

Original Article



Barriers and Facilitators of Intuitive Decision-Making among Psychiatric Nurses: A Cross-sectional Study

Hossein Namdar Areshtanab^{1*}, Maryam Vahidi¹, Mina Hosseinzadeh², Somayeh Janmohammadi¹¹Department of psychiatric nursing, nursing and Midwifery faculty, Tabriz University of Medical Sciences, Tabriz, Iran²Department of community health nursing, nursing and Midwifery faculty, Tabriz University of Medical Sciences, Tabriz, Iran

Article Info

Article History:

Received: November 6, 2023

Accepted: January 29, 2024

ePublished: March 10, 2024

Keywords:

Barriers, Clinical decision-making, Facilitators, Intuition, Psychiatric nursing

*Corresponding Author:

Hossein Namdar Areshtanab,
Email: hna442000@yahoo.com

Abstract

Introduction: Due to the type and nature of hospitalized psychiatric patients, nurses encounter many ambiguous and complex clinical situations that require intuitive decision-making. The present study was conducted to determine the use of intuition and its barriers and facilitators among psychiatric nurses.**Methods:** This study adopts a descriptive cross-sectional design and employs 123 nurses using convenience sampling in 2022. Demographic characteristics, the use of intuition in clinical practice, and the barriers and facilitators of intuition in clinical practice questionnaires were used for data collection.**Results:** The results of this study showed that the mean (SD) of intuitive decision-making among psychiatric nurses was 58 (13.07) out of a range from 25-125. The use of intuition had a statistically significant correlation with age and work experience in the psychiatry ward. The use of intuitive decision-making has a statistically significant difference in gender, work shift, and education level. The biggest barrier to the use of intuitive decision-making among psychiatric nurses was "The limitations of nursing role which restrict the use of intuition in the clinical setting". The most common facilitator in the use of intuition among psychiatric nurses was "having experience and clinical knowledge leads to the use of intuition in patient care".**Conclusion:** Given the low level of the use of intuition and the important role of intuitive decision-making in the quality of nursing care, nursing managers should provide some strategies for reducing the barriers to the use of intuition among nurses.

Introduction

Humans use two general approaches, 'analysis' and 'intuition,' to process information, know, recognize, decision-making, and problem-solving.¹ The 'analysis' approach is accompanied by high cognitive control and low information processing speed, and due to the linearity of this process, people are fully aware of the subject. However in the 'intuitive' process, cognitive control is low, and information processing is done quickly, and these actions are related to the unconscious system of the person. In the analytical approach, there is less confidence in the judgment, but the information processing method is entirely objective in intuition. While confident in a decision, the process of knowing and receiving data is unclear.² Intuition means presence, insight, revelation, observation, and a kind of ability and sense of guidance for a person's movement without understanding the exact cause of something. Also, another expression describes it as the feeling of understanding and knowing that something unpleasant is happening. This knowledge is obtained directly and immediately and is mainly used when there is a need for creativity and innovation or

in new, complex, and dangerous situations.³ From a cognitive psychological point of view, intuition is a non-analytical method of human information processing that operates through complex pattern recognition and fast and unconscious associations based on empirical knowledge.⁴ In many professions, such as health care workers, decision-making has been cited as critical for managers and leaders.⁵ Nurses usually play a crucial role in care because they have the most direct contact with the patient, which requires high communication skills. An essential aspect of this caregiving role is the decision-making that comes from assessing and monitoring patients to carry out effective treatment plans and coordinating the participation of other health professionals.⁶ They encounter many complex clinical situations that need decision-making skills. These skills are crucial for optimal patient outcomes in critical care settings. Decision-making is a complex process that includes a series of decisions, including making observations of clinical data, validating the observed data, making inferences, and taking actions to meet desired outcomes.⁷ Intuitive decision-making is one of the types of decision-making strategies in nursing that refers to the

perceptual, rapid recognition of significant clinical cues.⁴ Clinical practice nurses must make critical decisions, often under complex and ambiguous conditions. These decisions must be completed correctly and repeatedly with incomplete, contradictory, or imprecise data. Such situations require that nurses not only develop accurate analytical skills but also consider the use of intuition in clinical decision-making.⁸ Among nurses, nurses working in psychiatric departments, due to the type and nature of hospitalized patients, including lack of insight, behavioral violence and communication problems, suicide, and escape, the need for risk assessment and management in these cases inevitably requires the appropriate use of “intuitive” thinking methods. They need analytical thinking.^{9,10}

On the other hand, intuition and tacit forms of knowledge are often ignored due to fear of prejudice and concern that they are ‘unscientific.’¹¹ In a study, psychiatrists defined intuition as the defining characteristic of suddenly knowing the truth about something without having specific data or using a linear reasoning process.¹² Psychiatric nurses inevitably need the appropriate use of intuitive and analytical thinking to assess and manage risk.⁹ The studies showed that the nurses relied on their knowledge to be alert in psychiatric departments, resulting from the relationship between their formal and tacit knowledge. Some relied on their intuitive ability to recognize the signs of suicide.^{13,14} The studies conducted in the world and Iran on using intuition in nursing have mainly been among intensive care and emergency department nurses.¹⁵⁻¹⁹ The present study is one of the few quantitative studies on the use of intuitive decision-making and its obstacles and facilitators in psychiatric nurses. The present study was conducted to determine the use of intuitive decision-making and its barriers and facilitators among nurses working in the psychiatry department in Tabriz city.

Materials and Methods

Study Design and Sampling

The current study is a descriptive correlational study with the participation of 123 nurses working in the various wards of Razi Psychiatric Hospital in Tabriz in 2022. Sampling was done by using the convenience method. The center is the largest psychiatric center in the northwest. The method of patient assignment in the center is functional nursing. Inclusion criteria were being interested in participating in the research, completing the questionnaire, and having at least one year of direct participation in the nursing care of psychiatric patients. The nursing department prepared the list of the nurses working in the mentioned wards. Sampling was randomly performed in all three shifts. The sample size was calculated as 123 nurses using Morgan’s table, considering the number of the statistical population, and the probability of a 10% attrition in samples.

Data Collection Tools

Data were collected using a three-section questionnaire of

demographic information, the use of intuition in clinical practice, and barriers and facilitators of using intuition in clinical practice in nurses based on review literature.^{12,20}

The demographic information questionnaire contains age, gender, marital status, education level, and work experience in the psychiatric ward. The questionnaire on the use of intuition in clinical practice has three factors: intuition as a judgment factor, intuition as a predictor of the patient’s condition, and intuition as a communication channel in 25 statements on a 5-point Likert scale from very low to very high. It is 25-125. The higher the score, the more intuition is used. This questionnaire was created by Hosni and colleagues.²⁰ The questionnaire of barriers and facilitators of the use of intuitive decision-making in clinical practice in psychiatric nurses has 22 items in the form of yes-no. This questionnaire results from a qualitative study on the use of intuition by psychiatric nurses.¹²

To determine the reliability of the tools, the questionnaires were distributed among ten professors and ten experienced psychiatric nurses at Tabriz University of Medical Sciences for the pilot study. To evaluate the reliability of the questionnaires, after collecting information from 20 nurses and using Cronbach’s alpha coefficient, the internal consistency of the Intuition in Clinical Practice questionnaire and the barriers and facilitators of use of intuitive decision-making in clinical practice questionnaires were calculated as 0.90 and 0.85, respectively. The data were collected during two months from April–May 2022.

Data Analysis

Data were analyzed using SPSS v.11.5 (SPSS11.5, Inc, USA). Descriptive and inferential statistics were used to analyze the data.

Results

The study sample consisted of 123 psychiatric nurses with a mean (SD) age and work experience in the psychiatry ward of 35.84 (6.98) and 7.98(5.27) years, respectively. Most nurses were female (n=64, 52%), married (n=87, 70.7%), Circulated work shift (n=76, 61.8%), Level of Education of BS (n=102, 82.9%), worked in men psychiatric ward (n=54, 43.9%) (Table 1).

The results of this study showed that the average use of intuitive decision-making among psychiatric nurses was 58 ± 13.07 out of a range from 25-125. The use of intuitive decision-making had a statistically significant correlation with age and work experience in the psychiatry ward ($r=0.183, 0.311; P \leq 0.05$). On the other hand, intuitive decision-making has a statistically significant difference in gender, work shift, and education level. Statistically, there was no significant difference between marital status and psychiatric ward (Table 1).

The biggest barriers to the use of intuitive decision-making among psychiatric nurses were “The limitations of nursing role limit the use of intuition in the clinical

Table 1. Comparison of demographic characters with use of intuitive decision-making among Psychiatric nurses

Variable	Frequency (%)	Mean (SD)	P value	
Gender ^a				
Male	59 (48)	55.91 (10.63)	0.03*	
Female	64 (52)	59.93 (14.79)		
Marital status				
Single	36 (29.30)	53.11 (13.06)	0.72	
Married	87 (70.70)	60.03 (12.60)		
Work Shift ^a				
Fix	47 (38.2)	60.55 (15.70)	0.01*	
Circulate	76 (61.8)	56.43 (10.96)		
Level of Education ^a				
Bachelor of Nursing	102 (82.9)	57.19 (12.27)	0.01*	
Master of Nursing	21 (17.1)	61.95 (16.19)		
Psychiatric ward				
Men	54 (43.9)	58.87 (12.91)	0.20	
Women	28 (22.8)	59.75 (11.25)		
Children/adolescents	12 (9.8)	57.33 (16.67)		
Emergency	9 (7.3)	62.66 (13.72)		
Clinic	8 (6.5)	53.75 (14.98)		
Addiction	12 (9.8)	50.08 (14.38)		
	Min	Max	M(SD)	P value
Age ^b	24	52	35.84 (6.98)	0.04*
Work experience in the psychiatry ward ^b	1	25	7.98 (5.27)	0.02*
Intuitive decision-making	28	92	58(13.07)	0<.001

^a Student t test, ^b Pearson correlation, *Statistically significant.

setting.” and “Documenting patient care information on intuition is difficult” (Table 2).

The most facilitating use of intuitive decision-making among psychiatric nurses was “having experience and clinical knowledge leads to the use of intuition in patient care.” and “Willingness to take risks leads to its use in patient care” (Table 3).

Discussion

The current study assessed the use of intuitive decision-making and its barriers and facilitators among psychiatric nurses. Regarding the use of intuitive decision-making of the nurses, the results of the current study are in line with the results of some studies, including Nuray et al and Masoudi & Alavi which were low.^{21,22} However, these results were in contrast with the results of the studies of Hassani et al and Miller & Hill and Sari & Akbiyik which were high.^{15,18,19} Circumstance and context, individual characteristics, cognitive and mental processing, and synthesis are identified factors affecting intuition.²³ The difference in the study's environment, tools, size, and type of sampling, and context, individual characteristics of participants can be the possible causes of the difference in the results of the studies.

In the current study, there was a significant positive

correlation between the use of intuitive decision-making and age and work experience in the psychiatry ward. The present study found that with increasing age and work experience in psychiatric wards, use of intuitive decision-making increased. The current study's results align with the results of some studies, including Ruzsa et al and Kindie Abate et al.^{24,25} However, these results were in contrast with the results of the studies of Hassani et al and Noori Tajer et al.^{16,26} With increasing age, gaining experience, and being involved in different clinical situations, it can be said that nurses' confidence in themselves has increased; in a way that they can more easily communicate between the theoretical and practical knowledge they have acquired this year.²⁷ Also, the decision-making ability of nurses with experience in the bedside environment increases; So instead of being systematic and going through a linear process, decision-making goes towards intuitive and interpretive intuitive decision-making.

Also in the current study, the use of intuitive decision-making has a statistically significant difference in gender, work shift, and education level. The current study's results align with the results of some studies, including Sadler-Smith and Sinclair et al that reported women used more intuition, and men used more reason.^{28,29} However, these results were in contrast with the results of the studies of Delaney et al and Allinson & Hayes.^{30,31} Women tend to be more emotional, therefore, it is not as huge a leap for them to experience a higher level of awareness with things than the men.³² The current study's results align with the results of some studies, including Rababa et al revealed that nurses with high educational levels use intuitive decision-making more. Nurses with an advanced academic level have more opportunities to strengthen their theoretical and practical skills during their nursing education and clinical rotations.³³ Also, the current study revealed that nurses with circulated work shifts use intuitive decision-making more. Understanding patients' accurate and complete status is time-intensive and requires nurse presence in different shifts. It is an important and complex part of decision-making for nurses. The nurse must spend more time, collecting physiologic and psychological cues, determining which cues are important, and determining how to respond to the collected information as part of their decision-making process.³⁴

In the current study, the biggest barriers to the use of intuitive decision-making among psychiatric nurses were “The limitations of nursing role limit the use of intuition in the clinical setting.” and “Documenting patient care information on intuition is difficult.”

One of the pivotal factors in clinical decision-making practice among nurses the professional authority and autonomy. It is reportedly associated with the meaningfulness of work, which is promoted by autonomy in performing and scheduling work, clinical decision-making, and the freedom to perform nursing work according to nurses' judgment. The studies show that poor

Table 2. The barriers of the use of intuitive decision-making among Psychiatric nurses

Items	Completely disagree	Disagree	No opinion	Agree	Completely agree
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
1 Using intuition may be associated with adverse reactions from colleagues, such as ridicule or being judged as a non-scientific person.	16 (13)	64 (52)	40 (32.5)	2 (1.6)	1 (0.8)
2 I doubt my abilities regarding the use of intuition in the clinical setting because of my lack of experience and the feeling of being "different" from other colleagues.	16 (13)	41 (33.3)	58 (47.2)	7 (5.7)	1 (0.8)
3 The treatment system emphasizes the use of objective data to make decisions about patient care.	51 (41.5)	38 (30.9)	29 (23.6)	5 (4.1)	0
4 A high workload causes time limitations for the application of intuition in the clinical setting.	49 (39.8)	35 (28.5)	35 (28.5)	4 (3.3)	0
5 Intuition has not been clearly emphasized in nursing education programs.	54 (43.9)	34 (27.4)	32 (26)	3 (2.4)	0
6 The limitations of the nursing role limit the use of intuition in the clinical setting (If a special treatment and drug are needed based on intuition, the nurse cannot act without a doctor's order).	58 (47.2)	33 (26.8)	30 (24.4)	2 (1.6)	0
7 Decision-making based on intuition in patient care may have dangerous consequences.	48 (39)	34 (27.6)	37 (3.1)	4 (3.2)	0
8 Intuition does not have a valuable dignity in our public culture.	49 (39.8)	38 (30.9)	29 (23.6)	6 (4.9)	1 (0.8)
9 I feel embarrassed if I make a wrong decision based on intuition in patient care.	43 (35)	40 (32.5)	31 (25.2)	7 (5.7)	2 (1.6)
10 Documenting patient care information on intuition is difficult.	55 (44.7)	35 (28.5)	31 (25.2)	2 (1.6)	0
11 Being angry with the patient for any reason becomes an obstacle to using intuition in her/his care.	18 (14.6)	37 (30.1)	51 (41.5)	15 (12.02)	2 (1.6)

Table 3. The facilitators of the use of intuitive decision-making among psychiatric nurses

Items	Completely disagree	Disagree	No opinion	Agree	Completely agree
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
1 The respect and trust of others towards me led to the use of intuition in patient care.	4 (3.3)	48 (39)	68 (55.3)	2 (1.6)	1 (0.8)
2 Talking about intuitive experiences and receiving positive feedback from colleagues' leads to encouraging the use of intuition in patient care.	9 (7.3)	31 (25.2)	77 (62.6)	6 (4.9)	0
3 Having confidence in one's ability to use intuition leads to its use in patient care.	8 (6.5)	44 (35.8)	65 (52.8)	6 (4.9)	0
4 The successful outcome of decision-making based on intuition leads to its use in patient care.	9 (7.3)	46 (37.4)	61 (49.6)	7 (5.7)	0
5 Studying or participating in classes on intuition leads to its use in patient care.	7 (5.7)	45 (36.6)	67 (54.5)	3 (2.4)	1 (0.8)
6 Performing mind-relaxing exercises (meditation and reflection) leads to the use of intuition in patient care.	8 (6.5)	43 (35)	64 (52)	7 (5.7)	1 (0.8)
7 More focus and attention on the patient leads to the use of intuition in patient care.	8 (6.5)	41 (33.3)	69 (56.5)	4 (3.3)	1 (0.8)
8 Having experience and clinical knowledge leads to the use of intuition in patient care.	8 (6.5)	49 (39.8)	64 (52)	1 (0.8)	1 (0.8)
9 Willingness to take risks leads to its use in patient care.	5 (4.1)	52 (42.3)	58 (47.2)	8 (6.5)	0
10 Having an open mind (accepting beliefs and ideas contrary to one's thoughts) leads to the use of intuition in patient care.	6 (4.9)	38 (30.9)	69 (56.1)	10 (8.1)	0

professional autonomy is considered an obstacle to clinical decision-making in nurses.^{35,36} Documenting patient care information on intuition is difficult. Judgments and decisions based on intuition can be difficult to measure because they involve variables such as behavior, risk-taking, time, experience, level of training, the complexity of the data, and the maturity of the practitioner, which can affect the outcome of such measurements.^{12,37}

In the current study, the most facilitating use of intuitive decision-making among psychiatric nurses was “having experience and clinical knowledge leads to the use of

intuition in patient care.” and “Willingness to take risks leads to its use in patient care.”

Intuition is influenced by various factors out of which clinical experience is the most common element. Experienced nurses have a clearer understanding of clinical situations and symptoms which helps them to interpret patient cues.³⁸

One of the effective factors in the use of intuitive decision-making is the willingness to take new and unconventional approaches to problem-solving.^{37,39} Intuition might play a critical role in creative thought and creative problem-

solving. Constructs of intuitive and creative decision-making have in common that before a decision is made, option generation processes are involved, which bring about the options to choose.⁴⁰

This study has some limitations. The present study tools were based on self-report which can influence the results of the study. The generalization of the results may be limited due to the various contextual factors. There was a lack of a comprehensive and standard questionnaire to assess the barriers and facilitators in the use of intuitive decision-making among psychiatric nurses. Therefore, we used a researcher-made instrument. Using a sample with a limited size due to the limited population and inclusion criteria of the study.

Conclusion

Based on the results of the present study, it can be concluded that the use of intuitive decision-making among psychiatric nurses was at a low level and there were barriers to using intuitive decision-making among these nurses. Given the low level of The use of intuition, the existence of barriers among the nurses, and the important role of intuitive decision-making because of its nature in the quality of nursing care, organizations, and nursing managers should provide some strategies like the implementation of intuitive decision-making training courses, reducing the limitation of the role of nursing in intuitive decision-making, improving the position of intuitive decisions in nursing education, facilitating the documentation of intuitive information in the nursing process, and creating a suitable organizational culture.

Acknowledgments

The researchers are extremely grateful to the Vice-Chancellor for Research of Tabriz University of Medical Sciences, all of the nurses for participating in this study, and all who helped in this research.

Author's Contribution

Conceptualization: Hossein Namdar Areshtanab, Maryam Vahidi.

Data curation: Somayeh Janmohammadi.

Formal analysis: Hossein Namdar Areshtanab, Maryam Vahidi,

Mina Hosseinzadeh.

Funding acquisition: Hossein Namdar Areshtanab.

Methodology: Hossein Namdar Areshtanab, Maryam Vahidi. Mina Hosseinzadeh.

Validation: Hossein Namdar Areshtanab.

Visualization: Hossein Namdar Areshtanab.

Writing-original draft: Hossein Namdar Areshtanab, Maryam Vahidi. Mina Hosseinzadeh.

Writing-review & editing: Hossein Namdar Areshtanab, Maryam Vahidi. Somayeh Janmohammadi, Mina Hosseinzadeh.

Competing Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

Data Availability Statement

All data generated or analyzed during this study are included in this published article.

Ethical Approval

After obtaining permission from the Vice Chancellor for Research of Tabriz University of Medical Sciences, the researcher got informed consent from the participants, introduced the research, explained the research objectives, described voluntary participation in the study, and ensured the confidentiality of information. Then, the questionnaire was administered, and the completed questionnaire was received after a week. The Ethics Committee approved this study of Tabriz University of Medical Sciences (IR.TBZMED.REC.1401.217).

Funding

Tabriz University of Medical Sciences provided the financial support.

References

- Hallo L, Nguyen T. Holistic view of intuition and analysis in leadership decision-making and problem-solving. *Adm Sci.* 2021; 12(1): 4. doi: [10.3390/admsci12010004](https://doi.org/10.3390/admsci12010004)
- Chilcote DR. Intuition: a concept analysis. *Nurs Forum.* 2017; 52(1): 62-7. doi: [10.1111/nuf.12162](https://doi.org/10.1111/nuf.12162)
- Turan N, Kaya H, Özsaban A, Özdemir Aydın G. Intuition: an important tool in the practice of nursing. *Journal of Nursing & Healthcare.* 2016; 1(2): 1-5. doi: [10.33140/jnh/01/02/00008](https://doi.org/10.33140/jnh/01/02/00008)
- Adinolfi P, Loia F. Intuition as Emergence: Bridging Psychology, Philosophy and Organizational Science. *Front Psychol.* 2022;12:787428. doi:[10.3389/fpsyg.2021.787428](https://doi.org/10.3389/fpsyg.2021.787428)
- Sevy Majers J, Warshawsky N. Evidence-based decision-making for nurse leaders. *Nurse Lead.* 2020; 18(5): 471-5. doi: [10.1016/j.mnl.2020.06.006](https://doi.org/10.1016/j.mnl.2020.06.006)
- Roodbeen R, Vreke A, Boland G, Rademakers J, van den Muijsenbergh M, Noordman J, et al. Communication and shared decision-making with patients with limited health literacy; helpful strategies, barriers and suggestions for improvement reported by hospital-based palliative care providers. *PLoS One.* 2020; 15(6): e0234926. doi: [10.1371/journal.pone.0234926](https://doi.org/10.1371/journal.pone.0234926)
- Rababa M, Al-Rawashdeh S. Critical care nurses' critical thinking and decision-making related to pain management. *Intensive Crit Care Nurs.* 2021; 63: 103000. doi: [10.1016/j.iccn.2020.103000](https://doi.org/10.1016/j.iccn.2020.103000)
- Rosciano A, Lindell D, Bryer J, DiMarco M. Nurse Practitioners' Use of Intuition. *The Journal for Nurse Practitioners.* 2016; 12(8): 560-565. doi:[10.1016/j.nurpra.2016.06.007](https://doi.org/10.1016/j.nurpra.2016.06.007)
- Pelto-Piri V, Wallsten T, Hylén U, Nikban I, Kjellin L. Feeling safe or unsafe in psychiatric inpatient care, a hospital-based qualitative interview study with inpatients in Sweden. *Int J Ment Health Syst.* 2019; 13: 23. doi: [10.1186/s13033-019-](https://doi.org/10.1186/s13033-019-)

Research Highlights

What is the current knowledge?

- The use of intuition by nurses is one of the ways to make crucial decisions about patient care.
- The ability to use intuitive decision-making in nursing practice directly impacts the quality of care and patients' outcome

What is new here?

- The use of intuitive decision-making among psychiatric nurses in Tabriz-Iran was self-reported at a low level.
- The use of intuitive decision-making has a statistically significant difference in gender, work shift, and education level of nurses.

- 0282-y
10. Carroll A. Good (or bad) vibrations: clinical intuition in violence risk assessment. *Adv Psychiatr Treat.* 2012; 18(6): 447-56. doi: [10.1192/apt.bp.111.010025](https://doi.org/10.1192/apt.bp.111.010025)
 11. Rew L. Acknowledging intuition in clinical decision-making. *J Holist Nurs.* 2000; 18(2): 94-108, 9-13. doi: [10.1177/089801010001800202](https://doi.org/10.1177/089801010001800202)
 12. Rew L. Intuition in psychiatric-mental health nursing. *J Child Adolesc Psychiatr Ment Health Nurs.* 1991; 4(3): 110-5. doi: [10.1111/j.1744-6171.1991.tb00503.x](https://doi.org/10.1111/j.1744-6171.1991.tb00503.x)
 13. Vahidi M, Ebrahimi H, Namdar Areshtanab H, Asghari Jafarabadi M, West S, Foong A, et al. Providing a safe environment in a psychiatric ward: nurses and vigilance in Iran. *Issues Ment Health Nurs.* 2019; 40(1): 65-72. doi: [10.1080/01612840.2018.1463326](https://doi.org/10.1080/01612840.2018.1463326)
 14. Hagen J, Knizek BL, Hjelmeland H. Mental health nurses' experiences of caring for suicidal patients in psychiatric wards: an emotional endeavor. *Arch Psychiatr Nurs.* 2017; 31(1): 31-7. doi: [10.1016/j.apnu.2016.07.018](https://doi.org/10.1016/j.apnu.2016.07.018)
 15. Hassani P, Abdi A, Jalali R, Salari N. Relationship between the use of intuition in clinical practice and the clinical competence of critical care nurses. *Int J Evid Based Healthc.* 2017; 15(4): 171-7. doi: [10.1097/xeb.0000000000000113](https://doi.org/10.1097/xeb.0000000000000113)
 16. Hassani P, Abdi A, Jalali R, Salari N. The perception of intuition in clinical practice by Iranian critical care nurses: a phenomenological study. *Psychol Res Behav Manag.* 2016; 9: 31-9. doi: [10.2147/prbm.s101040](https://doi.org/10.2147/prbm.s101040)
 17. Aghajani M, Taghadosi M, Mirbagher Ajorpaz N. Intuitive decision-making by Iranian nurses of patients with COVID-19: a qualitative study. *J Caring Sci.* 2022; 11(3): 154-62. doi: [10.34172/jcs.2022.04](https://doi.org/10.34172/jcs.2022.04)
 18. Miller EM, Hill PD. Intuition in clinical decision-making: differences among practicing nurses. *J Holist Nurs.* 2018; 36(4): 318-29. doi: [10.1177/0898010117725428](https://doi.org/10.1177/0898010117725428)
 19. Sari D, Akbiyik A. Turkish nursing students' use of intuition. *Int J Caring Sci.* 2019; 12(2): 966-71.
 20. Hassani P, Abdi A, Jalali R, Salari N. Development and psychometric evaluation of an instrument to measure the use of intuition in clinical practice by critical care nurses. *J Nurs Meas.* 2018; 26(3): E142-58. doi: [10.1891/1061-3749.26.3.e142](https://doi.org/10.1891/1061-3749.26.3.e142)
 21. Turan N, Özdemir Aydın G, Özsaban A, Kaya H, Aksel G, Yılmaz A, et al. Intuition and emotional intelligence: a study in nursing students. *Cogent Psychol.* 2019; 6(1): 1633077. doi: [10.1080/23311908.2019.1633077](https://doi.org/10.1080/23311908.2019.1633077)
 22. Masoudi K, Alavi A. Relationship between nurses' emotional intelligence with clinical decision-making. *Avicenna J Nurs Midwifery Care.* 2021; 29(1): 14-22. doi: [10.30699/ajnm.29.1.14](https://doi.org/10.30699/ajnm.29.1.14)
 23. Tebyani K, Ajdari A, Bagheri Taleghani E. Investigating the factors affecting the intuitive thinking of designers in the design process. *Journal of Visual and Applied Arts.* 2021; 14(32): 5-22. doi: [10.30480/vaa.2021.3165.1504](https://doi.org/10.30480/vaa.2021.3165.1504)
 24. Ruzsa G, Szeverenyi C, Varga K. Person- and job-specific factors of intuitive decision-making in clinical practice: results of a sample survey among Hungarian physicians and nurses. *Health Psychol Behav Med.* 2020; 8(1): 152-84. doi: [10.1080/21642850.2020.1741372](https://doi.org/10.1080/21642850.2020.1741372)
 25. Kindie Abate H, Birhanu Y, Hailu Gebrie M. Clinical decision-making approaches and associated factors among nurses working in a tertiary teaching hospital. *Int J Afr Nurs Sci.* 2022; 17: 100432. doi: [10.1016/j.ijans.2022.100432](https://doi.org/10.1016/j.ijans.2022.100432)
 26. Noori Tajer M, Mahfooz Poor S, Noori Nejad F. Collaborative decision-making among head nurses in educational health centers of Iran university of medical sciences. *Scientific Research Health Management Quarterly.* 2007; 10(26): 7-14. [Persian].
 27. Skår R. How nurses experience their work as a learning environment. *Vocat Learn.* 2010; 3(1): 1-18. doi: [10.1007/s12186-009-9026-5](https://doi.org/10.1007/s12186-009-9026-5)
 28. Sadler-Smith E. The intuitive style: relationships with local/global and verbal/visual styles, gender, and superstitious reasoning. *Learn Individ Differ.* 2011; 21(3): 263-70. doi: [10.1016/j.lindif.2010.11.013](https://doi.org/10.1016/j.lindif.2010.11.013)
 29. Sinclair M, Ashkanasy NM, Chattopadhyay P. Affective antecedents of intuitive decision-making. *J Manag Organ.* 2010; 16(3): 382-98. doi: [10.5172/jmo.16.3.382](https://doi.org/10.5172/jmo.16.3.382)
 30. Delaney R, Strough J, Parker AM, Bruine de Bruin W. Variations in decision-making profiles by age and gender: a cluster-analytic approach. *Pers Individ Dif.* 2015; 85: 19-24. doi: [10.1016/j.paid.2015.04.034](https://doi.org/10.1016/j.paid.2015.04.034)
 31. Allinson CW, Hayes J. The cognitive style index: a measure of intuition-analysis for organizational research. *J Manag Stud.* 1996; 33(1): 119-35. doi: [10.1111/j.1467-6486.1996.tb00801.x](https://doi.org/10.1111/j.1467-6486.1996.tb00801.x)
 32. Olusakin AM, Nwolis FA. Gender differences and intuitive decision-making in the workplace. In: Afolabi ER, Popoola BI, Ojo OO, eds. *Readings in Education for National Development: A Publication of the Department of Educational Foundations and Counselling.* Obafemi Awolowo University (OAU); 2009. p. 175-83.
 33. Rababa M, Bani-Hamad D, Hayajneh AA, Al Mugheed K. Nurses' knowledge, attitudes, practice, and decision-making skills related to sepsis assessment and management. *Electron J Gen Med.* 2022; 19(6): em420. doi: [10.29333/ejgm/12556](https://doi.org/10.29333/ejgm/12556)
 34. Nibbelink CW, Brewer BB. Decision-making in nursing practice: an integrative literature review. *J Clin Nurs.* 2018; 27(5-6): 917-28. doi: [10.1111/jocn.14151](https://doi.org/10.1111/jocn.14151)
 35. Both-Nwabuwe JMC, Lips-Wiersma M, Dijkstra MTM, Beersma B. Understanding the autonomy-meaningful work relationship in nursing: a theoretical framework. *Nurs Outlook.* 2020; 68(1): 104-13. doi: [10.1016/j.outlook.2019.05.008](https://doi.org/10.1016/j.outlook.2019.05.008)
 36. Pursio K, Kankkunen P, Sanner-Stiehr E, Kvist T. Professional autonomy in nursing: an integrative review. *J Nurs Manag.* 2021; 29(6): 1565-77. doi: [10.1111/jonm.13282](https://doi.org/10.1111/jonm.13282)
 37. Melin-Johansson C, Palmqvist R, Rönnerberg L. Clinical intuition in the nursing process and decision-making-a mixed-studies review. *J Clin Nurs.* 2017; 26(23-24): 3936-49. doi: [10.1111/jocn.13814](https://doi.org/10.1111/jocn.13814)
 38. Pearson H. Science and intuition: do both have a place in clinical decision-making? *Br J Nurs.* 2013; 22(4): 212-5. doi: [10.12968/bjon.2013.22.4.212](https://doi.org/10.12968/bjon.2013.22.4.212)
 39. Smith AJ. Embracing intuition in nursing practice. *Ala Nurse.* 2007; 34(3): 16-7.
 40. Johnson JG, Raab M. Take the first: option-generation and resulting choices. *Organ Behav Hum Decis Process.* 2003; 91(2): 215-29. doi: [10.1016/s0749-5978\(03\)00027-x](https://doi.org/10.1016/s0749-5978(03)00027-x)