee and interviewer (Harris and Brown, 2019).

Testing assumption and cross examining both sustainable and recognizable information and the novice and unusual have an influence in growing the limits of comprehension and clarification. To get the data support for this discussion may have bias as well since the researcher searched limited articles and conducted the research within short time. Methodical survey is liable to publication bias since papers with statistically significant discoveries will probably be published, and researcher just included peer-reviewed and published reviews. The choice to prohibit exploratory qualitative reviews implies that this study has not caught a portion of the rich subjective knowledge accessible in regard of study topic (Duncan and Fiske, 2015).

However, in naturalistic and subjective ways to deal with assessment to control of bias triangulation has been a vital methodological issue and setting up substantial recommendations since conventional logical systems are contradictory with this substitute epistemology (Golafshani, 2003).

#### *Personal experience in conducting qualitative study*

There are many sources of bias which may exist in judgments and assessment of exercise performance. The most self-evident is the individual bias of the judge (Casad and Luebering, 2023). Being a Ph.D. student, to move on the research field particularly qualitative research, it is an initial attempt to get the encounters from the fields which required a great deal

of the endeavors and research to create an accurate research result. Bias might be presented as a result of specific reactions or qualities of the sources. Sources might worsen things appear to be preferable than they are. Informants may equally be unwilling to impart certain data to the investigators and may intentionally withhold or twist it. Fusch *et al.* (2018) suggested that researcher can endeavor to expand the legitimacy of replies in such a setting: (1) by ensuring that sources are sure about the way of the exploration e.g. why the investigator is there, what he is expecting, how he will gather information and what he will do with it. (2) By first building a trust-relationship with the subjects and remaining in that setting for a lengthy expanse of time. (3) By talking similar informants on a few events and mentioning objective facts more than once and after some time. (4) By contrasting the outcomes acquired and other confirmation. (5) By affirming discoveries and investigation with source. (6) By keeping exact and precise field notes to take note of the varieties in reactions throughout time. (7) By indicating field notes for a while by other researcher.

To mention a similar observation by more than one expert, it helps to reduce of trustworthiness and observer bias. Every investigator ought to bring their own specific knowledge and skill to the observation (Fotheringham, 2010) since, another researcher is commonly noticeably sharper to see where or how a fieldworker is being misdirected or drafted. John & Timothy (2012) expressed that in depth interview is the best origin of the information gathering in the investigation since it raise the information from more profound perspective. The novice researchers may encounter many sorts of things and take in something from the field that they presented to; in this way, this is the main endeavor to be a researcher that the Ph.D. students will completely comprehend the gaps, mistakes, bias, and the shortcoming of themselves directly after a process of the information accumulation and information analysis.

Form my own involvement in qualitative data gathering, I discovered many shortcoming, mistakes,

errors and indicated after I tuned in to my tap record of our discussion, yet this is a good event to see myself and for further advancement in qualitative research in conducting in depth interview to discover the exit plan and better answer for the following research. For example, participants' selection and their ability to express their opinion is a crucial thing. Since, the participants of my study were foreign students and they were from non-native English speaking country, so, the probing question was limited and it was difficult to stretch the conversation. At some point, I just centered excessively on my guideline which, the interviewee feels awkward to answer the inquiries. I discovered like they are not willing to answer while I was just continue running with the guideline, they appear, loss of the eagerness to give the appropriate response. It may be for sticking strictly with the guideline or for the participant's English speaking limitation.

#### *Conducting the in-depth interview*

The information will be considered as a finished in depth interview through determination on the trusted upon the researcher interface and the completed information is found (Turner III, 2010). From my own understanding, exploring into the insightfulness and completed data is somewhat hard in light of my own capability and efficiency as the investigator; in this manner, many points needed to be balanced and needed to focus on, particularly like, probing, and set up trust and sound of correspondence. Respondents' beliefs or qualities that go with this, seen relationship with a specific gathering might be a source of potential bias. The participant and the researcher have to have rapport building and very good communication to participate for the purpose of gaining expected and productive data from the interviewee by utilizing the guideline or leaving guideline.

#### *How to be a good instrument?*

In qualitative research, investigator is considered as an instrument (Cresswell, 2013). Since, the researcher is a device or instrument to gather the information, so the researcher ought to be educated or sufficiently

experienced about the process and the key techniques to collect the information. Before entering into the field for information gathering readiness is an absolute necessity. For the data gathering, thoughts of examining and uncovering to the point of information saturation, together with a good instrument, a plan and guideline of the process of the information gathering ought to be made. To get progressive and critical data by proper utilization of the interview strategy and rule, sustained by a few of methodologies, and individual encounters to set-up plainly a qualified analyst is the key focuses to deliver a decent research result (Turner III, 2010).

In all cases of human communication, the interaction bias is an issue whether the practices contemplated are answers to inquiries in a probing interview, recognizable conduct in a controlled explore, open exchange in a focus group, easygoing discussion in a setting of naturalistic request, or requested reactions on a self-administered questionnaire (Taherdoost, 2021). All the strong thoughts and assurance from the experts of qualitative research ought to be taken to create competency and wisdom in regards to the in depth interview for avoidance of bias. Experts can regulate the new investigator how to get the typical information and particular to keep away from what is ought not to ask within in depth interview. Hence, the investigator can get ready such a large number of things like knowing the subjects base, culture, sex, race beforehand when going to the participants. For instance, the guideline is to get a few thoughts to make discussion, not simply go through the guideline.

#### *Ways of minimizing bias*

In spite of the fact that researcher ought to endeavor to limit bias, it exists in all study design, and outlining potential sources of bias allows more prominent basic assessment of the research findings and conclusions. Upgrade the truthfulness for possible research bias because researchers convey each study of their ideas, thoughts, preferences and philosophies. To decrease normal pitfalls in connection to bias unmistakably expressing the method of thinking and picking a correct study design to meet the objectives.

In considering whether the research design and methodological procedures are biased or appropriate to address the issue being investigated, ethics committee have an imperative role in this regard. Subsidizing bodies and ethical boards is a basic piece of designing research study, and commonly gives important viable direction in creating strong research along with criticism from peers.

Selection bias is frequently diminished by the random selection of subjects, and on account of clinical trials randomization of subjects into comparison group in quantitative study. Nonetheless, not representing informants who withdraw from the study or are lost to catch up can bring about sample bias or change the attributes of subjects in comparison group (Sica, 2006). Convenience and purposive sampling can diminish bias because of continuous refinement of subjects to meet the research objectives in case of qualitative research compared to quantitative study. Premature conclusion of the determination of subjects before investigation is finished can weaken the legitimacy of a qualitative study (Francis *et al.*, 2010). By proceeding to enlist new participants into the review of information examination until no new data develops, this can be overcome, which is known as data saturation. Qualitative research has been criticized for lacking straightforwardness in connection to the scientific procedures utilized (Morse *et al.*, 2002).

Having a well-designed research convention clearly drawing information accumulation and analysis can help with diminishing bias. Bias can be decreased by increasing follow-up and where suitable in randomized control trials analysis. Qualitative analysts must show precision, related with openness, significance to practice and harmoniousness of the methodological approach. Even though different experts may make out the information in a different way, acknowledging and seeing how the subjects were produced is a basic piece of showing the vigor of the findings (Morse *et al.*, 2002). By different researchers and triangulation, lessening bias can incorporate

respondent approval, consistent examinations crossway over participant accounts, signifying to immoral cases.

In synopsis, limiting bias is a key thought when outlining and undertaking research. Researchers have a moral obligation to plot the constraints of studies and record for potential sources of bias in spite of the fact that deciding general danger of bias is difficult on the grounds that the level of bias is dormant but rather can be helpful (Guyatt *et al.*, 2011). This will empower health experts and policy makers to assess and investigate contemplate study findings, and consider these while applying findings to practice or strategy.

### Conclusion

This academic article was a descriptive explanation of the relations between bias and qualitative research instrument since bias might be happened from the planning stage to the publication. It is not possible for a researcher to completely avoid bias in each stages of a research study. However, if the novice researchers follow the instruction of conducting in depth interview then bias can be minimized in many ways. In this article it has been additionally illustrated that the influential differences in bias, the findings and flow of discoveries indicating constructive contrasts in the simplicity in which possible bias can occur in a qualitative research.

Overall, the present study showed the areas of possible bias and the method for staying away from or limiting bias. However, there are possible limitations in the measures utilized as a part of the study. The present experience ought to be considered in light of a few limitations. The sample size was unassuming; a bigger sample would consider for more noteworthy examination of individual contrasts crosswise over development. Language barrier was an important issue to dive into deeper view by relevant probing questions. It would be useful for future reviews to consider the utilization of additional bias assessment works and look at the point comes in consideration. Future emerging bias in research may also benefit by

the utilization of the experience gathered from this article as a novice researcher.

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