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Article

Clinical decision-making of bachelor and clinical internship (professional) nursing students in Indonesia

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Abstract

Background: Clinical decision-making is an essential element of every professional nursing career. A nurse's aptitude for clinical decision-making influences the quality of the healthcare they provide. This research aims to describe the clinical decision-making among nursing students at Universitas Indonesia.

Design and Methods: This research employed a cross-sectional design by sampling 216 students across several types and level of students' programs in the University. The samples were selected using a stratified random sampling technique and met the inclusion criteria. The instrument of this research was the 2014 Nursing Decision Making Instrument. The survey instrument was translated from English into Indonesian, and its validity and reliability were tested (α Cronbach value = 0.816).

Results: The results of the univariate analysis revealed that students' clinical decision-making abilities vary; 59.2% in the analysis category, 40.3% in the quasi-rational category, and 0.5% in the intuitive category.

Conclusion: This research concludes that the clinical decision-making ability of bachelor and professional nursing students' program is in the analysis category that indicate that students' clinical decision-making abilities involve their explicit-theoretical knowledge and are supported by evidence-based practices. Therefore, their clinical decision-making can be logically defended, though it requires a longer duration of time to strengthen those abilities. The students' clinical decision-making must continuously be improved to enable them to create precise decisions based on various situations and clinical conditions.

Introduction

Clinical decision-making is a typical responsibility of professional nurses. It illustrates the basic role of a nurse in providing clinical services, and it is a process performed by nurses daily to assess their patients' health care quality.[1] Clinical decision-making is a complex process that involves monitoring, information processing, critical thinking, evidence evaluation, implementation of relevant knowledge, problem-solving skills, reflection, and clinical assessment to select the best health measures to optimize clients' health and minimize potential risks.[2] The inability to pro-

vide precise clinical decision-making can cause a nurse to overlook potential chances to improve their clients' conditions.[3] Unexpected events in hospitals could be prevented approximately 65% if nurses made more precise decisions.[4]

Nursing students, as a candidate of professional nurses, must hone and strengthen their clinical decision-making abilities. A study that investigates nursing students in their last academic year concluded that, within the sample population, 76% of the students were in the quasi-rational category of cognition model, 23% of them were in the analysis category, and 1% were in the intuitive category.[5] The clinical decision-making of nursing students can be influenced by various factors, such as fundamental knowledge, clinical experience, clinical infrastructures, clinical instructors, self-efficacy and confidence, the atmosphere of clinical learning, stress, fear, and clinical practice units.[6,7] Theoretically, nursing students learn all required skills during their education, but they graduate from their training with insufficient experience and a lack of practical skills.[8] Furthermore, studies investigating the description of clinical decision-making in Indonesia are important. Thus, the results of this research study can be used as an indicator of the success of educational nursing programs and the data can be considered in implementing the revision of the nursing higher education curriculum.

Design and Methods

This research employed a descriptive study with a cross-sectional design employing 216 nursing students as the respondents. The inclusion criteria of this research were as follows: (1) Students of the Faculty of Nursing from the 2017 Regular Bachelor Program (year 3), the 2016 Regular Bachelor Program (year 4), the 2018 Bachelor Bridging Program (year 4), and the Regular and Bridging Professional Nurse Programs; (2) Students that have experience with clinical practices; (3) Currently enrolled students; and (4) Students willing to participate in the research. The samples were determined by employing a stratified random sampling technique and Alpha was set at .05. The Bachelor of Nursing Program in Indonesia is divided into two types of program categories, namely regular and bridging program. The Regular Bachelor Program is one of the programs that is opened for highschool graduates. Graduated nursing students will be awarded the title Bachelor of Nursing after completing a study

Significance for public health

Health education institutions have a responsibility to provide quality health workers for the community. This research provides reflection data for educational institutions in developing learning strategies that support the improvement of clinical decision-making competencies.

load of 144 credits over 8 semesters. The Bachelor Bridging Program is required to complete a load of 72 credits in 5 semesters and has minimum 1 year of work experience in the nursing field. The Professional Nurse Program is a program organized as a further education for graduate Bachelor of Nursing Students from regular and bridging programs. This program has a study load of 36 credits which is carried out through clinical practice in various educational facilities and graduated with a Ners degree.

The instrument of this research was the 2014 Nurse Decision Making Instrument (NDMI-R2014) developed by Dr. Sirkka Lauri and Sanna Salanterä.[5] The instrument was translated from English into Indonesian, and its validity and reliability were tested (r count value = 0.368-0.626 and α Cronbach value = 0.816). The measurement results are categorized into Analysis, Quasi-rational, and Intuitive. the analytical category means that decision making is analytically oriented, the Quasi-rational category means that decision making is flexible depending on the situation, and Intuitive means that decision making is intuitively oriented. This research employed a questionnaire of respondents' characteristics that consisted of age, gender, study program, highest degree of education, and (for bridging program students) their amount of time spent working in hospitals.

The data of this study were collected using an online questionnaire via Google Forms. the explanation related to the research and informed consent for participants is explained on the first page of the Google Forms.

The collected data were processed through editing, coding, entry, cleaning steps and analyzed by employing a univariate analysis using IBM SPSS ver. 23.0 for Windows program. The univariate analysis in this study is intended to describe the frequency distribution and percentage of age, gender, study program, latest education, and length of work in hospitals, along with an overview of clinical decision-making in nursing students in Indonesia.

Results

The characteristics of the respondents of this research are age, gender, study program, last education degree, and length of work in hospitals (Table 1). The average age of the respondents is 23.25±4.494 years old (95% CI: 22.65-23.85). Furthermore, the research results indicated that the majority of the respondents are female students (87.5%), and the highest level of education for the majority of respondents is the senior year of high school (59.7%). The characteristic of the length of hospital work for bridging program students is 8.53 ± 4,366 years (95% CI: 7.19-9.88). Thus, according to novice to expert theory which states nursing clinical experience classified in five stages: novice (less than 6 months), advanced beginner (6 to 12 months), competent (1 to 3 years), proficient (4 to 5 years), and expert (more than 5 years), most of the students from bridging program are categorized as 'expert'.

Table 2 indicates that many nursing students within the sample population demonstrate clinical decision-making abilities in analysis model categories (59.2%).

Table 3 shows that the majority of students from the 2017 regular bachelor program, 2016 regular bachelor program, 2018 bridging bachelor program, and nursing profession regular program are in the analysis category (above 50%). Meanwhile, most students from the bridging nursing program are in the quasi-rational category (4.8%), and one student is in the intuitive category. The mean scores of each study program indicate score improvement from the 2017 regular bachelor program to the bridging nurse profession program.

Table 4 shows that the mean score of male students' clinical decision-making was higher than that of female students. The average score of each highest level of education category also increased, namely in high school and equivalent (65.59), Diploma 3 of Nursing (66.73), and Bachelor of Nursing (67.52).

Table 1. Respondents' characteristics (N=216).

Variables	Frequency, n	%	Mean	Standard deviation
Age	216		23.25	4.494
2017 Regular Bachelor	66		20.35	0.568
2016 Regular Bachelor	63		21.43	0.640
2018 Bachelor Bridging	22		31.27	4.355
Regular Professional	44		22.43	0.501
Bridging Professional	21		31.14	4.293
Gender				
Male	27	12.5		
Female	189	87.5		
Study program				
2017 Regular Bachelor	66	30.6		
2016 Regular Bachelor	63	29.2		
2018 Bachelor Bridging	22	10.2		
Regular Professional	44	20.4		
Bridging Professional	21	9.7		
Highest level of education				
High School Senior	129	59.7		
Diploma 3 of Nursing	22	10.2		
Bachelor of Nursing	65	30.1		
Length of working in hospital	43		8.53	4.366
Novice	0	0		
Advanced Beginner	0	0		
Competent	6	14		
Proficient	8	18.6		
Expert	29	67.4		

Table 5 illustrates that the mean score of the nursing students is 66.29, with an SD of 3.985 (95% CI: 65.75-66.82). It further demonstrates that the mean score of sub-scale 4 (implementation, monitoring, and result evaluation) is the highest of the four sub-scales.

Discussion

Characteristics of respondents

The results of this research reveal that the respondents are young adults, with ages ranging from 24-40 years. During this period, young adults generally have a strong adaptation ability to new experiences. They have critical thinking behavior, conceptual skills, problem-solving, and motor skills that improve with the furthering of their formal and informal educational experiences.[3] Within this research, male students display higher average scores in clinical-decisions making than female students. This result is in line with previous study that male students have a higher confidence level and less worries about making clinical decisions.[9]

Therefore, because they are more confident in their skills, male nurses have a greater potential to quickly make decisions using their intuition. Confidence can be the most influential factor in decision making.[6] Phillips researches students in their final academic year from two study programs in United States,[5] Baccalaureate (BSN) and Accelerated Baccalaureate (ABSN), and determines that the clinical decision-making abilities of the students in both programs are in the quasi-rational category. However, the result of this research reveals that the mean score of the regular bachelor program and bachelor bridging program is in the analysis

Table 2. Clinical decision-making of nursing students in Indonesia (N=216).

Variables, clinical decision-making	N.	%
Analysis	128	59.2
Quasi-rational	87	40.3
Intuitive	1	0.5
Total (n)	216	100

Table 3. Clinical decision-making of the students in several study program (N=216).

| Study programs | Clinical decision-making | | | | | | Total | Mean |
| | Analysis | | Quasi-rational | | Intuitive | | | |
	n	%	n	%	n	%		
2017 Regular Bachelor Program	44	66.7	22	33.3	0	0	66	65.58
2016 Regular Bachelor Program	41	65.1	22	34.9	0	0	63	65.60
2018 Bachelor Bridging Program	12	54.5	10	45.5	0	0	22	66.73
Regular Professional Nurse Program	23	52.3	21	47.7	0	0	44	66.89
Bridging Professional Nurse Program	8	38.1	12	57.1	1	4.8	21	68.86
Total	128	59.2	87	40.3	1	0.5	216	66.29

Table 4. Clinical decision-making of the students in each gender and highest level of education (N=216).

| Variables | Clinical decision-making | | | | | | Total | Mean |
| | Analysis | | Quasi-rational | | Intuitive | | | |
	n	%	n	%	n	%		
Gender								
Male	11	40.7	16	59.3	0	0	27	68.11
Female	117	61.9	71	37.6	1	0.5	189	66.03
Total	128	59.2	87	40.3	1	0.5	216	66.29
Highest Level of Education	23	52.3	21	47.7	0	0	44	66.89
High School Senior	85	65.9	44	34.1	0	0	129	65.59
Diploma 3 of Nursing	12	54.5	10	45.5	0	0	22	66.73
Bachelor of Nursing	31	47.7	33	50.8	1	0.5	65	67.52
Total	128	59.2	87	40.3	1	0.5	216	66.29

Table 5. Sub-scales of students' clinical decision-making (N=216).

Variable	Mean	SD
Clinical Decision-Making	66.29	3.985
Sub-Scale 1	15.74	1.767
Sub-Scale 2	16.25	1.856
Sub-Scale 3	17.07	1.477
Sub-Scale 4	17.22	1.613

category. The researchers deduce that this difference occurs because Phillips involves more ABSN students who have additional education and greater professional experience. Furthermore, Williams et al. in Krumwiede explain that ASBN students are considered to have higher levels of clinical competency, particularly in professional behaviors like client confidentiality and critical thinking in nursing diagnosis.[10] Two of the factors that influence students' clinical decision-making is self-efficacy or an emphasis on clinical competence.[7] As mentioned previously, the majority of this study's respondents' indicate high school senior as their highest level of education. Upon investigating nurses' perception of clinical decision-making, Bjørk and Hamilton found that nurses with higher education levels tend to make decisions more intuitively.[11] In other words, the greater the education, the greater the intuition. The average score among bridging program students for length of work in hospitals is 8.5 years. The majority of bridging program students are in the expert category, indicating that they have greater than five years of clinical working experience. Novice to expert theory states that an expert can intuitively make decisions based on their previous experiences, and intuition primarily introduces previously-experienced patterns.[12] Bjørk and Hamilton explain that nurses' length of professional experience significantly correlates with clinical decision-making in the intuitive category.[11]

Clinical decision-making

The major percentage of clinical decision-making among types of programs is in the analysis category. This finding supports the theory of Benner, which states that novice nurses (including students) think and makes decision more analytically.[5] It means that the majority of the students make decisions consciously and in several steps. Consequently, it can be logically defended because explicit-theoretical knowledge is applied supported with evidence-based practices and related studies.[13] The major percentage of the respondents from the previous study by Phillips,[5] which involves bachelor nursing students in their final year, are in the quasi-rational category. This finding differs from those of this research, where the majority of respondents are in the analysis category. The researchers posit that this difference occurs because the majority of research samples in this study (59.72% of the total samples) are regular bachelor students. These individuals are still completing their academic studies, and most of their learned materials are theoretical concepts, class-taught nursing skills, as well as laboratory management. This condition affords students few chances to directly treat patients and provides them with limited experience. However, other departments provide more credits for clinical practice. A study state that in practical learning, students attempt to review theories learned in academic settings.[14] Hammond in Phillips explains that an intuitive model for clinical decision-making occurs when a task requires a rapid or simple solution, and/or when the decision-maker has greater knowledge and experience.[5] Therefore, the limited experiences of students influence their clinical decision-making abilities. Clinical experience is necessary to improve their ability to recognize more cues and patterns while treating a patient.

Furthermore, the findings of this research reveal that bridging professional nursing students exhibit the highest percentage of the quasi-rational category. This indicates that these students have flexible decision-making abilities that depend on the current situation and task characteristics performed to make decisions.[15] The only respondent who meets the requirements of the intuitive category is from the bridging professional nurse program and also has the longest working experience in hospitals. This intuitive categorization is probably caused by this respondent's experiences and their knowledge of nursing, which is greater than that of the other respondents. Muntean asserts that experience, knowledge, and clue recognition are closely related because the ability to recognize cues relies on knowledge gained from years of experiences.[4] The more cues a nurse recognizes, the more intuitive their decision-making will be. The instrument of this research divides the process of clinical decision-making into four sub-scales: (1) data collection, (2) data processing and problem identification, (3) action planning, and (4) result implementation, monitoring, and evaluation. The finding of this research reveals that the mean score of sub-scale 4 is the highest of the sub-scales. A higher score can indicate a more intuitive process.

Results and Conclusions

To summarize, the majority of this study's respondents are female young adults with an average age of 23.25 and students of the 2017 regular bachelor program; their highest level of education is high school senior; the average length of hospital work for bridging students is 8.53 years, and the majority of respondents are considered expert according to the novice to expert theory. This research concludes that the clinical decision-making ability of bachelor nursing program students in Indonesia is in the analysis category because most of them are bachelor students who are still pursuing academic studies and, as a result, have limited clinical experience.

The findings of this research are intended to be considered and referenced for educational nursing institutions to enhance students' clinical decision-making abilities by implementing appropriate learning methods, such as case study or in-class simulations. As a result of these methods, a beneficial and practical learning environment for developing students' clinical decision-making abilities is available to them during their learning process. Furthermore, clinical instructors or educators must facilitate more students to have real experience in clinical situations. The findings of this research stand to provide information and reference for future researchers that will investigate the subject of clinical decision-making among nursing students in Indonesia.

The most significant limitation to this study occurred during the data collection process when the method of data collection had to be changed. The collection of data was originally going to be done through face-to-face interviews, however, the data had to be collected virtually, due to increased restrictions in face-to-face interactions resulting from the Covid-19 pandemic. Changes in this collection method to a virtual setting can create a lack of control on the part of researchers because they are unable to directly observe respondents as they complete the survey questionnaire. Nonetheless, this limitation is certainly beyond the authority of the researchers. To address this limitation, researchers attempted to contact respondents one by one and did not publicly distribute the questionnaire. Researchers also included instructions for completing the survey questionnaire and obtained consent forms from respondents prior to their participation.

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