

Clinical Decision-Making Levels of Nursing Students and Affecting Factors

✉ Burcu Arkan¹, ✉ Dilek Yılmaz², ✉ Hava Gökdere Çınar³, ✉ Rabia Uzun⁴

¹Department of Psychiatric Nursing, Bursa Uludağ University Faculty of Health Sciences, Bursa, Turkey

²Department of Fundamentals of Nursing, Bursa Uludağ University Faculty of Health Sciences, Bursa, Turkey

³Department of Administration Nursing, Bursa Uludağ University Faculty of Health Sciences, Bursa, Turkey

⁴Bursa Uludag University Faculty of Health Sciences, Bursa, Turkey

Abstract

BACKGROUND/AIMS: Although clinical decision-making is an integral part of nursing practice, there are very few studies which investigate the factors affecting decision-making. This study was conducted to find out nursing students' levels of clinical decision-making and their affecting factors.

MATERIALS AND METHODS: This research was carried out with a cross-sectional and descriptive design. This research was carried out on 362 1st, 2nd, 3rd and 4th grade students studying at a faculty of health sciences department of nursing. The data of this research were collected by using a "Sociodemographic Data Collection Form" and "The Clinical Decision-Making in Nursing Scale (CDMNS)." In the analysis of the data, numbers, percentages, and means were used with Mann-Whitney U test and Kruskal-Wallis test.

RESULTS: The mean age of the students was 20.75 ± 1.91 years, 80.9% of the students were female and 63% were graduates of elite Anatolian or science high schools. The students' total "CDMNS" score mean was 100.81 ± 18.06 . It was found that variables such as grade, gender, the high school of graduation, the number of people living in the family, education and employment status of the parents, having chosen the department willingly, and income and employment status did not affect the clinical decision-making status of the students ($p > 0.05$).

CONCLUSION: As a result of this study, it was found that the students' status of clinical decision-making is at a medium level. It is recommended to repeat this study on students studying in different curricula in nursing, on a larger sample group and to analyze the students' level of clinical decision-making in terms of variables such as critical thinking, problem solving and their clinical learning environment.

Keywords: Nursing, clinical, decision, practice, education

INTRODUCTION

Decision-making can be defined as selecting the most appropriate possible way to solve a problem. The process of decision-making is a mental process which starts with the perception of a situation as a problem by an individual and includes the selection of an activity

related to a behavior from one or more options, in order to achieve a desired goal.¹

Clinical decision-making is the ability to use the basic and current knowledge of nursing, which includes nonlinear and multi-faceted interactions.² According to this approach, clinical decision-making

To cite this article: Arkan B, Yılmaz D, Gökdere Çınar H, Uzun R. Clinical Decision-Making Levels of Nursing Students and Affecting Factors. Cyprus J Med Sci 2022;7(6):738-744

ORCID IDs of the authors: B.A. 0000-0002-7285-6196; D.Y. 0000-0001-7269-8493; H.G.Ç. 0000-0002-5792-5958; R.U. 0000-0002-0548-648X.



Address for Correspondence: Burcu Arkan
E-mail: arkanburcu@yahoo.com
ORCID ID: orcid.org/0000-0002-7285-6196

Received: 15.09.2020
Accepted: 08.01.2021



©Copyright 2022 by the Cyprus Turkish Medical Association / Cyprus Journal of Medical Sciences published by Galenos Publishing House.
Content of this journal is licensed under a Creative Commons Attribution 4.0 International License

allows the nurse to observe the patient's condition, evaluate the observed data, critically question their causes, and identify alternative hypotheses. It includes choosing the most possible hypothesis among them and determining and implementing the most suitable action for the hypothesis chosen.^{3,4}

Clinical decision-making is a basic skill which needs to be developed in all health professionals who offer health care, especially nurses.⁵ Clinical decision-making, which expresses the ability of nurses to use and combine their theoretical and practical knowledge, requires nurses to access new information through different methods during this process.² In order for the nurse to make a correct and effective decision, it is very important to obtain the most accurate information for the solution of the existing problem and to use it in the process of decision-making.⁶ Clinical decision-making, which is a complicated process which involves a series of decisions in order to achieve the targeted results in patient care, is also an essential part of the nursing process.^{7,8}

Clinical decision-making is one of the skills which should be learnt by students in their nursing education.⁹⁻¹¹ Therefore, there is a need to determine the clinical decision-making perception of nursing students and to improve and evaluate their decision-making skills during the education process, and there are currently only a limited number of studies on the perceptions of nursing students and their understanding of clinical decision-making.^{11,12} As decision-making is a complex process and many factors affect this process, it is difficult to study clinical decision-making in nursing students.^{9,11} In the study by Garrett¹¹, it was found that nursing senior students perceive clinical decision-making as a complex conceptual process and at the same time think that clinical decision-making is related to knowledge and experience. In the literature, it has been suggested that there have been changes in critical thinking and intellectual development with undergraduate nursing education, however, these changes will take several years and should be applied in clinical decision-making processes.¹¹⁻¹³ In their qualitative study, Jahanpour et al.¹⁴ reported that an insufficient number of clinical instructors, low self-sufficiency, an unsuitable clinical learning environment and stress negatively affect decision-making in students and that students cannot decide independently. In the study conducted by Ho et al.¹⁵ on senior students at a nursing school in Malaysia, it was reported that the students' "Clinical Decision-Making in Nursing Scale (CDMNS)" mean score were good, and that this result was affected by the fact that nursing was their first preference and they were satisfied with being a nurse. In another study in which the clinical decision-making perception of nursing students were analyzed in our country,¹³ it was found that there was a difference between grades in clinical decision-making levels of the students, and as a result of a one-year follow-up, it was found that the clinical decision-making scores of the senior students were lower. In a study conducted by Özden et al.¹⁶ to determine the clinical decision-making levels of nursing students and the factors affecting them, the students' status of clinical decision-making was reported to be affected by variables such as the employment status of the mother, Having entered the department willingly or not, liking nursing as a profession, having a positive opinion about the profession, not having problems in clinical practice and thinking that they use their theoretical knowledge in their clinical practice.

Although there are studies on the clinical decision-making levels of students in the literature, it has been observed that there are only a limited number of studies which reveal the factors which affect the clinical decision-making levels of students. It is thought that the findings

obtained through this study can assist instructors in improving clinical decision-making in nursing students and in identifying appropriate educational and clinical strategies. This research was carried out to find out the clinical decision-making levels of nursing students and their effecting factors. This study aimed to answer the question "*What are the factors affecting the clinical decision-making skills of nursing students?*"

MATERIALS AND METHODS

Design and Sample

This research was conducted in Bursa Uludağ University Faculty of Health Sciences, Department of Nursing, between March and April of 2019, in a descriptive and cross-sectional design.

The universe of the research consisted of 771 1st, 2nd, 3rd and 4th grade students who were studying in the nursing department of the university's faculty of health sciences during the 2018-2019 academic year. The sample of this study comprised 362 students who agreed to take part in this study and completed the study forms after the necessary explanations about this study were made. No sampling methods on the students comprising the target population were used.

The dependent variable of this study was the clinical decision-making skills of the students, while the independent variables were their grade, age, gender, number of siblings, number of family members, type of high school graduated from, status of choosing the department willingly or not, income status, accommodation, employment status, the educational background of their parents and the place where they had lived longest. All of these data were collected via the sociodemographic data form.

Data Collection Tools

The data of this study were collected using the "Socio-Demographic Data Collection Form" and "The CDMNS-Tr".

Socio-Demographic Data Collection Form: This form was developed by the researchers. It consists of 9 closed-ended questions which include the grade, age, school of graduation of the students, whether they had chosen the nursing department willingly or not, where they lived, their employment status, and the education and employment status of their parents.

The Clinical Decision-Making in Nursing Scale: Developed by Jenkins¹⁷ on nursing students in the USA, this scale describes the clinical decision-making perception of nursing students based on self-expressions. The Cronbach alpha reliability coefficient of this scale was found to be 0.83.¹⁸ The Cronbach alpha reliability coefficient of the CDMNS which was adapted into Turkish by Edeer and Sarikaya¹⁹ was found to be 0.78. In this study, the Cronbach alpha reliability coefficient was calculated to be 0.81.

The original CDMNS consists of 40 items and four subscales. The subscales of the scale are as follows: "*search for alternatives or options*", "*canvassing of objectives and values*", "*evaluation and reevaluation of consequences*", and "*search for information and unbiased assimilation of new information*". Each sub-scale is composed of 10 items. Twenty-two items (1, 3, 5, 7, 8, 9, 10, 11, 14, 16, 17, 18, 20, 26, 27, 28, 29, 33, 35, 36, 37, 38) are positively assessed and 18 items (2, 4, 6, 12, 13, 15, 19, 21, 22, 23, 24, 25, 30, 31, 32, 34, 39, 40) are negatively assessed. The 18 negatively assessed items of this scale are inversely scored. Each item

of the scale is evaluated as 5: Always, 4: Frequently, 3: Occasionally, 2: Seldom, and 1: Never.

The minimum and maximum points are from 40 to 200 for the whole scale from 10 to 50 for each sub-scale. A high score taken from this scale indicates that the perception in decision-making is high and a low score indicates that the perception in decision-making is low. The scale is evaluated considering each sub-scale and the total score of the scale.¹⁷⁻¹⁹

Data Collection

These questionnaire forms were applied outside the course and clinical practice periods. Before the questionnaire forms were given, the participants were informed about the objectives of this research. The questionnaire forms, which were distributed on a voluntary basis, were filled out under the supervision of the researcher. It took participants about 20 minutes to complete the questionnaire forms.

For the implementation of this research, written permissions from the Faculty in which the research was conducted and from the Bursa Uludağ University Health Sciences Research and Publication Ethics Committee (approval number: 2019/03) and verbal informed consent from the students were obtained.

Statistical Analysis

The data obtained from this research were analyzed using the SPSS 22.0 (Statistical Package for Social Science) statistical program software. In the analysis of the data; numbers, percentages, means, the Mann-Whitney U test, and the Kruskal-Wallis test were used. A p-value under 0.05 was accepted as statistically significant.

RESULTS

The mean age of the students who participated in this study was 20.75 ± 1.91 and 80.9% of them were female. 25.1% of the students were 1st grade, 27.6% were 2nd grade, 21.5% were 3rd grade, and 25.7% were

4th grade students. 63% of the students were graduates of Anatolian-science high schools, which are both elite schools in Turkey. 71.5% of the students did not enter the nursing department willingly. The mothers of 4.0% of the students and the fathers of 18.0% of the students were university graduates.

The mean score of the Students' CDMNS-Tr was 100.81 ± 18.69 . When the sub-dimensions of the CDMNS mean scores were analyzed; "Search for Alternatives or Options" was 25.52 ± 5.38 , "Canvassing of Objectives and Values" was 22.95 ± 5.19 , "Evaluation and Reevaluation of Consequences" was 26.54 ± 5.61 , and "Search for Information and Unbiased Assimilation of New Information" was 25.59 ± 5.15 (Table 1).

Table 2 shows the distribution of the students' CDMNS-Tr and its sub-scale mean scores. The CDMNS-Tr mean scores of the 1st, 2nd, 3rd and 4th grade nursing students were; 100.98 ± 18.82 , 100.37 ± 20.00 , 102.61 ± 14.88 , and 99.60 ± 20.11 , respectively. It was determined that the total CDMNS-Tr mean scores were similar among all of the students and any differences were not statistically significant ($p=0.082$). It was found that the students' CDMNS-Tr sub-dimension mean scores did not show a statistically significant difference ($p=0.091$) (Table 2).

In Table 3, the distribution of The CDMNS mean scores are shown according to some of the characteristics of the nursing students. It was found that male students (110.10) had a higher score mean in CDMNS-Tr, compared to female students (100.97), but this difference is not statistically significant ($p>0.05$). The students were examined in terms of the variables of the high school they graduated from, whether they had entered the department willingly or not, their employment status, their place of residence and their income status. In terms of these criteria, their CDMNS-Tr mean scores were not found to be statistically significant ($p>0.05$).

DISCUSSION

Technological developments have helped the development of nursing and strengthened its roles and functions. While problem solving in

Table 1. Results of the Clinical Decision-Making in Nursing Scale and sub-scale analysis (n=362)

	X ± SD	Minimum	Maximum	Range
The total of CDMNS	100.81 ± 18.69	40.00	141.00	101.00
CDMNS and sub-scales				
Search for alternatives or options	25.52 ± 5.38	10.00	43.00	33.00
Canvassing of objectives and value	22.95 ± 5.19	10.00	41.00	31.00
Evaluation and reevaluation of consequences	26.54 ± 5.61	10.00	38.00	28.00
Search for information and unbiased assimilation of new information	25.59 ± 5.15	10.00	40.00	30.00

SD: standard deviation, CDMNS: Clinical Decision-Making in Nursing Scale.

Table 2. Comparison of the scores of students on the Clinical Decision-Making in Nursing Scale according to year (n=362)

CDMNS and subscales	1 st year (91)	2 nd year (100)	3 rd year (78)	4 th year (93)
	X ± SD	X ± SD	X ± SD	X ± SD
Search for alternatives or options	25.69 ± 5.48	25.48 ± 5.71	26.24 ± 4.66	25.52 ± 5.38
Canvassing of objectives and value	23.19 ± 5.87	22.71 ± 5.56	22.87 ± 4.27	23.04 ± 4.84
Evaluation and reevaluation of consequences	26.43 ± 5.55	26.39 ± 5.91	27.10 ± 4.63	26.35 ± 6.13
Search for information and unbiased assimilation of new information	25.39 ± 5.06	25.60 ± 5.74	26.20 ± 3.94	25.29 ± 5.50
The total of CDMNS	100.98 ± 18.82	100.37 ± 20.00	102.61 ± 14.88	99.60 ± 20.11

CDMNS: Clinical Decision-Making in Nursing Scale.

nursing was mostly carried out through trial and error, decision-making has gained an information-based infrastructure in light of certain scientific approaches today.^{20,21} Clinical decision-making, which expresses the ability of the nurses to use and combine their theoretical and practical knowledge, requires the nurse to access new information through different methods in this process. In order for the nurse to make the correct and effective decision, it is very important to obtain the most accurate information for the solution of the existing problem

and use it in their decision-making process.^{6,22} In addition to that, the ability of decision-making in nursing is one of the most important skills that nursing students should learn and use in their nursing practice in order to ensure patient safety and provide the most appropriate care service.¹⁵ Based on this approach, in this study, it was aimed to reveal the clinical decision-making levels of the nursing department students, who were the candidates for the nursing profession, and any affecting factors. As a result of this study, the students' CDMNS-Tr mean score was

Table 3. Comparison of the scores of students on the Clinical-Decision-Making in Nursing Scale according to various features (n=362)

CDMNS and subscales	(n)	CDMNS	Statistical evaluation	
			Z/Z/t	p
Gender			Z: -0.068	0.946
Male	69	110.10		
Female	293	100.97	K-W: 2.738	0.066
Educational status				
High school	64	103.20		
Vocational high school	70	96.31		
Elite Anatolian-Science high school	228	101.52	Z: 0.261	0.804
Voluntarily choosing the nursing department				
Yes	266	100.96		
No	96	100.38		
Working status			K-W: 0.983	0.375
Working	23	95.52		
Not working	318	101.16		
Part-time working	21	101.23	K-W: 0.977	0.420
Educational status of mothers				
Illiterate	33	103.78		
Elementary school	170	101.12		
Secondary school	67	102.64		
High school	77	97.66	K-W: 1.056	0.378
University	15	98.66		
Educational status of fathers				
Illiterate	8	97.12		
Elementary school	105	101.69		
Secondary school	63	103.74		
High school	119	100.59		
University	67	97.49	K-W: 1.435	0.232
Parental employment status				
Only father works	257	100.42		
Only mother works	25	107.36		
Both parents work	69	99.20	K-W: 1.515	0.221
Income status				
Low	16	102.62		
Medium	290	101.47		
Good	56	96.85	K-W: 0.945	0.419
Currently living status				
At home with family	135	99.48		
At home with friends	64	99.00		
State dormitory	104	102.47		
Private dormitory	59	102.89		

CDMNS: Clinical Decision-Making in Nursing Scale.

found to be 100.81 ± 18.69 . Considering that the highest score which can be obtained from this scale is 200, it is possible to say that the students' clinical decision-making levels are medium. When considering other national and international studies on this subject, it was noticed that the clinical decision-making levels of other students were found to be higher than for our students.^{13,15,16,22,23} The results of our study were not similar to these other study findings. This difference between studies may have resulted from the fact that the other studies were carried out in schools where different course curricula and educational methods were applied.

Nursing students must be able to maintain the process of fast and accurate clinical decision-making in changing conditions by interpreting different information.^{16,24} It was found that the clinical decision-making perception of the nursing students was at medium levels in the sub-dimensions of "search for alternatives or options", "canvassing of objectives and values", "evaluation and reevaluation of consequences" and "search for information and unbiased assimilation of new information". When the literature was reviewed, in the studies of Özgen et al.²², the sub-dimensions of the CDMNS-Tr of the students were observed to be above average, and in the studies of Özden et al.¹⁶, they were observed to be high. In terms of these, our research results were not similar to the literature.

Another study on nurses by Chen et al.²⁵ emphasized that clinical experience affects clinical decision-making. As a result of our study, it was observed that the grade/year at which the students study did not affect their clinical decision-making levels. Although there was no significant difference between them, the highest CDMNS-Tr mean score was found in 3rd grade students and the lowest mean score was found in 4th grade students. In the literature, it was reported that the clinical decision-making skills of students increased with their clinical experience at all stages of their education.^{13,26} However, in our study, the clinical decision-making levels of the senior students were observed to be lower than those students studying in the lower grades. When the literature was reviewed, it was observed that simulations of practices had a positive effect on the clinical decision-making levels of nursing students.^{27,28} The fact that the clinical skills of the students who participated in this research were supported by simulation only in their first grade and the lack of simulation-based practices in the higher grades may have caused the fourth-year students to have the lowest clinical decision-making skills. On the other hand, in the fourth-grade internship practice, students take on a responsibility almost identical to a nurse and therefore, they have a lot of new information to learn. In addition to this, nurses started working with the clinical "*Computer Based Decision Support Systems*".²⁹ Within the education curriculum, these systems are mentioned only theoretically and the students do not practice on these systems. This may have caused them to feel insufficient in the clinical decision-making process. Moreover, similar to our study topic, as a result of the study conducted to reveal the clinical decision-making levels of nursing students and the variables which affect them by Özden et al.¹⁶, it was found that the variable of grade/year did not affect the clinical decision-making levels of the students. Aktaş and Karabulut³⁰ and Özgen et al.²² found similar results in their studies. The result of our study supports the findings of these two studies.

In this research, it was concluded that the gender factor of the students did not affect their clinical decision-making levels. Similar results were also found in the study conducted by Özden et al.¹⁶. Unlike this study, some studies stated that gender was directly related to the decision-

making process.^{3,31} Our study result did not support those others study results. This made us think that this difference may be due to the fact that the majority of the students who participated in our study were female, and that a balanced ratio could not be established in our study sample group. Furthermore, as a result of this study, it was found that the high school type and income status of the students did not affect their clinical decision-making levels. However, the results of other studies which analyzed the effects of these two variables on the clinical decision-making levels of the students could not be found. Therefore, based on our results alone, it is possible to conclude that the high school type and income status of the students do not have a significant effect on their clinical decision-making levels.

It is thought that providing a democratic environment in the family, which is the closest environment where individuals grow, can change the factors which may affect students' decision-making skills, such as their self-expression and their capacity to take responsibility.³² For this reason, when the education levels of their parents and the students' status of having chosen the nursing department willingly or not were questioned, no significant difference was found between these variables and the CDMNS-Tr mean score. Özden et al.¹⁶ found in their research that individual differences, such as the employment status of the mothers of the students and whether they had entered the nursing department willingly, affected their clinical decision-making levels. The difference with the literature may have resulted from the fact that very few of the students in the sample group had working mothers, and therefore, a homogeneous distribution could not be provided in this regard.

CONCLUSION

Clinical decision-making, which involves a series of decisions in order to carry out the patient care process effectively, is a complicated process, but it is a critical skill which should be developed during the education process of nursing students. As a result of this study, it was revealed that the nursing students' status of clinical decision-making is at a medium level. It was found that variables such as grade, gender, type of high school, number of members living in the family, education status of parents, having entered the department willingly, income and employment status did not affect the clinical decision-making status of students.

Nurse educators and administrators have a great responsibility in the improvement of nursing students' skills in decision-making. In this context, we suggest the following recommendations;

- Repeating the study on a larger sample group, and on students studying in different curricula in nursing.
- Investigating the clinical decision-making levels of students in terms of other variables, such as critical thinking, problem solving, the clinical learning environment, while also considering their individual differences and communication skills.
- Improving the current conditions of "realistic patient simulation" training, which will contribute to the clinical decision-making processes of the students in the first grades and also adding them to the curricula of the second, third and fourth grade students.
- In addition to the theoretical knowledge about computer-based decision support systems, implementing training methods which are

based on practice and also providing computer skills to the student nurses in a more professional manner during their nursing education.

MAIN POINTS

- Although clinical decision-making is an integral part of nursing practice, the nursing students' status of clinical decision-making is at a medium level.
- It was found that variables such as grade, gender, high school of graduation, number of members living in the family, the education status of the parents, having entered the nursing department willingly, or income and employment status do not affect the clinical decision-making status of the students.

ETHICS

Ethics Committee Approval: For the implementation of this research, written permissions from the faculty in which the research was conducted and from the Bursa Uludağ University Health Sciences Research and Publication Ethics Committee (approval number: 2019/03).

Informed Consent: Verbal informed consent from the students were obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: B.A., D.Y., H.G.Ç., R.U., Design: B.A., D.Y., H.G.Ç., Supervision: B.A., Fundings: B.A., D.Y., Materials: B.A., D.Y., H.G.Ç., Data Collection and/or Processing: B.A., D.Y., R.U., Analysis and/or Interpretation: B.A., D.Y., H.G.Ç., Literature Search: B.A., D.Y., H.G.Ç., R.U., Writing: B.A., D.Y., H.G.Ç., R.U., Critical Review: B.A., H.G.Ç.,

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study had received no financial support.

REFERENCES

1. Sucu G, Dicle A, Saka O. Decision making in clinical nursing: decision-making models and affecting factors. *Hemşirelikte Eğitim ve Araştırma Dergisi*. 2012; 9(1): 52-60.
2. Thompson C. A conceptual treadmill: The need for 'middle ground' in clinical decision making theory in nursing. *J Adv Nurs*. 1999; 30(5): 1222-9.
3. Lauri S, Salanterä S, Chalmers K, Ekman SL, Kim HS, Käppeli S, et al. An exploratory study of clinical decision-making in five countries. *Jf Nurs Scholarsh*. 2001; 33(1): 83-90.
4. Inangil D, Uzen Cura S. Nursing Students' Perceptions of Nursing Diagnoses and Clinical Decision-Making. *Clin Exp Health Sci*. 2020; 10: 131-6.
5. Tanner CA. Thinking like a nurse: a research-based model of clinical judgment in nursing. *J Nurs Educ*. 2006; 45(6): 204-11.
6. Junnola T, Eriksson E, Salanterä S, Lauri S. Nurses' decision-making in collecting information for the assessment of patients' nursing problems. *J Clin Nurs*. 2002; 11(2): 186-96.
7. ONeill ES, Dluhy NM, Chin E. Modelling novice clinical reasoning for a computerized decision support system. *J Adv Nurs*. 2005; 49(1): 68-77.
8. Günerigök F, Yılmaz Kurt F, Küçükoğlu S. Determination of Nursing Student's Self-Confidence and Anxiety Levels in The Process of Clinical Decision Making: Example of Two Different Programs. *Journal of Anatolia Nursing and Health Sciences*. 2020; 23(1): 77-94.
9. Canova C, Brogiato G, Roveron G, Zanotti R. Changes in decision-making among Italian nurses and nursing students over the last 15 years. *J Clin Nurs*. 2016; 25(5-6): 811-8.
10. Durmaz A. Hemşirelik öğrencilerinin ameliyat öncesi ve sonrası hasta bakım yönetimini öğrenmesinde bilgisayar destekli simülasyon tekniğinin etkisi. *Hemşirelik Programı Yayınlanmamış Doktora Tezi*, Dokuz Eylül Üniversitesi Sağlık Bilimleri Enstitüsü. İzmir; 2012.
11. Garrett B. Student nurses' perceptions of clinical decision-making in the final year of adult nursing studies. *Nurse Educ Pract*. 2005; 5(1): 30-9.
12. Botti M, Reeve R. Role of knowledge and ability in student nurses' clinical decision-making. *Nurs Health Sci*. 2003; 5(1): 39-49.
13. Dicle A, Durmaz Edeer A. Examination of clinical decision making perceptions of nursing students. *The New Educational Review*. 2013; 33(3): 134-44.
14. Jahanpour F, Sharif F, Salsali M, Kaveh MH, Williams LM. Clinical decision-making in senior nursing students in Iran. *Int J Nurs Pract*. 2010; 16: 595-602.
15. Ho SE, Koo YL, Ismail S, Hing HL, Widad O, Chung HT et al. Clinical decision making ability of nursing students in a tertiary hospital. *Medicine & Health*. 2013; 8(2): 73-80.
16. Özden D, Özveren H, Gülnar E. Nurse Students' Clinical Decision-Making Abilities Level and The Factors That Affect Abilities. *DEUHFED*. 2018; 11(1): 41-7.
17. Jenkins HM. Clinical decision making in nursing scale. In: Waltz CF, Jenkins LS, (Eds), *Measurement of Nursing Outcomes volume:1 measuring nursing performance in practice, education and research*. USA: Springer Publishing Company; 2001; p. 33-7.
18. Jenkins H. Perceptions of decision making among baccalaureate nursing students as measured by the clinical decision making in nursing scale, doctors theses. University of Maryland; 1983.
19. Edeer DA, Sarıkaya A. Adaptation of Clinical Decision Making in Nursing Scale to Undergraduate Students of Nursing: The Study of Reliability and Validity. *International Journal of Psychology and Educational Studies*. 2015; 2(3): 1-9.
20. Azak A, Taşçı S. Clinical decision making and nursing: review. *Türkiye Klinikleri J Med Ethics*. 2009; 17(3): 176-83.
21. Taşçı S. The Problem Solving Process in Nursing. *Journal of Health Sciences*. 2005; 14(Suppl): 73-8.
22. Özen N, Yazıcıoğlu İ, Çınar Fl. Analyzing the Correlation between the Attitudes of Nursing Students towards Using Computers in Health Care and Clinical Decision Making Skills. *Hemşirelikte Eğitim ve Araştırma Dergisi*. 2017; 14(2): 112-8.
23. Krumwiede AK. An examination of accelerated and basic baccalaureate nursing students' perceptions of clinical decision making. *Capella University, Doctor of Philosophy*, 2010, UMI Number: 3409185. (Accessed on; 13 April 2020). Available from: <https://eric.ed.gov/?id=ED518161>
24. Johansen ML, O'Brien JL. Decision making in nursing practice: a concept analysis. *Nurs Forum*. 2016; 51(1): 40-8.
25. Chen SL, Hsu HY, Chang CF, Lin ECL. An exploration of the correlates of nurse practitioners' clinical decision-making abilities. *J Clin Nurs*. 2016; 25(7-8): 1016-24.
26. Atasoy I, Sütütemiz N. A group of final year students views on nursing education. *Florence Nightingale Hemşirelik Dergisi*. 2014; 22(2): 94-104.

27. Bonnetaire E, Boucheix JM, Hamet M, Freysz M. Benefits of computer screen-based simulation in learning cardiac arrest procedures. *Med Educ.* 2010; 44(7): 716-22.
28. Salyers VL. Teaching psychomotor skills to beginning nursing students using a web-enhanced approach: A quasi-experimental study. *Int J Nurs Educ Scholarsh.* 2007; 4(1): Article11.
29. Randell R, Mitchell N, Dowding D et al. Effects of computerized decision support systems on nursing performance and patient outcomes: A systematic review. *J Health Serv Res Policy.* 2007; 12(4): 242-9.
30. Aktaş YY, Karabulut N. A Survey on Turkish nursing students' perception of clinical learning environment and its association with academic motivation and clinical decision making. *Nurse Educ Today.* 2016; 36: 124-8.
31. Bjørk IT, Hamilton GA. Clinical decision making of nurses working in hospital settings. *Nurs Res Pract.* 2011; 2011: 524918.
32. Eldeleklioğlu J. The relationship between Parental attitudes and decision making strategies. *Türk Psikolojik Danışma ve Rehberlik Dergisi II.* 1997; 11: 7-13.