



# Guest Editorial

## Application of Mixed-Methods Research in Clinical Practice

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Nursing is a discipline that traditionally considers the whole person and, following this mandate, nursing research is also considered to have a holistic perspective. Yet research methods demanded that the researcher focus on some *part* of the person—to quantitatively measure some biological, psychological, or social aspect of the persons, or to qualitatively describe an experience within the context of the family, work or illness. Mixed-methods design overcomes this imitations, and expands the scope of the research considerably, for now nurses can do *both*. We can both measure *and* describe the experience in the same project.

Thus, mixed-method research adds another dimension to research design, enabling our questions to be more holistic. For instance, a single project may qualitatively describe the patient's illness or caregiving experience, along with a quantitative psychological measure. Alternatively, the mixed-methods project may quantitatively measure various physiological parameters, and include qualitative description of the experience.

### What Kinds of Questions Do Mixed-Methods Address?

Mixed-methods studies generally have one overarching aim the encompasses both the methods used in the study, with a separate research question addressing each “component”<sup>2</sup> of the study. For instance, the aim of a study may be to explore modes of infant feeding in the infants' first six weeks of life. The quantitative question may be *What is the infant's health status?* If the study was conceived as quantitatively-driven (QUAN<sup>3</sup>) (with, for instance, the infant health as measured by weight gain, length and hemoglobin level) and simultaneously component (*qual*) qualitative interviews addressing the questions: *Is the infants described as content?*, with contentedness defined as the mothers' description of the infant sleep patterns, episodes of hard

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  2. Mixed-methods studies are usually conducted with a separate component for each question and method. The *results* of each component are then brought together at the *point of interface*, and integrated as the results narrative. The results narrative section is then followed by the *discussion* (1).
  3. The notation for mixed-method design is QUAL, QUAN (upper case), indicating the core (complete) component, and *qual*, *quan* (lower case, italics) indicating the supplemental component. In the results narrative, the core component provides the main findings, and the supplemental findings are integrated to support the core findings (2).

crying, and indicators of hunger (periods of fist sucking, etc.). On the other hand, if the researcher is interested in the experience of breast feeding in the first six weeks of life, the researcher may obtain a qualitative descriptive of breast feeding contentedness as the core QUAL component.

Many nursing research questions are amenable to mixed designs. Consider a project with the aim of exploring the effect of ICU alarms:

1. What is the effect of noise in ICUs on the patient? This question demands measurement of the noise, and the physiological measurement of the patient when the alarms sounded (i.e., a QUAN + quan design).
2. What is the experience of noise in the ICU for the patient? This is a qualitative question (QUAL) with measurement of the number of alarms and their intensity (+ quan) providing contextual description.
3. What is the experience of ICU noise on patients' perceived quality of sleep? (A QUAL + qual design).
4. What is the experience of nurses' alarm fatigue (QUAN) on the patient's experience of care (qual).

### **When to Do Mixed-Methods?**

Mixed-methods are appropriately used when the researcher's conceptual frame is broad, and when it is clear that using one research method will not.

However, combining research methods in the same study is not a quick and easy task, nor is it without difficulties. First, every time a researcher adds a data set to the design, it greatly expands the investigator's *work*, *costs*, and *time* that the project will take, so that deciding on mixed-method design should not be a decisions made lightly. Of course, when considered for a broader perspective, mixed-methods also shorted your research program, by perhaps, allowing you to answer a questions in the present projectone that may shortcut a separate project that would be conducted at a later time. It allowed you to do it sooner, more cheaply and faster than conducting a separate study.

One additional point: mixed-methods usually consist of a qualitative and a quantitative components used either at the same time (simultaneous) or sequentially. But mixed-methods may also be composed of two quantitative components (as QUAN + *quan*) or two qualitative components) as QUAL + *qual*)<sup>4</sup> (1,2).

### **The Technicalities of Doing Mixed-Methods**

Using more than one method in the same project may also stretch the skills of a researcher. Investigators usually consider themselves as a qualitative or a quantitative researcher, but not as one with expertise in both paradigms. Therefore, in order to conduct a study using more that one methods, often a second investigator—or sometimes a whole team—will have to be recruited.

But the real anathema for mixed-method design is in the sampling. If you are conducting a quantitatively-driven mixed-method with a qualitative supplemental component, your main sample (the quantitative one) is too

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4. The + sign is used to indicate simultaneous design, and the → sequential design (2).

large for the qualitative component, and has been selected randomly. And viceversa, if your project is qualitatively-driven—the sample is too small and will have been purposefully selected. The sample does not meet quantitative criteria for size or randomness, and a new sample will have to be pulled for the supplemental component.

The final problem when doing mixed-methods, I call “making it mixed.” Mixed-methods is not simply doing two different projects; there must be reflexivity between the two components, so that if a question arises when analyzing one method, it is theoretically possible to have that emerging question answered in the supplementary component. Mixed-method design has the flexibility even for incorporating additional supplemental sequential components, if indicated. When combining the results of the components in the Research Narrative, the result of the two methods are *integrated*. If QUAL, the core findings usually provide the theoretical foundation of the results, with the supplementary findings providing complementary information. If QUAN, the qualitative supplementary data provide description throughout. Importantly the results are *not* the sequential paragraphs of description from each component.

In summary, mixed-method design is a tool well suited to nursing research, and a way to obtain holistic data, that fits well with the nursing perspective. It is more efficient (both in cost and researcher time) than in conducting two separate projects, and has the potential for moving a project forward.

## References

1. Morse JM. Developing qualitative-driven mixed-methods design. New York: Routledge; 2007.
2. Morse JM, Niehaus L. Mixed-method design: Principles and procedures. Walnut Creek, CA: Left Coast Press; 2009.

