

Experiences of Nurse Researchers Using the Neuman Systems Model: A Qualitative Study

Neuman Sistemler Modelini Kullanan Hemşire Araştırmacıların Deneyimleri: Nitel Çalışma

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ABSTRACT Objective: Nursing theories and models are essential for nursing practice and research, but there are problems with integrating models into research. There is a need for theory-based nursing research. This study aimed to examine the experiences of nurse researchers using the Neuman Systems Model (NSM). **Material and Methods:** The study had a descriptive qualitative design, and the sample consisted of 15 nurse researchers with experience using the NSM. Data were collected through focus group interviews. Data were analyzed using thematic analysis. **Results:** Five themes emerged. These were the decision-making process, strengths of the NSM, challenges of working with the NSM, reflections of the NSM, and suggestions for users of the NSM. **Conclusion:** Although using the NSM supports the development of individual and professional perspectives, the language barrier, the abstractness of the concepts and the lack of measurement tools specific to the model create difficulties. There is a need for studies to clarify the concepts and to present research results based on the NSM. It is recommended to cooperate with experts in the field of the NSM in the research process.

Keywords: Nursing model; qualitative research; research; theory

ÖZET Amaç: Hemşirelik teorileri ve modelleri, hemşirelik uygulamaları ve araştırmaları için önemlidir fakat modellerin araştırmalara entegrasyonu ile ilgili sorunlar yaşanmaktadır. Kuramsal temellere dayalı hemşirelik araştırmalarına gereksinim duyulmaktadır. Bu çalışmanın amacı, Neuman Sistemler Modelini (NSM) kullanan hemşire araştırmacıların deneyimlerini incelemektir. **Gereç ve Yöntemler:** Çalışma tanımlayıcı nitel bir tasarıma sahiptir ve örneklem NSM'yi araştırmada kullanma deneyimi olan 15 hemşire araştırmacıdan oluşmaktadır. Veriler odak grup görüşmeleri yoluyla toplanmıştır. Veriler tematik analiz kullanılarak analiz edilmiştir. **Bulgular:** Beş tema ortaya çıkmıştır. Bunlar sırasıyla; karar verme süreci, NSM'nin güçlü yönleri, NSM ile çalışmanın zorlukları, NSM'nin yansımaları ve NSM'nin kullanıcıları için önerilerdir. **Sonuç:** NSM'nin kullanımı bireysel ve profesyonel bakış açısının gelişimini desteklese de dil engeli, kavramların soyutluğu ve modele özgü ölçüm araçlarının bulunmaması zorluklar yaratmaktadır. Kavramları netleştirmek ve NSM temelli araştırma sonuçlarını ortaya koyacak çalışmalara ihtiyaç vardır. NSM'nin konusunda uzmanı olan kişilerle araştırma sürecinde işbirliği yapılması önerilmektedir.

Anahtar Kelimeler: Hemşirelik modeli; kalitatif araştırma; araştırma; teori

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Nursing theory and models form a framework for systematizing nursing practices and contribute to developing nursing knowledge and quality of care.¹ The incorporation of theories and models into the nursing discipline enhances the explanation and understanding of nursing and contributes to the development of nursing science by guiding nursing processes and research.² They provide a perspective of the person for whom you are caring, specify the focus for the delivery of care, and structure the reasoning, critical thinking, and decision-making of nursing practice.³ Nursing theories guide nurses in education, research and practice.⁴ Nurse researchers use theory/model to conceptualize research problems, and in this way, the accuracy of theoretical propositions is tested.^{3,5} The use of theory/models in nursing research should become widespread in terms of increasing the knowledge specific to the nursing profession, transferring theory to practice, systematizing nursing practice, and directing nursing practice.⁶ Nursing theory and models should continue to guide nursing research and evaluate the effectiveness of nursing practices under theory guidance.¹

The use of a theory/model to guide nursing research in Türkiye has increased in recent years, but their use in research and practice has limitations.⁶ For example, knowledge of theory/models is often not included in curricula until graduate education, and thus, nurses have insufficient or no knowledge of the use of theory/models.⁷ It is important that the use of models in nursing research becomes widespread in terms of increasing the knowledge specific to the nursing profession, transferring theory to practice, systematizing nursing practices, and directing nursing practices.⁶ Bond et al. reviewed studies published in nursing journals between 2002 and 2006 to determine the extent to which nursing theories were used. The study accessed 2184 research articles using nursing theories; 55% of these articles used nursing theories and 38% used non-nursing theories. The review revealed that the specific nursing theories used are not sufficiently defined and do not provide evidence about the usefulness of theory-guided practice; therefore experimental studies are recommended instead of descriptive studies.⁸ A study conducted in Brazil

reported that a small number of graduate nursing students used nursing theories in their dissertations.⁹ A study to explain the experiences of nurse educators determined that conducting theory-based research is a complex experience but contributes to individual and academic development. In addition, educators stated that theory-based research is essential for the progress of nursing knowledge.¹⁰ A study explaining the experiences of the advisors and students regarding the use of models/theory determined that using a model in the doctoral thesis contributed to the methodology of the research and the professional development of the student and the advisor, but difficulties arose surrounding lack of knowledge and experience.¹¹

The Neuman Systems Model (NSM) is one of the frequently used models in nursing research internationally.^{3,12} The model has been translated into several languages, incorporated into nursing education curricula, and provided the conceptual framework for much research.¹³ NSM is a model that can be applied to a wide range of patient systems with different health problems. It can also guide qualitative, quantitative or mixed methods research designs.¹⁴ The NSM provides a systems-based and comprehensive conceptual framework for nursing. The model focuses on environmental stress and the health of the person system in response to this stress. A person is considered to be an open system in constant change that interacts with the environment. The model explains how the system maintains equilibrium against the stressor and how the nurse regulates and controls the response to the stressor with primary, secondary, and tertiary prevention to maintain equilibrium.¹⁵ In the study conducted by Dağ et al. it is stated that using NSM makes it easier to use the nursing process and provides holistic care.¹⁶ In Türkiye, NSM-based nursing research has increased in recent years. However, it has not yet reached the desired level compared to international studies.¹⁷⁻¹⁹ This may be because problems arise when using the NSM and thus, limit its use. To date, no published study has discussed the experiences of researchers using the NSM. The purpose of this study was to examine the experiences of nurses who used the NSM in their research in Türkiye. The results are expected

to inspire and guide new researchers to use the model, and to reveal how using NSM in research can be improved.

MATERIAL AND METHODS

RESEARCH DESIGN

This research was a descriptive qualitative study. Descriptive qualitative studies are considered most appropriate for describing the subjective experiences of the participants and the nature of the problem.²⁰ This study was reported using the Consolidated Criteria for Reporting Qualitative Research Guidelines.²¹

PARTICIPANTS

The research was carried out between April and May 2022. Participants were recruited using purposive sampling. Individuals who had a student or supervisor role in a doctoral dissertation using NSM and who had experienced the difficulties and benefits of the process of integrating the model into research were targeted to participate in the study. The inclusion criteria of the study were having experience with NSM-based research and agreeing to participate in the study. In order to reach these people, the thesis database of the Council of Turkish Higher Education and the database of Google Scholar (Google, USA) were searched using the keyword “Neuman Systems Model”. Finally, 14 PhD theses were reached. Using the thesis contact information, we reached 16 researchers. Three researchers declined to participate in the study, citing workload issues. Finally, of the 15 participating nurse researchers, 4 were thesis advisors, and 11 were PhD candidates who used NSM in PhD thesis (Table 1).

In qualitative research, a sampling approach is used to collect data until the saturation point, when the concepts and processes in answer to the research question begin to repeat; at this point, a sufficient number of data sources have been reached.²² In this study, it was thought that the data were repeated and sufficient sample size and saturation point were reached after 3 focus group interviews.

TABLE 1: Participant characteristics

Participant	Research role	Age
1	PhD student	43
2	Advisor	56
3	PhD student	37
4	PhD student	44
5	PhD student	29
6	PhD student	35
7	PhD student	41
8	Advisor	72
9	PhD student	43
10	PhD student	39
11	PhD student	33
12	PhD student	43
13	PhD student	33
14	Advisor	60
15	Advisor	52

DATA COLLECTION

A personal information form and a semi-structured interview form were used in the research. The personal information form identified the researcher's academic degree and role in using NSM. The participants were sent a link containing the information regarding the study, an informed consent form, and personal information through Google Forms (Google, USA). Three focus group interviews were scheduled and conducted via the Zoom (Zoom Communications, Inc., California, USA) platform. The purpose of the focus group interviews was to obtain in-depth, detailed, and multidimensional qualitative information about the participants' perspectives, experiences, and emotions. An idea expressed by one person in a focus group interview can be developed by another, and thus detailed information can be obtained.²³ Each participant was interviewed once. The researchers took field notes during the interviews.

The focus group interviews used a semi-structured interview form consisting of open-ended questions to explain the nurse researchers' experiences with NSM (Table 2). This form was created by 5 academicians who are experts in their fields with qualitative work experience and experience working with nursing theories. All interviews were conducted in Turkish.

TABLE 2: Interview Questions Guide

Interview questions
What was your reason for working with NSM?
How did you decide to work with this model? What do you think about this decision now?
What do you think about continuing to work with NSM?
What were the positive aspects of working with NSM?
How has NSM influenced your understanding of nursing?
How has NSM influenced your worldview?
How was the experience of using NSM in research for you?
What difficulties did you encounter while working with NSM? What helped you overcome these difficulties?
What would you recommend to your colleagues who are considering working with NSM?
If you compare working with NSM to an object/thing, what would it be?

TABLE 3: Themes of study

The decision-making process	<ul style="list-style-type: none"> • Individual closeness • Relation with the research subject
Strengths of NSM	<ul style="list-style-type: none"> • NSM's philosophical foundations and concepts • NSM's supporters
Difficulties of working with NSM	<ul style="list-style-type: none"> • Understanding a new language • Abstract concepts • Understanding variables and lines • Absent measuring tools
Reflections of NSM	<ul style="list-style-type: none"> • Individual development • The development of nursing perspective • Contribution to nursing education • Ability to produce scientific knowledge specifically to nursing
Suggestions for NSM Users	<ul style="list-style-type: none"> • Read and understand the basic resources • Comprehend the philosophical viewpoint • Read the foundational theories • Consult the experts

DATA ANALYSIS

Data were analyzed using Braun and Clarke's 6-stage thematic data analysis method. The method identifies, analyzes, and reports patterns (themes) in data, prioritizing explanations of how and why a particular theme is important to the subject under study.²⁴ Firstly, all interviews were transcribed verbatim before starting the analysis. Transcripts were read several times to become familiar with the data. In creating the first codes, the data were systematically

divided into meaningful groups according to the purpose of the research and coded openly. The researchers who made the analysis (1st and 2nd researchers) did the coding separately. In reviewing the themes, the researchers read and examined the data under each main theme to determine whether they supported them (Table 3). Themes were named and simplified. At the last stage, the research report was written, adding direct quotations from the nurse researchers under each theme to provide evidence for the themes.²⁴

TRUSTWORTHINESS

The principles of credibility, reliability, confirmability, and transferability were used in this study.²⁵ To provide internal validity, focus group interviews with nurse researchers lasted an average of 66 min (51 min, 70 min and 77 min, respectively), ensuring long-term interaction. During the focus group discussion, each participant was given the opportunity to express their thoughts. Each researcher in this study examined the data transcripts individually. After the data analysis, the meanings and interpretations extracted were shared with the participants and confirmed (member checking). For external validity, the researchers organized the themes by adhering to the data and reporting them without comment.

The study team consisted of 2 professors and 1 associate professor. All researchers were women and worked with the NSM. Three researchers were specialized in psychiatric nursing and experienced in qualitative studies. Their working experience and interest in the NSM were known to the participants.

ETHICAL CONSIDERATIONS

The study was approved by the non-invasive research ethics committee of the Dokuz Eylül University (date: April 13, 2022, no: 2022/14-17). The study was conducted in accordance with the Declaration of Helsinki. The nurse researchers' consent was obtained via a Google form before the focus group interviews, and participants were informed of the purpose of the research and the details of the online recording.

RESULTS

The mean age of the participants was 43.86 years. Participants were from 8 universities in 4 regions of Türkiye (Table 1). Four of the participants had doctorate degrees, 2 were PhD candidates, 1 was an assistant professor, 5 was an associate professor, and 4 were full professors.

Five themes emerged: decision-making process, strengths of the NSM, difficulties of working with the NSM, reflections of the NSM, and suggestions for NSM users (Table 3).

1 THEME 1. THE DECISION-MAKING PROCESS

Participants reported that subject suitability and individual closeness to the model decided to their use of the NSM. Reading about the NSM and preparing the NSM as a seminar in a nursing theory course during their graduate education engendered feelings of closeness to the NSM philosophy. They reported that effective in this decision were their thesis topics, the characteristics of their studies' samples, and the model's focus on concepts of stressor, response, and defense lines.

"I was going to give a presentation on the NSM in the class. Actually, this is how I came across it extensively... The model concepts seemed close to myself and the subject I was interested in... It was the NSM that best explained the stress issue I studied. Frankly, what impressed me the most about the model was that it expressed the individual as an open system and emphasized the uniqueness of the individual." (P, 5)

"In my thesis, I worked with depressed patients. I thought this model was more appropriate because it was multidimensional. I also looked at the coping strategies of depressed patients. Strengthening these lines of defense and psychoeducation in the NSM... We saw that they overlapped a lot in that respect. That is why I chose this model." (P, 7)

2 THEME 2. STRENGTHS OF NSM

The model's basis in a system approach, a holistic perspective, focus on perceptions and human uniqueness, consistency, and focus on the nursing discipline were considered strengths. Conceptually, the fact that

the model was focused on the stress, variable, prevention, and defense lines dimensions was considered a strength.

"NSM is a model that offers holistic care and individualized care. There are also questions about understanding people, and how they deal with stress, so when Neuman is looked at in this sense, it is like mixed-method research. I noticed these in the process, and I thank Neuman for providing good nursing care." (P, 13)

The fact that NSM has an active trustee group and website and the presence of people who have used NSM in their studies were also cited as strengths of the model.

"Having a website was an advantage for me. And being able to communicate through the website... I could get opinions and support when necessary. Especially when I got stuck somewhere in my thesis. I wondered if I was on the right track; I informed them about how I understood the model, asked if it was going the right way, and asked for support." (P, 7)

"For example, there were people who worked the model before me... I remember asking a lot of questions at that time. Knowing what people who have used this model are doing helps you follow the same path." (P, 10)

3 THEME 3. DIFFICULTIES OF WORKING WITH NSM

The participants' metaphors showed that working with NSM is a valuable but also challenging experience. At this point, they compared working with NSM to a spider web, a puzzle, and a chess. The participants had difficulties understanding the model in a foreign language, the abstract NSM concepts, and the model's core response and defense lines. At the same time, the lack of an NSM-based measurement tool presented difficulties in evaluating the study results.

"We get lost in translation, and there is a language barrier. What a word means in a different language may differ from its dictionary meaning. It is necessary to consider whether we have fully understood the things we need to understand or if we have interpreted them correctly. For example, the defense lines were the hardest part for us to understand." (P, 2)

“Measurement was one of the things we had the most difficulty with. How could we measure it? We looked at the scales. However, since this was not specific to Neuman’s concepts, we had difficulties in that area. So, we felt compelled to develop a scale from scratch.” (P, 13)

4 THEME 4. REFLECTIONS OF NSM

The participants’ metaphors showed that working with NSM is a valuable experience. The participants explored that they gained core nursing knowledge through NSM-based research. Similarly, participants likened working with NSM to a companion, the cosmos, an umbrella, and a pair of glasses. Participants stated that working with the NSM improves their individual perspectives, nursing perspectives, and scientific knowledge specific to nursing.

“We all have an essence in us that we take action to protect, so we want to continue living, and when we look at it with a system approach, I am not different from other people. I am a being who tries to protect myself and to continue to live, and I learn many things from the environment. I transform them in my own way, which has consequences; when we look at it in this sense, I also see that I am very special. But I also see that I am weak, so I need protection occasionally. There are times when I am weak and when I need others. But it also reminds me that these can be overcome by being strengthened, and beyond that, there is an end to life.” (P, 14)

“Compared to my other research on using a theory that I noticed most, I thought I was generating nursing knowledge when I used a nursing model. I can say that this actually increased my satisfaction with that research. Because communicating with other researchers working in this field and learning the nurses’ perspectives on this issue... I can say that this was nursing.” (P, 11)

5 THEME 5. SUGGESTIONS FOR NSM USERS

Participants recommended that nurses planning to use NSM in their research read books that describe its basic concepts, explore the philosophical bases from which the model originated, and seek guidance from people experienced in using the NSM and NSM trustees.

“It is necessary to read the basic sources. The studies can be limited because they focus only on the relevant part, which is really difficult to understand. That is why I think it is necessary first to explore the foundational sources to gain a deeper understanding of them and to build a connection with NSM. My suggestion is to start with foundational sources, then theses, then articles.”

“If they have a question, they should contact directly the people who study the model, and they should reach the people who work on that subject, who do research and follow them. There may be new studies, there may be studies that test the model, and they should be read.”

DISCUSSION

This study focused on the experiences of nurse researchers who have conducted NSM-based research.

The researchers stated that NSM is based on the system approach, provides a holistic perspective, focuses on perceptions and uniqueness of human beings as the strengths of the model. The system approach provides a universal language by focusing on the whole rather than the parts. The concept of client wholeness, the goal of optimal health, and the use of primary prevention strategies to maintain health are elements supporting the nursing profession’s acceptance of NSM. NSM’s wholistic perspective supports a comprehensive perspective in all client care situations.^{26,27} NSM users stated that the NSM’s active working group and consultancy are the strengths of the model. Similarly, the ability to obtain answers to questions about theory while using it in research is advantage. For researchers, access to the theoreticians and researchers who have used that theory or model in their studies are important sources of information and support.^{10,11}

However, the fact remains that NSM is an abstract model and this makes it difficult to use in research. The NSM Group promotes the model nationally and internationally, presenting the model at conferences and meetings, making changes and adjustments to the model, and networking and consulting with those interested in it.¹⁵ Communication with the theoretician is supportive for nurse researchers

engage in theory-based research.²⁸ The NSM Group needs to continue their efforts to clarify the concepts and relationships outlined in the model in order to increase its use.¹²

Participants described working with NSM as a facilitating but also challenging experience through metaphors. The researchers acknowledged difficulties in understanding the model language and the abstractness of its concepts, specifically the basic structure variables and defense lines.

Originating in California, NSM is now widely accepted internationally, although barriers of language and terminology pose difficulties in understanding nursing models/theories.^{12,29} Understanding the model in a foreign language can make complex concepts difficult to understand. It is understandable that researchers turn to other sources of support concerning the unclear concepts and propositions in the model. Similarly stated, NSM-based research in the literature has sorely neglected the core response as an outcome variable.³⁰ More work is needed to clarify such concepts.

Nurse researchers stated that working with NSM had positive impacts on their individual lives, nursing perspective, and scientific knowledge specific to nursing. Nursing theories provide theory-based knowledge for the nursing discipline.³¹ One study determined that nurse educators prefer to use models for their own professional development and that of their students. The same study stated that working with the model/theory helped researchers acquire in-depth knowledge and analytical and synthetic skills and to create their own nursing philosophies.¹¹ Nasiri and Adib-Hajbaghery found that Iranian graduate nursing students had positive experiences with nursing theories, a result similar to ours.³² They found that nursing theories offered new nursing perspectives, strengthened the human dimensions of the nursing profession and nursing care in their minds, helped students determine professional boundaries, and contributed to their satisfaction with being a nurse.

Given the difficulties of using NSM in research, the researchers participating in our study suggested that people planning to use NSM in their research

read sources explaining NSM and the model's underlying philosophies and seek guidance from NSM practitioners and the NSM group. Theoreticians or experts involved in relevant associations should provide guidance for theory/model-based research in countries where such research has just begun.¹¹

LIMITATIONS

The thesis advisors and thesis authors were together in the focus groups. The presence of an advisor-student relationship may have affected the content of the interviews. The participants may have struggled to express their thoughts clearly in the group. Online interviews may have further limited individuals' ability to express themselves. However, including researchers in different regions of Türkiye is a strength of the research.

CONCLUSION

The study showed that the philosophical foundations of the NSM and the specific concepts that distinguish the NSM from other theories/models are determinants of its use in research. However, although using the NSM supports the development of individual and professional perspectives, the language barrier, abstractness of the model and its concepts, and the lack of model-specific measurement tools create difficulties. In using NSM, researchers need the knowledge and support of experienced people. In conclusion, more NSM-based research is needed to develop means of clarifying the concepts in NSM. Academic courses, continuing education workshops, and formal mentoring programs are recommended to support the effective use of NSM in research.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Neslihan Partlak Günüşen; **Design:** Neslihan Partlak Günüşen, Figen Şengün İnan, Besti Üstün; **Control/Supervision:** Besti Üstün; **Data Collection and/or Processing:** Neslihan Partlak Günüşen, Figen Şengün İnan, Besti Üstün; **Analysis and/or Interpretation:** Neslihan Partlak Günüşen, Figen Şengün İnan, Besti Üstün; **Literature Review:** Neslihan Partlak Günüşen, Figen Şengün İnan; **Writing the Article:** Neslihan Partlak Günüşen, Figen Şengün İnan; **Critical Review:** Besti Üstün.

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