

Clinical Reasoning Process of Novice and Expert using Consensual Qualitative Research in Observational Situations of Postpartum mothers and Newborns

Yuko Uemura¹, Kumiko Kido²

¹Associate professor Department of Nursing, Faculty of Health Sciences, Kagawa Prefectural University of Health Sciences, ² Professor Department of Nursing, Faculty of Health Sciences, Kagawa Prefectural University of Health Sciences.

How to cite this article: Uemura Y, Kido K. Clinical Reasoning Process of Novice and Expert using Consensual Qualitative Research in Observational Situations of Postpartum mothers and Newborns, 2022;14(3):171-178

ABSTRACT

Purpose: The purpose of this study is to describe the process of clinical reasoning in novice level nursing students and expert level midwives using the Dreyfus model in the setting of an observational situations of subjects (postpartum mothers and newborns) as nursing practice.

Methods: Consensual Qualitative Research used for qualitative research. The study used the Vignettes Method to compare the behaviors of novices and experts in the same situation, setting up an observation scene of a postpartum woman on the third day and a newborn on the third day after birth. The novices in the study were two fourth-year nursing students at the A university, and the experts were two midwives with more than 10 years of experience.

Results: Eighteen core ideas were identified as clinical reasoning processes in the two domains of 'pre-information gathering' and 'participants' observation situations' for novices and experts.

Conclusions: Novices functioned mainly on analytic reasoning only and were likely to make errors in definitive diagnosis, while the experts used empirical knowledge intuitively and combined narrative reasoning to ensure the accuracy of their clinical reasoning.

Keywords: Dreyfus model, Novice level, Expert level, Clinical reasoning, Observation situations

INTRODUCTION

In Japan, medical safety measures are promoted with the aim of ensuring safety and improving the quality of medical care. The Model Core Curriculum for Nursing Education in Japan (2017) listed 'management of quality and safety of care' as a basic quality/ability expected of nursing personnel. Safety management was also listed as an educational goal in basic nursing education. However, 4082 medical accidents were reported to the Japan Council for

Quality Health Care¹ in 2020, and this number is increasing every year. The risk of medical accidents is significantly high as the nursing work environment involves many unstable factors—numerous duties, multiple patients, and several time-sensitive nursing tasks. As per the aforementioned annual report,¹ nurses (2713 cases) were majorly responsible for medical accidents in 2020. In clinical practice, it is necessary to accurately judge the situation and act accordingly. In the United States of

Corresponding author: Yuko Uemura, Associate Professor, Department of Nursing, Faculty of Health Sciences, Kagawa Prefectural University of Health Sciences, 281-1 Hara, Mure-cho, Takamatsu, Kagawa 761-00123, Japan

Email: uemura@chs.pref.kagawa.jp

America,² the need for education focusing on clinical judgment skills has increased; it is evident that appropriate clinical judgment achieves patient safety and desired outcomes. In Japan, the ability to make accurate clinical judgments in nursing practice is gradually being recognized as a necessary basic ability. A report on basic nursing education³ stated that the number of credits—related to anatomy, physiology, pharmacology, and so on—was increased to strengthen the foundation of clinical judgment skills; in the revision of the designated regulations targeted at schools for public health nurses, midwives, and nurses, it is necessary to enhance clinical judgment skills in basic nursing education. Tanner,⁴ a researcher who focused on clinical judgement skills, presented a four-step clinical judgement model, which highlighted the following steps: ‘noticing, interpreting, responding, and reflecting’; these steps reflect the process employed by, and the factors most relevant to, bedside nurses’ clinical judgement. For this study⁴, under ‘interpreting’, we showed that there are three patterns of reasoning used by nurses: analytical reasoning, intuitive reasoning, and narrative reasoning. The participants reported that skilled nurse practice and reflect on these three patterns of reasoning to further improve the accuracy of their clinical judgments.⁴ The ability to make clinical judgments requires the ability to use these three patterns of clinical reasoning judiciously and sensibly.

Clinical reasoning is a cognitive process by which physicians diagnose and treat patients.⁵ Clinical reasoning patterns are essential for making appropriate clinical judgments. The ability to perform clinical reasoning must be continuously honed, starting from the bachelor’s course to the post-graduate programme, throughout the duration of nursing education.⁶ Thus, the ability to make clinical judgments in nursing practice should be integrated into the curriculum of basic nursing education. It is necessary to teach clinical reasoning patterns and continuously improve the accuracy of clinical judgments. An enhancement in clinical judgment ability will ensure medical safety and improved nursing quality.

It has been reported that skilled nurses use the three patterns of reasoning⁴, but how they use these patterns to make clinical judgments has not been clarified. The role of experience in nurses’ clinical judgment and reasoning is not yet understood. Researchers are extensively exploring educational methods to improve clinical judgment. In Japan, Okada⁷ explained how the cognitive process necessary for nursing students to make clinical judgments is acquired. Furthermore, the type of clinical reasoning pattern used by nursing students has not yet been determined. Aoki⁸ compared the perceptual patterns of eye movement between nurses and novices, but the differences between the clinical reasoning patterns used by the nurses and novices in the same situation were not clear. Therefore, the process of training students in Tanner’s clinical reasoning patterns to improve clinical judgment is still unclear.

Benner⁹ identified the characteristics of nursing performance at various levels of education and experience, from novices to experts. This study used the Dreyfus model of Skill Acquisition, which focuses on the use of proficient attitudes and knowledge in certain clinical situations. The Dreyfus model¹⁰ shows the process of skill acquisition at five levels. The Dreyfus model is also useful in the acquisition of medical skills and has been extensively applied in nursing education.⁹ However, the characteristics of each level of clinical reasoning patterns have not yet been clarified in Japan. Thus, in this study, we focused on the two crucial subjects in this context: the novices and the experts.

In order to examine educational methods in basic nursing education, it is important to clarify the differences in clinical reasoning patterns used by novices and experts in the same situation.

In this study, observation scenes of postpartum mothers and newborns were set as the subjects; the scenes were filmed and interviews were conducted. The researcher was a maternal nurse and midwifery teacher with experience as a midwife. The observation scenes

of the postpartum mothers and new-born babies were chosen because these scenes reflected an ideal example of a basic nursing situation in the nursing of newborns and new mothers.

OBJECTIVE

The present study clarifies, using the Dreyfus model, some aspects of the clinical reasoning of novice and expert subjects in the observation scenes of postpartum mothers and newborns. This study aims to provide basic data for research on clinical reasoning in novices and experts.

Definition of Terms

Clinical reasoning

The process of formulating a solution (response or intervention) to the subject's problem is termed as clinical reasoning.

Definitive Diagnosis

The diagnosis of a problem in order to determine the most appropriate solution (response or intervention) to the subject's problem is termed as a definitive diagnosis.

Novices

The acquisition of skills is generally considered to be in the novice stage during the first year of clinical education for nursing students.¹¹ Fourth-year nursing students at University A were considered novices.

Expert

Referring to Benner¹¹, midwives with more than 10 years of clinical experience, who could intuitively grasp the situation when observing postpartum mothers and newborns, were considered experts.

METHODS

Research design

Qualitative research

Research Method

Consensual qualitative research (CQR) is a qualitative analysis method developed

by Hill¹² that combines phenomenological elements, grounded theory, and comprehensive process analysis. The co-researchers were divided into two groups: the main members and the auditing members. The consultation process consisted of (1) individual work, (2) consultation with the main members, and (3) consultation with the auditing members. The advantages of qualitative research using a consultative process include increased efficiency, addressing bias, utilising individuality, and ensuring quality. In this study, nursing students were included as the main members, and CQR was used as a research method to ensure quality. This paper describes, through the interview and video of the observation scene, the cognitive process employed by nurses from the stages of information collection to care implementation.

Selection of the participants

The selection criteria for novice participants were as follows: the study's purpose was explained to 71 fourth-year nursing students at University A. Those who provided consent were requested to individually contact the co-researchers via e-mail. A letter explaining the study's purpose was sent to the office of the B Prefecture Midwives Association.

Hill¹² recommended a sample size of eight to 15 participants for the CQR. Franklin¹³ used the CQR to analyse 90 minutes of the video footage of their five participants. Contrarily in this study, we collected the video footage of the observation scenes in addition to participants' interview content. This is so that we had a total of four participants: two novices and two experts.

Survey Method

Vignettes Method

The Vignettes Method is based on Finch's (1987) definition of Vignettes as 'a method in which a short story about a hypothetical character in a particular situation is presented and the interviewer responds to the situation'.¹⁴ We were interviewed in the same

Table 1: Clinical reasoning process in pre-information gathering

	<i>Core ideas</i>
Novice level	Collecting information on the general condition of the participant until the previous day
	Matching knowledge from the textbook based on the characteristics of the information
	Anticipating problems in the target audience
Expert level	Collecting information on the general condition of the participant until the previous day
	Matching knowledge from the textbook based on the characteristics of the information
	Anticipating problems in the target audience
	Gathering basic information
	Developing a plan for a focused problem

situation, and their behaviour was compared with those of novices and experts.

The entire room of each mother and her newborn baby was filmed. The observation scenes by the research participants and the questionnaires' responses were used as data.

Analysis

The CQR is a scale that divides the collaborators into two groups: 1) the core members, who are primarily responsible for collecting and analysing the data, and 2) the auditors, who are responsible for confirming the core members' findings through consultation. First, the contents of the interviews were recorded verbatim. We collected data in an open-ended manner, via the CQR. Then, the CQR categorised the data into a broad range of domains and generated a core idea, which was the main point. Finally, the process of clinical reasoning between novices and experts in observational situations of postpartum mothers and newborns was illustrated.

Ethical considerations

This study was approved by the ethical review committee of University A to which the author belongs No. (322).

RESULTS

All the study participants were female, and two were novices in their 20s, one expert was in her 40s, and the other was in her 50s.

We generated 18 core ideas from novices and experts in the process of clinical reasoning

in the two domains of 'pre-information gathering' and 'the participants' observation', and illustrated the relationships among the core ideas (table 1, 2).

Clinical reasoning process in pre-information gathering

For novice level, three core ideas were generated during 'pre-information gathering'. The novices collected information on the participant from 'the progress of the previous day, the value of [the] vital signs' (novice A, B). Thus, they generated "Collecting information on the general condition of the participant until the previous day". In the information interpretation, the information was categorised into elements such as 'progressive and regressive changes that have been passed normally from the information (novice A)' and the analytical reasoning functioned in comparison with the knowledge of the textbook and was generated by "Matching knowledge from the textbook based on the characteristics of the information".

For expert level, the 'pre-information gathering' generated five core ideas, two in addition to the three core ideas of the novices. The experts gathered not only the information on the participant's general condition but also the information on the participant's social background. They named it "Gathering basic information". The information obtained was used to predict the participants' challenges via analytical and intuitive reasoning. The participants' specific plans were developed by using their previous experiences with

similar situations. These are, such as 'there is a need to see how well the person can comprehend (expert D)', which was generated as "Developing a plan for a focused problem".

Clinical reasoning process in the participants' observation situations

For Novice level, four core ideas were generated during the 'participants' observation situations'. The novices made an analytical inference based on the observed information. In the participants' observation scenes there were no receptive responses to give them a sense of security. In the conversation during the observation, the responses were 'It's all right because it's a normal process (novice A)'. This was generated as a "Routine response".

At the expert level, in the 'participants' observation situations', 11 core ideas were generated. In their interactions with each participant, the experts made effective use of their empirical knowledge by talking to them, observing them. They also made the participant feel safe, elicited important information from them, and used narrative reasoning to create an "Accepting response". The experts understood each participant

holistically through their observation and conversations with them. They interpreted each participant's condition by using their empirical knowledge. These led to the naming of the project as "Can envisage options based on empirical knowledge". The experts said that an accurate and definitive diagnosis will lead to the implementation of appropriate care by "Checking the scientific evidence to support the results of the analysis (diagnosis)". However, the scientific basis of empirical knowledge is unclear from observations such as '[babies] are born with a lunch box and a water bottle (expert D)'. It is named "Based on experience alone and without reviewing the scientific evidence". Finally, it may lead to a "Possible misdiagnosis", which would lead to inappropriate care being provided.

DISCUSSION

Comparison of the clinical reasoning process between novices and experts

In the preliminary information collection, the novices generated three core ideas, and the experts generated five core ideas. The information collected by the novices was regarding the participants' general condition

Table 2: Clinical reasoning process in the participants' observation situations

	<i>Core ideas</i>
Novice level	Matching knowledge from the textbook based on the characteristics of observed phenomena was generated
	Routine response
	Narrative reasoning does not work
	Possible misdiagnosis
Expert level	Matching knowledge from the textbook based on the characteristics of observed phenomena was generated
	Accepting response
	The term capturing the present from the participant's past
	Recognised each participant's value
	Can envisage options based on empirical knowledge
	Developed a plan to eliminate the assumptions
	Deriving of the analytical results (diagnosis): definitive diagnosis
	Developing a plan to solve the problem
	Checking the scientific evidence to support the results of the analysis (diagnosis)
	Based on experience alone and without reviewing the scientific evidence
	Possible misdiagnosis

up until the previous day. However, the experts used their empirical knowledge to systematically cover the participants' history and to collect information. In addition, it was thought that the experts analytically reasoned about the participants' state of being, predicted the problem, and even devised the plan for solution. This was based on the information gathered at the time of preliminary information collection. Benner¹¹ stated that even before knowing the patient, nurses have predictions about their clinical situation. However, these are open expectations that may be modified or confirmed after meeting the patient. It is inferred that the experts anticipate the participants' situations during the preliminary information-gathering phase. When experts are new to a patient's care, they should take time to gather information to gain a certain understanding of the patient's personality, the patient's pattern of reactions, and their needs and concerns. This includes a clinical assessment of the situation and considering the immediate past, present, and likely future course of the event.¹¹

Before meeting a patient for the first time, the experts are likely to collect information to understand the patient and to predict the past, present, and future of the patient's situation. It was inferred that experts used analytical and intuitive reasoning to understand the participants and to plan their observations after considering each participant's past and present in-depth situation and future predictions.

The novices generated four core ideas, and the experts generated 11 core ideas in the target observation. The novices extracted the necessary observation items from the content of the prior information collection based on the basic observation items in the textbook. They compared their observation results with the standard values in the textbook. Aoki⁸ reported that in response to epileptiform movements in infants, expert nurses focused their attention on the area around the eyes, where the central nervous system problems were expressed. Conversely, novices focused their attention on other areas in addition to the area around the eyes. It was thought that the novices

made unfocused observations. In addition, the novices concentrated on observing the items that they had thought of beforehand, and it was difficult for them to modify or add observation items according to the situation while interacting with the participants. The novices were unable to read each participant's responses and respond flexibly in the observation situations' conversations. They instead adopted a formulaic response strategy. Therefore, narrative reasoning was unsuccessful, and they could not obtain the determinant of each participant's problem. This may have led to an erroneous definitive diagnosis and inappropriate care.

Conversely, the experts used their experiential knowledge and encouraged them to become more acquainted through receptive response. In the video of the observation scene of the experts, the expert's first words and actions were to ask each participant about their condition, and thereafter to respond to them by narrative reasoning with a receptive response. The conversations and observations were smooth and uninterrupted. We believe that this smoothness provides a sense of security for each participant. The practice of the experts is characterised by practical argumentation while engaging with the participants.¹¹ It is also dependent on an understanding based on the accumulation of mature practice and a perceptual grasp of the differences and commonalities in a particular situation. While interacting with the participants, the experts intuitively applied their empirical knowledge, and adopted strategies to obtain the determinants of the participants' challenges. Finally, they arrived at an analytical result (diagnosis) through narrative reasoning. Additionally, scientific evidence was used to support the analyses' results (diagnosis), which led to the implementation of appropriate care. Expert nurses are characterised by professional caring practices and full humanistic care.¹¹ This level of expertise is not immediately attainable by novices. The professional caring practice is a skill that is acquired through accumulated experience.

However, even if the experts derive an analytical result (diagnosis) via narrative reasoning or intuitive reasoning, without confirming the scientific evidence to support the result, there is a possibility that the definitive diagnosis could be wrong. This may lead to the implementation of inappropriate care. Akiyama¹⁵ reported that proficient level nurses have developed practical skills based on their experiential knowledge, but that their experiential knowledge leads them to provide erroneous answers by considering complex scenarios. Intuitive reasoning based on empirical knowledge alone does not lead to an accurate definitive diagnosis. Even experts must always review the scientific evidence and draw conclusions via analytical reasoning.

Education to train the clinical reasoning patterns of novices

In the participants' observation, novices could make analytical inferences based on knowledge gained from textbooks. However, this did not apply to narrative or intuitive inferences. The novice level of skill acquisition is the stage where nursing students are trained to compare and match textbook cases with clinical cases, and to rely on typical predictions in textbooks.¹¹ The novices have learned basic knowledge in nursing and have acquired the basic ability to judge the participants' normal or abnormal conditions. The novices' clinical experience was limited to nursing practice. In this nursing practice, it was difficult to repeatedly conduct the same experience. Therefore, simulation education has been introduced in recent years. Simulation education allows students to experientially learn new content without harming patients.¹⁶ It has also been reported that simulation education helps students develop clinical decision-making skills in nursing care for participants, for which there are few clinical facilities.¹⁷ Simulation allows the same situation to be repeated many times, and debriefing allows students to reflect on the situation. Odajima¹⁸ reported that several work and simulation interventions that

incorporate a variety of cases are useful for improving clinical reasoning. We believe that simulation education may lead to the development of clinical reasoning patterns. We believe that when novices accumulate experiences of similar situations through simulations, they accumulate empirical knowledge and may function with intuitive reasoning. In addition, the novice's narrative reasoning did not function because the novice's responses to the participants were formulaic. Therefore, we believe that the simulation of the participants' interactions with the novices may change the response to a receptive response that allows novices to care for the participants in a humane way. Novices may improve the accuracy of definitive diagnoses if they can summarise important events in a story by being able to interact with them. Benner¹¹ stated that in basic nursing education, education aims to improve the dialogue fostered by the concerns of the good inherent in the practice. Since young people are vulnerable to the formation of interpersonal relationships, it is necessary to use simulation not only for them to acquire nursing skills but also to learn how to interact with various participants and to develop ethical attitudes. In the future, we believe that more effective simulation methods in nursing will lead to the education of novices to train their clinical reasoning patterns.

CONCLUSION

As a result of analysing the observation scenes using CQR, 18 core ideas as clinical reasoning processes were generated from the novices and the experts in two domains: 'pre-information gathering' and 'participants' observation situations'. The novices generated three core ideas in the 'pre-information gathering' and four in the 'participants' observation situations'. The experts generated five core ideas in 'pre-information gathering' and 11 in 'participants' observation situations'.

Conflicts of interest: The authors have no conflicts of interest directly relevant to the content of this article.

Funding: This research no received external funding.

REFERENCES

1. National Database of Medical Adverse Events. Japan Council for Quality Health Care. https://www.med-safe.jp/pdf/year_report_2020.pdf
2. Fenske CL, Harris MA, Aebersold ML & Hartman LS. Perception versus reality: A comparative study of the clinical judgment skills of nurses during a simulated activity. *The Journal of Continuing Education in Nursing*. 2013; 44(9): 399-405.
3. Ministry of Health, Labour and Welfare: Kangokisokyokuhoukokusyo, Retrieved from <https://www.mhlw.go.jp/content/10805000/000557411.pdf>
4. Tanner CA. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *Journal of nursing education*. 2006; 45(6): 204-211.
5. Jones M. Clinical reasoning and pain. *Manual Therapy*. 1995; 1(1), 17-24.
6. Cappelletti A, Engel JK, & Prentice D. Systematic review of clinical judgment and reasoning in nursing. *Journal of Nursing Education*. 2014; 53(8), 453-458.
7. Okada M. Process of students acquiring necessary thinking for clinical judgment by accumulating experience in clinical nursing practicums. *Journal of Japan Academy of Nursing Education*. 2020; 29(3), 1-13.
8. Aoki H, Seki S, Nishimagi H, Suzuki S, & Aoki M. Visual perception patterns in clinical reasoning processes during diagnosis of infant epilepsies—Comparisons of eye movement among nurses and students considering their expertise levels—. *The Japanese Journal of Ergonomics*. 2019; 55(5), 200-211.
9. Benner P. Using the Dreyfus model of skill acquisition to describe and interpret skill acquisition and clinical judgment in nursing practice and education. *Bulletin of science, technology & society*. 2004; 24(3), 188-199.
10. Dreyfus SE. Formal models vs. human situational understanding: Inherent limitations on the modeling of business expertise. *Office Technology and People*. 1982; 1(2/3):133-165. <https://doi.org/10.1108/eb022609>
11. Benner P, Tanner C, & Chesla C. (Eds.). *Expertise in nursing practice: Caring, clinical judgment, and ethics*. Springer Publishing Company. 2009.
12. Hill CE, Knox S, Thompson BJ, Williams EN, Hess S A, & Ladany N. Consensual qualitative research: An update. *Journal of counseling psychology*. 2005; 52(2), 196-205. <https://doi.org/10.1037/0022-0167.52.2.196>
13. Franklin AJ, Chen M, Capawana MR, & Hoogasian RO. (2015). Consensual qualitative research analysis of a therapeutic support group session for African American men. *Psychology of Men & Masculinity*. 2015; 16(3), 264.
14. Barter C, & Renold E. The use of vignettes in qualitative research. *Social research update*. 1999; 25(9), 1-6. <https://sru.soc.surrey.ac.uk/SRU25.html>
15. Akiyama N, Akiyama T, Kono R, Hayashida T, & Kanda K. Japanese nurses' competency on different clinical ladder levels: Using a mixed-methods approach. *Journal of the Japan Academy of Nursing Evaluation*. 2020; 10(1), 1-11.
16. LeFlore JL, Anderson M, Michael JL, Engle WD, & Anderson J. Comparison of self-directed learning versus instructor-modeled learning during a simulated clinical experience. *Simulation in Healthcare*. 2007; 2(3), 170-177.
17. Fogg N, Kubin L, Wilson CE, & Trinkka M. Using virtual simulation to develop clinical judgment in undergraduate nursing students. *Clinical Simulation in Nursing*. 2020; 48, 55-58.
18. Odajima Y & Furuihi M. Trends in interventional research for improving clinical reasoning ability in nursing education. *Journal of Japan Society of Nursing and Health Care*. 2020; 22(1), 23-37.