

# Designing Appropriate Mixed Methods Nursing Research

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Mixed methods studies have been suggested as part of a strategy to develop nursing investigations and knowledge [1]. Mixed methods is a research approach by which researchers collect and analyze both quantitative and qualitative data within the same study; thereby, two methods from different paradigms are used in a single work. This approach can improve knowledge accumulation without crossing paradigmatic boundaries, especially when researchers clarify in advance the goals and contributions of each paradigm [1]. It requires researchers to adopt a mindset that is focused on which method and design groupings are most suitable for answering significant research questions [2].

The recent development of mixed methods research in nursing and healthcare occurs during a time of a global increase in the complexity of healthcare delivery [3,4]. Many scholars consider that research questions are shaped by the purpose of a study, and that the methods and design of the investigation are then formed. The value of mixed methods studies has been affirmed in nursing research, where this approach is presented as a complementary and alternative method to traditional qualitative and quantitative approaches [5,6]. There is widespread agreement that a combination of methodologies is necessary to fully understand the circumstances under which change (i.e., interventions) takes place. This is related to the current emphasis on translational research and the importance of practical applications within

nursing research [4].

In the *Journal of Korean Academy of Nursing*, a search of the journal's database for the key term "mixed method" produced 11 articles published since 2014; still, mixed methods research is a contested field that is still developing [7]. Although there is an increasing need to conduct mixed method research in the nursing field, there is little guidance or information on how to improve the quality of nursing research using mixed method designs [8]. This editorial, therefore, offers a broad understanding of the process of mixed methods nursing research, as well as strategies to improve the quality of mixed methods research in Korean nursing academies.

## UNDERSTANDING MIXED METHODS RESEARCH

Mixed methods research is rooted in recognizing that neither quantitative nor qualitative research methods are sufficient in themselves to understand the complexity of human phenomena, including the many different factors that affect health [9]. Historically, quantitative research has been synonymous with a positivist/scientific worldview, while qualitative research is associated with an interpretivist/constructionist worldview. Hence, they differ vastly in the type of information they produce [1,10]. We are aware that qualitative

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and quantitative research are based on different paradigms.

To eliminate fundamental conflicts related to the contradictory mixing of qualitative and quantitative research in a single study, we need to understand the difference between the terms *methodology* and *methods* [11]. As the “thinking tool,” methodology consists of the theoretical underpinnings that guide the research question as well as the methods and data analysis that will be used. In contrast, methods refer to the “doing tools” used to collect and analyze data [11]. In mixed methods research, the methodologies are not mixed, but are rather reflected in which methods are combined and how and why they are combined [12]. Thus, “quantitative” and “qualitative” describe the different methods, not methodologies, and the combination of methods is a technical problem [10,12].

The two primary mixed methods research designs are *concurrent* and *sequential*. In the concurrent or *parallel* design, quantitative and qualitative methods are used simultaneously and both methods are of equal importance in answering the research question. As options of concurrent mixed methods designs, we have the “*embedded*” and the “*nested*” designs, which both show unequal priority. Conversely, sequential mixed method designs use one method first, followed by the other [8,10]. In sequential mixed method designs, quantitative and qualitative data may either be given equal priority, or one dataset may be secondary to the other. The most common sequential designs in health and social science research are *sequential explanatory* (*quantitative*→*qualitative*) and *sequential exploratory* (*qualitative*→*quantitative*) designs [13]. The sequential explanatory design is best suited for areas in which little prior knowledge exists. In these types of studies, qualitative data can be used to develop items for questionnaires, testable hypotheses, or theoretical frameworks that can be used to analyze quantitative data that are subsequently collected.

The various forms of mixed methods research offer a meaningful approach toward comprehending complex social phenomena, such as nursing knowledge studying on the study of human beings. It may broaden existing evidence-based nursing practice and enhance its applicability in the nursing field [14]. Despite the benefits of mixed methods

research, there are certain challenges when using mixed methods design in nursing research. One of the main challenges involve increased costs and resources, longer study durations, and labor-intensive processes, as a mixed methods study design often involves multiple stages of data collection and analysis [9,14]. Moreover, using multiple methods does not guarantee an improvement in the quality of nursing research; therefore, mixed methods research should not be used based solely on researchers’ belief that they will obtain better findings. Mixed methods nursing research is only valuable if it is appropriate for the research questions [12,13].

## RESEARCH PROCESS OF MIXED METHODS NURSING RESEARCH: RESEARCH QUESTION, DATA COLLECTION, ANALYSIS, AND INTEGRATION

An appropriate mixed methods study starts with a strong mixed methods research question or study objective. As the mixed methods approach can be used to gain a better understanding of the connections or contradictions between qualitative and quantitative data, a research question that can be answered by either quantitative or qualitative methods alone is required [15].

When using a mixed methods approach, authors need to include at least one explicitly formulated mixed methods question or objective, considering the nature of mixing, linking, and integration. Regardless of the order in which the study questions are postulated, overarching or comprehensive research questions to be answered at the end of the study also need to be presented. The study questions should include both qualitative and quantitative questions related specifically to the need to use mixed methods, such as elaboration or complementarity [16]. Furthermore, the research questions might differ, according to the type of mixed methods design. Referring to a concurrent mixed methods design, both components’ questions would be framed from the start. In the case of sequential mixed methods studies, however, the second or later strand of questions emerges as a result of the findings of the first strand [15,16]. Therefore, each study’s questions must be clearly described, based upon the

type of mixed methods design. The specific type of mixed methods design should be described clearly to guide data collection, analysis, and synthesis of study results throughout the process of the mixed method research. Additionally, the rationale for using mixed methods design in a study must be presented. For example, in a study on adolescents' experience of fatigue and their perceptions of its impact on quality of life during and after treatment for cancer using a concurrent mixed methods design [17], the rationale for using mixed methods was that the convergence of the qualitative and quantitative data would provide a richer and deeper description of participants' experience, contingent upon the study aims.

Implementing mixed methods in studies requires rigorous and validated procedures. We therefore discuss elements that can be useful for evaluating the quality of the mixed methods research next. First, the research question needs to be justified by the use of mixed methods. Second, the data collection procedures will vary, depending on the type of mixed methods research design [12]. The sequence of the methods must be clearly described and must flow logically; illustrations of mixed methods research designs are helpful and promotes understandability [13]. Referring to the mixed methods type (concurrent or sequential), the equal or prioritized weights of both methods must be described; moreover, the method used needs to be aligned with the study aims. The methodological implications of using mixed methods research must be discussed. Third, data collection and analysis should be described clearly and aligned with the purpose of the study [15]. Sampling for mixed methods involves combining probability (quantitative) and purposive (qualitative) sampling techniques [12]. Data must be obtained using rigorous data collection techniques and analyzed using sophisticated procedures.

Lastly, the integration of qualitative and quantitative findings in the reporting and interpretation phases is required [9,13]. Descriptions of how, when, and by whom data integration is achieved is required [15]. Fetters, Curry, and Creswell suggested three strategies to integrate results; these were *integrating through narrative*, *integrating through data transformation*, and *integrating through joint displays* [18]. Integration through narrative means reporting qualitative and

quantitative findings in a single report or a series of reports. There are three types of narrative integration techniques: weaving, contiguous, and staged integration. For example, the contiguous approach involves presenting the findings within a single report, but with the qualitative and quantitative findings reported in different sections. For the staged approach, which is often used in multistage mixed methods studies, the findings of each step are reported in stages, as the data are analyzed [18]. Finally, integration through transformation refers to transforming the qualitative data into quantitative data and vice versa, to be able to compare both findings. In the case of integration through joint displays, researchers integrate the data by bringing the data together through visual means to draw out new insights beyond the information gained from separate qualitative and quantitative findings [18].

## STRATEGIES TO IMPROVE THE QUALITY OF MIXED METHODS NURSING RESEARCH

Mixed methods research questions and objectives clearly demand the use and integration of qualitative and quantitative approaches. In addition, there have been concerns regarding mixed methods research in the past, due to inconsistencies in application and reporting, less than optimal reporting of validity/reliability, or a rigor of the methods [19]. However, considering the complexity of nursing due to its nature involving personal and healthcare issues when dealing with human issues, mixed method research has a broad appeal among nursing scholars, and the use of mixed method designs in nursing research continues to grow [19,20].

The Research Initiative Valuing Eldercare (THRIVE) projects were complex coordinated research projects that used a fully integrated mixed method design to evaluate the effect of the Green House nursing home culture change. The authors of these works suggested practical challenges, solutions, benefits, and considerations for each theoretical component and challenge they faced when doing their mixed method research [21].

The theoretical components to be considered when conducting effective mixed method research include diverse dis-

ciplines, diverse methodologies, nonhierarchical leadership, team engagement and commitment, new collaborations, and optimal use of resources [21]. For example, in terms of the component “diverse methodologies” in mixed method research, there is a risk of methodological marginalization and a lack of understanding of the research process, results, and interpretation among research team members.

To overcome differing views on the evidence required for the interpretation of findings and the gaps in the pace of studying between qualitative and quantitative data collections, the teamwork or cooperation among senior researchers and their devotion of time to understanding each project’s method and criteria for rigor. The need for mutual understanding of each methodology among the team members, who should be flexible and open to new approaches is critical [3,21]. The strategies for successful mixed method research include considering not only the expertise but also the interest and dedication, personality, and willingness to both the leaders and team researchers when crafting a mixed methods research team. Further, frequent and multi-modal communications such as email, phone, and in-person communications must be maintained throughout the collaboration, and disciplinary and methodological differences should be identified, recognized, discussed, and addressed early in the partnership [3,21].

In addition to the emphasis on establishing nonhierarchical and collaborative leadership when conducting mixed method research, effective educational strategies should be implemented to provide our nursing scholars with the skills and competencies to conduct mixed method research to utilize both quantitative and qualitative techniques [21–23]. Internal support to develop research capacity—such as research training fellowships, motivation for higher education, and research training for clinical staff—is necessary. Further, external support, including additional funding for research training, institutional support structure, and dedicated time to pursue research must also be considered. Courses to learn mixed method research would also be useful to expand nursing research. Likewise, efforts to improve the quality of mixed methods nursing research are essential to expand knowledge of nursing and health care sciences in Korea.

## CONFLICTS OF INTEREST

YeoJin Im has been the Associate Editor with the journal since 2020. Except for that, there are no potential conflicts of interest relevant to this article to report.

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## DATA SHARING STATEMENT

Please contact the corresponding author for data availability.

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