MCBU SBED
MANİSA CELAL BAYAR ÜNİVERSİTESİ SAĞLIK BİLİMLERİ ENSTİTÜSÜ DERGİSİ
MANISA CELAL BAYAR UNIVERSITY JOURNAL OF INSTITUTE OF HEALTH SCIENCE
ISSN: 2147-9607

ARAŞTIRMA MAKALESİ
RESEARCH ARTICLE
CBU-SBED, 2022, 9(4): 501-508.

Vaka Temelli Öğrenme Yönteminin Pediatri Hemşireliği Öğrencilerinin Klinik Karar Verme Sürecinde Özgüven ve Anksiyete Üzerine Etkisi

The Effect of Case-Based Learning Methods on Self-Confidence and Anxiety of Pediatric Nursing Students in Clinical Decision Making Process

Mukaddes Demir Acar[1]*, Ümran Çevik Güner[1], Birgül Vural[1]

[1] Tokat Gaziosmapasa University, Faculty of Health Sciences, Department of Pediatric Nursing, Tokat, Turkey.

e-mail: mukaddesdemir.acar@gop.edu.tr , umrancevik@hotmail.com, b.vural1973@gmail.com
ORCID: 0000-0002-6376-2171
ORCID: 0000-0002-8677-0414
ORCID: 0000-0002-7493-6149
*Sorumlu Yazar / Corresponding Author: Mukaddes Demir Acar

Gönderim Tarihi / Received: 01.01.2022
Kabul Tarihi / Accepted: 28.12.2022
DOI: 10.34087/cbusbed.1052241

Öz

Giriş ve Amaç: Klinik karar verme, hemşireler tarafından problem çözme yaklaşımı olarak benimsenen hemşirelik sürecinin ve hasta bakım planının önemli bir parçasıdır. Bu çalışmada, pediatri hemşireliği dersinde vaka temelli öğrenme yöntemlerinin, öğrencilerin klinik karar vermede özgüven ve anksiyetesine etkisinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntemler: Bu çalışma iki gruplu yarı deneysel olarak tasarlanmıştır. Birinci grup vaka temelli öğrenme grubu (n=38) iken, ikinci grup vaka temelli öğrenmeye ek olarak simülasyon (n=47) grubu olarak tasarlanmıştır.

Bulgular: Öğrencilerin ders öncesinde yaş, cinsiyet, gelir düzeyi, ikamet ettikleri bölge, mesleğe yönelik algıları, teorik bilgileri pratikte kullanabilmeleri yönünden, klinik karar vermede özgüven ve anksiyete toplam ve alt ölçek puan düzeyleri benzerdi ($p>0.05$). Her grubun son test özgüven puan ortalamalarında artış, anksiyete puan ortalamalarında azalma olduğu belirlendi ($p<0.05$). Son test puan ortalamalarında gruplar arasında anlamlı bir fark bulunmamakla birlikte vaka temelli öğrenme/simülasyon grubunun özgüven puan ortalamaları (özgüven:115.74±20.08, kaygı: 59.59±22.96) daha yüksek, anksiyete puan ortalamaları daha düşüktü ($p>0.05$).

Sonuç: Vaka temelli öğrenme ve vaka temelli öğrenme/simülasyon gibi aktif katılımlı zenginleştirilmiş öğretim yöntemlerinin pediatri hemşireliği öğrencilerinin özgüvenlerini artırmada ve kaygılarını azaltmada etkili olduğu belirlenmiş ve bu konu üzerine daha fazla araştırma yapılması önerilmiştir.

Anahtar Kelimeler: Anksiyete, Klinik karar verme, Özgüven, Pediatri hemşireliği, Simülasyon, Vaka temelli öğrenme.

Abstract

Objective: Clinical decision making is an essential part of nursing process and patient care plan adopted by nurses as a problem solving approach. This study aimed to evaluate the effect of case-based learning methods on self-confidence and anxiety of the students in clinical decision-making process in pediatric nursing lecture.

Materials and Methods: This study was designed as quasi-experimental with two groups. While the first group was a case-based learning group (n=38), the second group was designed as simulation group in addition to case-based learning(n=47).

Results: There was a similarity between the groups in the mean age, gender, income level of the students, area of residence, perception of the profession, their ability to use theoretical knowledge in practice, self-confidence in clinical decision-making before the lecture, anxiety total score, and the mean subscale scores ($p>0.05$). It was identified that there was an increase in the post-test mean scores of self-confidence for each group, and a decrease in the mean anxiety scores ($p<0.05$). Although there was no significant difference between the groups in the post-test mean scores, it was

found that the mean scores of self-confidence of the case-based learning/simulation group (self-confidence:115.74±20.08, anxiety: 59.59±22.96) were higher, and the mean scores of anxiety were lower (p>0.05).
Conclusion: Enriched teaching methods with active participation such as case-based learning and case-based learning/simulation was determined to be effective on boosting self-confidence and reducing anxiety of pediatric nursing students and it was suggested that more studies would be done on the topic.

Key Words: Anxiety, Case-based learning, Clinical decision making, Pediatric nursing, Self-confidence, Simulation.

1. Introduction

Decision making is a mental process starting with the perception of a situation as a problem by any individual and choosing a behaviour-oriented action among one or more options to achieve a desired goal [1]. As a process, decision making consists of several stages. These stages are identifying a situation/problem requiring decision making, determining and evaluating the options, and choosing the best option. After implementing the decision in the most appropriate way, it should be monitored whether the decision chosen solves the problem and gives the expected results. When there are significant differences between the actual and the expected results, the decision should be revised or changed again [1,2]. Clinical decision making is an essential part of nursing process and patient care plan adopted by nurses as a problem solving approach. The nursing process is a systematic approach consisting of stages such as determining the care needs/problems of healthy/sick individual and family, planning and implementing necessary nursing interventions, and evaluating the result [3]. Clinical decision making involved in all stages of the nursing process is a basic skill that should be developed in all healthcare professionals and nurses. The reason is that nurses make very critical and important decisions in clinics [4,5]. Nurses are the healthcare professionals evaluating the data on the changes in a patient's condition, setting priorities, and taking responsibility with patient himself/herself and family to make the most appropriate clinical care decision. These decisions directly affect the outcomes of patient care and patient safety [6,7]. The World Health Organization (WHO) recommends the development of clinical decision making, problem solving, and critical thinking at nursing schools as the gold standard in professional nursing education [8].

Clinical decision making is one of the skills that should be acquired by the students in nursing education; therefore, it is necessary to determine decision-making perceptions, self-confidence and anxiety of nursing students, improve and evaluate decision-making skills of these students [9,10]. In a study analyzing the clinical decision making levels of nursing students, it is recommended that decision making be investigated in terms of variables such as clinical learning environment [11]. However, today, conditions such as cost, patient safety, ethics, and legal sanctions etc. have limited the acquisition of many skills on real patients in health education. For the last 20 years, the use of simulation with many advantages in education has become very common as a solution. In our country, the use of simulation in nursing education is becoming important to ensure patient safety due to the increase in the number of students and the limited number of lecturers/trainers. Therefore, an environment, which contributes to vocational education in a safe and controlled manner, should be created through clinical simulation enabling situations similar to real world cases, together with appropriate curriculum and laboratory practices [12]. The simulation also needs to be used and evaluated as an alternative teaching method to traditional basic skills teaching. Simulation-based teaching is recommended as especially high-risk, difficult and critical cases can be replicated in accordance with the clinical environment and it offers easy, accessible and repeatable learning opportunities [13,14]. Neonatal and pediatric intensive care clinics are the settings in the field of pediatric nursing where there is a high level of workload and frequent follow-up of critical cases can be performed and which are yet known to be with high-risk due to nosocomial infections. Therefore, a limited number of nursing students can practice in these clinics; many students do not have the opportunity to implement the nursing care plan and to make infant/child observation, and thus clinical experience, which is one of the essential conditions of clinical decision making, remains poorly gained [15].

Peer interaction and case-based learning (CBL), where clinical experiences are shared, are active and effective teaching techniques which develop critical thinking and problem solving skills focusing on a particular subject or problem by using real world scenarios [16]. Moreover, CBL provides students better opportunities to develop patient assessment skills and to gain nursing care experience [17]. When these benefits are taken into consideration, CBL has been widely adopted in many countries to improve critical thinking skills of students in nursing education [18,19]. When a case based on real-life experiences is presented to students, it allows them to analyse the causes and think critically about alternative action processes after putting themselves in decision-making role while identifying the problem they face in the case. Therefore, while giving case-based education a lecturer can use various approaches such as case seminars, role play and performing simulated patient care, and s/he can enrich the educational environment with active participation aspect [20]. Today, new developments in education; consider individuals as people who create, construct and actively participate in the learning process, rather than those passively acquire knowledge, skill and values. In this regard, teaching methods in which an individual can actively participate should be employed in health education [21,22]. Creative drama method, which has attracted much attention in

education in recent years, is an educational method that activates the individual, enables him/her to learn by doing-living it, brings real life situations to the educational environment, transforms the acquired knowledge into a new state. It includes enjoyable processes and is based on improvisation and gamification [23,24]. In the literature, creative drama in education is an effective method in cognitive, affective, and social learning. According to the results of the studies conducted, it was concluded that there was a positive change in knowledge, attitude, and behaviours with the use of creative drama in education [25,26]. Therefore, this study aimed to evaluate the effect of two case-based learning methods (CBL and CBL/S) on self-confidence and anxiety of the students in clinical decision-making process in nursing process of babies/children with high-risk of pediatric nursing lecture.

Research Questions

1. Does CBL have a positive effect on pediatric nursing students' self-confidence and anxiety in the clinical decision-making process?
2. Does CBL/S learning have a positive effect on pediatric nursing students' self-confidence and anxiety in the clinical decision-making process?
3. Is there a significant difference between CBL and CBL/S on anxiety and self-confidence in the clinical decision-making process of pediatric nursing students?

2. Materials and Mehods

2.1. Design

This study was designed as quasi-experimental pre-test and post-test study with two groups to evaluate the effect of two learning methods, CBL and CBL/S, on self-confidence and anxiety of the students in clinical decision-making process in the follow-up and care training of babies / children with high-risk in pediatric nursing lecture.

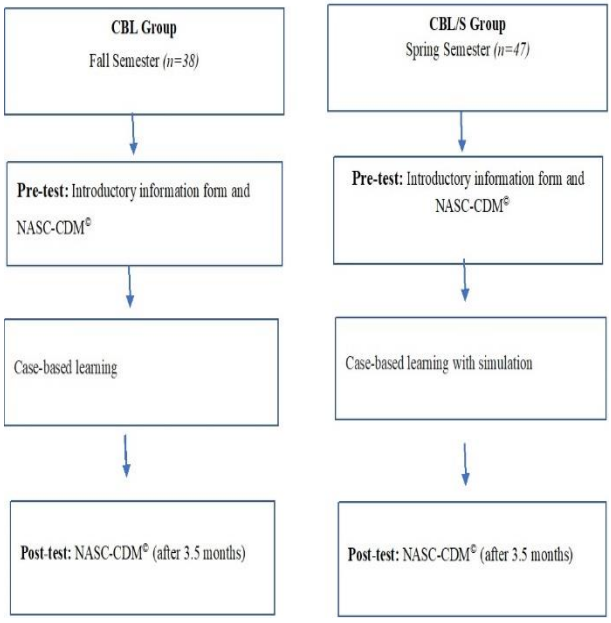

Figure 1. Flowchart of study

2.2. Subjects

The study was conducted in the Nursing Department of Faculty of Health Sciences of Tokat Gaziosmapasa University. No sample selection was made and all the population (students who will attend the pediatric nursing lecture for the first time in 2018-2019 fall and spring terms, N=85) was included in the study. The study was conducted with fall term students (n=38) for the CBL learning group and spring term students (n=47) for the CBL/S learning group. The education period in the Nursing Department is 8 semesters (4 years). This study was conducted with 3rd grade students (5. and 6. semester). One student was excluded from the study, as that student took the lecture for the second time, and four students were excluded due to absence.

2.3. Ethical considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki. All the participants were informed about the nature of the study, and written and verbal consents were obtained from the students and the institution where the study would be conducted. The study protocol was approved by the Ethics Committee of Tokat Gaziosmapasa University (No:83116987-405, 28.08.2018). The names of the students were not stated on the scale forms. They were described on the forms by coding the names instead. Furthermore, the permission to use the self-confidence and anxiety scale (NASC-CDM) in this study was obtained from White (2014), who developed the scale, and from Bektaş et al, (2017) who conducted the validity and reliability study of the scale in our country [2,27]. The lectures given to the CBL/S learning group students were also provided to the CBL group students at the end of the study.

2.4. Study tools

The data was collected using introductory information form and NASC-CDM scale.

Introductory information form: The form consists of information about the age, gender, marital status, and income level of the students, area of residence with their family, educational background, professional status as a nurse, socio-demographic characteristics related to income status, and area of residence, perception of the profession, their ability to use theoretical knowledge in practice.

The Nursing Anxiety and Self-confidence with Clinical Decision-Making Scale (NASC-CDM): This scale, which aims to measure the perceptions of nurses about self-confidence and anxiety levels in clinical decision making process, was developed by White (2014) in America to be used for nursing students [2]. The validity and reliability study of the scale was conducted by Bektaş et al. (2017) [27]. Cronbach alpha coefficients of .97, .96, .89 and .91 were established for self-confidence and anxiety sub-dimensions, respectively. These values were found to be .97, .95, .91, and .90 in the anxiety section and its subscales. In this study, pre-test and post-test Cronbach alpha coefficients of .94 and .95, and .95 and .97 were found in the self-confidence and anxiety sub-dimension of the scale, respectively. The scale was a 6-

point Likert-type scale consisting of 27 questions (sample question; I am …. self-confident and …. anxious in my ability to implement the 'best' priority decision option for the client's problem). The evaluation of the scale was performed based on each subscale score. Self-confidence and anxiety were the only subscales of the scale, and these subscales included three sub-dimensions; "1-Using resources to collect information and listening carefully 2-Using information to see the big picture 3-Knowing and acting". The lowest score in the self-confidence and anxiety sections was 27, the highest score was 162, and there was no cut-off value. High scores indicate high level of self-confidence and anxiety, while low scores indicate low level of those. The scale takes approximately 10 to 15 minutes to complete. The scale is responded by the students themselves.

2.5. Teaching organization and content of course

Introductory information form and NASC-CDM scale (pre-test) were applied to both learning groups at the beginning of the process (at the beginning of the semester).

CBL and CBL/S groups: In this study, the subjects of pediatric nursing lecture curriculum in both learning groups (fall and spring terms) were delivered by lecturers through in-class presentation (power point), Questions and Answers (Q&A) session, videos, baby/child models, and demonstrations with active student participation. After all the curriculum subjects were lectured (20 hours weekly/6 weeks), clinical practice was introduced in the hospital (16 hours weekly/8 weeks). Thus, both groups performed clinical practice for the same period of time and thus psychomotor, cognitive and affective learning was targeted. The students prepared nursing care plans on the cases they observed in the pediatric and neonatal clinics. They made presentations (power point) of 12 basic pediatric cases they observed (child with hydrocephalus, child with Type 1 diabetes, premature babies, etc.) in parallel with their clinical practice (4 hours weekly/6 weeks). These presentations included follow-up results such as the characteristics, physical evaluation, vital and laboratory findings of the case, drug and fluid treatment, nursing diagnoses grouped according to functional health patterns, and targeting, planning, implementation and evaluation of each nursing diagnosis. Presentations were prepared and made by a group of 3-4 students in each group. The case presentations were prepared under the supervision of the responsible lecturers. Thus, cognitive and affective learning was targeted in both groups (Table 1) [21,22]. At the end of the term (post-test), NASC-CDM scale was applied to all students of both learning groups (See: Research Application Scheme).

CBL/S group: The lectures were given using simulation (S) in the CBL/S group. The content of the lecture were as follows; The students presented their cases and the nursing care practices (feeding, care, physical examination, vital follow-up, medication, etc.) that they carried out in the hospital, accompanied by the nurse/lecturer, in a laboratory setting with role play. These applications were the end results of a group of 3-4 students in each group participating in the practices of their own cases (4 hours weekly/6 weeks). Simulation applications were conducted by checking the conformity of the interventions performed in a laboratory setting to the procedure steps according to the checklists. Thus, in addition to cognitive and affective learning, psychomotor learning was also targeted for the CBL/S group (Table 1) [21,22].

Table 1. Learning Objectives by Groups

<table>
<tr><th rowspan="2">Learning methods and times</th><th colspan="2">Learning Objectives by Groups</th></tr>
<tr><th>CBL Group</th><th>CBL/S Group</th></tr>
<tr><td>Presentation of curriculum topics: 20 hours weekly/6 weeks</td><td>Cognitive and affective learning</td><td>Cognitive and affective learning</td></tr>
<tr><td>Clinical Practice:
16 hours weekly/8 weeks</td><td>Psychomotor, cognitive and affective learning</td><td>Psychomotor, cognitive and affective learning</td></tr>
<tr><td rowspan="2">Presentation of Case-Based course: 4 hours weekly/6 weeks
<u>Unit and Cases</u>
Newborn Intensive Care Unit (NICU)
-Prematüre baby
-Low birth weight baby
-Babies with hydrocephalus
-Babies with with cleft palate and lip
Pediatric Intensive Care Unit (PICU)
-Child with pneumonia and down syndrome
-Child with cerebral palsy
-Child with Status Epilepsy
-Baby with spinal muscular atrophy
Pediatric Clinic
-Child with Type 1 diabetes
-Child with asthma
-Child with acute diarrhea
-Child having appendectomy surgery</td><td></td><td><u>Psychomotor Learning</u>
- Psychomotor learning such as feeding, physical examination, vital follow-up, pain, glaskow coma scale etc. scoring, medication, phototherapy, baby/child holistic nursing care in an NICU/PICU/Pediatric Clinic.</td></tr>
<tr><td colspan="2"><u>Cognitive Learning</u>
- Cognitive learning about the causes of this cases, incidence, diagnosis, treatment and nursing care, complications, protection.
-Cognitive learning about data collecting, nursing diagnoses grouped according to functional health patterns, and targeting, planning, implementation and evaluation of each nursing diagnosis.
<u>Affective Learning</u>
-Basic affective learning processes such as empathy, holistic approach, self-confidence, listening carefully, communication about the care of patient babies/childs and family process.</td></tr>
</table>

2.6. Statistical analyses

The data were evaluated using the SPSS (v.24.0) software with normal distribution test, Cronbach alpha, percentile, chi-square, unpaired t test and, paired t test. A p value of < 0.05 was considered statistically significant.

3.Results and Discussion

3.1.Results

The mean age of the students included in the study was 20.85±0.84; a total of 80% of those were girls, 83.52% were living in the city, 84.7% had a moderate level of income. Of the students in the study, 65.8% had a positive perception of nursing profession. A total of 67% of the students stated that they used theoretical knowledge in practice. As is seen in Table 1, there is no significant difference between the groups in the mean age, gender, level of income, area of residence, perception of nursing profession, and the ability to use theoretical knowledge in practice (p>0.05) (Table 2).

Table 2. Comparison of Demographic Characteristics of Groups

	The Group of CBL (n_1=38)		**The Group of CBL/S (n_2=47)**		**Test**	***p***
	Mean±SD		**Mean±SD**			
Age	20.73±0.89		20.95±0.80		1.197	.235
Gender	n	%	n	%		
Female	31	81.6	37	78.7	.107	.743
Male	7	18.4	10	21.3		
Income						
Low	0	0	1	2.1	1.621	.445
Medium	34	89.5	38	80.9		
High	4	10.5	8	17.0		
Region						
Rural	8	21.1	6	12.8	.533	.465
Urban	30	78.9	41	87.2		
Perception of nursing profession						
Positive	26	68.4	30	63.8	2.066	.356
Negative	1	2.6	5	10.6		
Partially negative	11	28.9	12	25.5		
Using theoretical knowledge in practice						
Yes	24	63.2	33	70.2	.473	.789
Unstable	13	34.2	13	27.7		
No	1	2.6	1	2.1		

Both groups were similar in terms of the mean total score and subscale score of the students of self-confidence and anxiety in clinical decision making before the lecture (p>0.05). The mean total scores of self-confidence increased and the total score of anxiety statistically decreased in both groups after the lecture (p<0.05). It was found that the increase in the mean scores of self-confidence and the decrease in the mean total scores of anxiety in the CBL/S training group were higher compared to the other group; however, there was no statistically significant difference between the groups (p>0.05) (Table 3).

3.2. Discussion

Clinical decision making involved in all stages of the nursing process is a basic skill that should be developed in all healthcare professionals and nurses [4,5]. The present study enabled the presentation of the real-life cases, which they learned by experience in pediatrics clinics through case-based learning designed in both groups, together with the nursing process. Thus, it is aimed that other students learn about the cases that each student cannot follow in clinical practice. The self-confidence and anxiety level of the students in clinical decision-making in the nursing process was evaluated by a pre-test and post-test quasi-experimental design with two groups using NASC-CDM scale, which covers the 3 sub-dimensions of the nursing process (1-Using resources to collect information and listening carefully 2-Using information to see the big picture 3-Knowing and acting). The study results showed that it had a positive effect for students in both education groups on self-confidence and anxiety in clinical decision making. As nurses gain experience, they gain self-confidence, and thus feel more competent. Therefore, it is important to improve the self-confidence of nursing students in clinical decision making [28]. It is reported that it has a positive effect on clinical decision making as the level of anxiety of the nursing students decreases and their negative feelings about themselves are relieved with self-confidence gained. It is stated that low self-confidence and high anxiety block clinical decision making process and create emotional obstacle [2,12]. In this study, the level of anxiety decreased (pretest: 69.44, posttest: 63.02), while the level of self-confidence increased in the CBL group at the end of the education (pre-test: 105.92, post-test 115.21). In CBL/S group, similarly and more optimistically to the other group, the level of self-confidence increased (pre-test:104.87, post-test:115.74),

and the level of anxiety decreased at the end of the study (pre-test:67.29, post-test:59.59). A statistical increase in self-confidence and a decrease in anxiety of the students within both groups was a result supporting the situation (Table 3).

Table 3. The Nursing Anxiety and Self-confidence with Clinical Decision-Making Scale and Subscale Score Averages of the Groups

Subscales and measurement times	The Group of CBL (n_1=38) Mean± SD	The Group of CBL/S (n_2=47) Mean± SD	t	p_1
Self-confidence				
Using resources to collect information and listening carefully				
Pretest	52.84±10.56	52.89±9.19	.024	.981
Posttest	56.94±9.27	57.00±10.87	.024	.981
Using information to see the big picture				
Pretest	27.63±4.99	26.65±5.00	.891	.375
Posttest	30.05±4.51	29.51±4.75	.534	.594
Knowing and acting				
Pretest	25.44±5.65	25.31±5.02	.111	.912
Posttest	28.21±5.40	29.23±5.43	.866	.389
Total Score				
Pretest	105.92±19.97	104.87±17.84	.255	.799
Posttest Test	115.21±18.10 t=4.036 p_2=0.001	115.74±20.08 t=3.422 p_2=0.001	.127	.899
Anxiety				
Using resources to collect information and listening carefully				
Pretest	31.97±11.23	30.80±9.46	.519	.605
Posttest	28.28±11.46	27.00±11.64	.963	.611
Using information to see the big picture				
Pretest	18.26±5.31	17.25±5.12	.671	.378
Posttest	16.84±5.61	15.91±6.27	.709	.480
Knowing and acting				
Pretest	19.21±6.23	19.23±4.68	.053	.984
Posttest	17.89±6.71	16.68±6.09	.576	.385
Total Score				
Pretest	69.44±21.67	67.29±18.00	.499	.619
Posttest Test	63.02±22.81 t=2.745 p_2=0.009	59.59±22.96 t=2.272 p_2=0.028	.687	.494

Data are shown as mean±standard deviation. p_1:Between-subjects comparison, p_2:Within-subjects comparison.

Similarly, in the studies conducted by Bektaş and Yardimci evaluating the effect of web-based education in pediatric nursing, it was determined that the level of self-confidence in clinical decision-making of the students increased (pre-test: 111.90, post-test: 137.30) and the level of anxiety decreased (pre-test: 72.69, post-test:59.81) [29]. While giving case-based education, the lecturer can use various approaches such as case seminars, role playing, and simulated patient care, and s/he can enrich the lecture with active participation [20]. In this study, the students received education in two groups defined as CBL and CBL/S, and the content was enriched to make the students participate actively, especially in the CBL/S group. The students in CBL/S group were offered a more active, original and enriched content through both role play and simulation. In this study, psychomotor learning was also targeted in addition to the cognitive and affective learning of the students in the CBL/S group (Table 1).

Thus, it was aimed to increase self-confidence and decrease anxiety in clinical decision making and this was evaluated with the NASC-CDM scale. At the end of the term, all participants of this group gave qualitatively positive feedback to the course. After the education, the mean scores of self-confidence of the CBL/S group were higher and the mean anxiety scores were lower compared to the other group, although there was no significant difference between the groups. There was no significant difference between the groups. This may be related to that the number of students in the CBL/S group (n=47) was higher than the other group (n=38), and this was a limitation of the study. It is known that an increase in the number of students in the educational environment will adversely affect learning [22,30]. Furthermore, there are some points neglected, although there are many positive aspects of education with simulation. There is no strong evidence indicating that it improves the competence and self-confidence of the students, despite especially the benefits of simulations with high validity levels. It was stated that the competence and self-confidence of the students gained through education with simulation would not be the same or would be different from that they could feel when they encountered a real life situation in the clinic [31]. Moreover, it was reported that simulation was widely used in creating a learning environment, contributed to the knowledge, skills and self-confidence of students, but there was a gap in adapting these gains into the clinical environment [32]. Furthermore, the studies in the literature on learning psychology showed that a certain time was required for the changes in target in a learner. In some studies, it was notified that it was necessary to constantly focus on these attitudes over the years. It is reported that basic attitudes cannot be changed to a great extent with one month, two, three or four months of education, in general. Similarly, the realization of other behavioural changes such as thinking and working ways, basic habits and practices, and interests requires plenty of time and experience [33]. The study results suggest that either there is a gap in in adapting these gains into the clinical environment, more significant difference and change require a long time and especially clinical experience. Therefore, further long-term studies on the subject are needed [34].

In the literature, there is a limited number of studies on CBL's self-confidence and anxiety in clinical decision making in pediatric nursing. Studies on case-based learning showed that it had an effect on developing the critical thinking skills of nursing students [30,35]. In a study, it was identified that problem-based learning (PBL), combined with simulation, had positive effects on the critical thinking of nursing students [36]. Nursing is an applied profession that requires the combination of theoretical content with skills in practice. It is necessary that nursing education have an integrated approach, and nursing lecturere direct their attention on not only the knowledge but also having students understand their minds, bodies, and feelings, reinforce their self-confidence, identify their anxiety, and provide approaches to reduce it [37,38,39]. The positive impact of PBL and a combined learning method in a similar study suggests that it can be an effective approach in pediatric nursing practice [40].

3.3. Limitations

The study was conducted within the scope of pediatric nursing lecture; therefore, inequality between the CBL and CBL/S groups in the numbers of the students, a short period (3.5 months) between the pre-test and post-test measurements were the limitations of the study. Furthermore, it can be generalized only to this group of students as the study included only the students of the Nursing Department of the Faculty where the study was conducted.

4. Conclusion

Enriched teaching methods with active participation such as case-based education and case-based/simulated education are effective on increasing the level of self-confidence and reducing anxiety in clinical decision making process of pediatric nursing students, and further studies are required on the subject. Therefore studies designed with different groups are needed on this subject. Thus, this research can be a starting point for different and experimental study plans that affect nursing students' self-confidence and anxiety levels in clinical decision making.

5. Acknowledgements and disclosures

The study was funded by the Tokat Gaziosmapasa University.

The authors declare that they have no conflict of interest. We would like to thank all students, who helped us complete this study.

References

1. Azak, A, Tasci, S, Clinical decision making and nursing: review, *Türkiye Klinikleri Journal of Medical Ethics*, 2009, 17 (3), 176-183.
2. White, K.A, Development and validation of a tool to measure self-confidence and anxiety in nursing students during clinical decision making, *Journal of Nursing Education*, 2014, 53(1), 14-22.
3. Birol, L, Nursing Process, 10th ed. Etki publishing; 2009.
4. Chen, S.L, Hsu, H.Y, Chang, C.F, Lin, E.C, An exploration of the correlates of nurse practitioners' clinical decision-making abilities,

Journal of Clinical Nursing, 2016, 25, 1016–1024.
5. Johansen, M.L, O'Brien, J.L, Decision making in nursing practice: a concept analysis, *Nursing Forum*, 2016, 51(1), 40-48.
6. Al-Dossary, R.N, Kinsantas, P, Maddox, P.J, Clinical decision-making among new graduate nurses attending residency programs in Saudi Arabia, *Applied Nursing Research*, 2016, 29, 25-30.
7. Choi, M, Kim, J, Relationships between clinical decision-making patterns and self-efficacy and nursing professionalism in Korean pediatric nurses, *Journal of Pediatric Nursing*, 2015, 30,81-88.
8. World Health Organization (WHO). Nursing & midwifery human resources for health, global standards for the initial education of professional nurses and midwives. http://www.who.int/hrh/nursing_midwifery/en/. (accessed 22.06.2021)
9. Bucknall, T.K, Forbes, H, Phillips, N.M, Hewitt, N.A, Cooper, S, Bogossian, F, et al. An analysis of nursing students' decision making in teams during simulations of acute patient deterioration, *Journal of Advanced Nursing*, 2016,72, 2482-2494.
10. Jahanpour, F, Sharif, F, Salsali, M, Kaveh, M.H, Williams, L.M, Clinical decision-making in senior nursing students in Iran, *International Journal of Nursing Practice*, 2010,16,595-602.
11. Ozden, D, Ozveren, H, Gülnar, E, Nurse students' clinical decision-making abilities level and the factors that affect abilities, Dokuz Eylul University E-*Journal of Nursing Faculty*, 2018,11 (1),41-47.
12. Espinosa-Rivera, B.P, Morán-Peña, L, García-Piña, M.A, González-Ramírez, P, López-Ruíz, C.M, Self-confidence and anxiety as intervening factors in clinical decision-making in newly nursing bachelor graduates, *American Journal of Nursing*, 2019, 8(2), 59-67.
13. Durmaz Edeer, A, Sarıkaya, A, The use of simulation in nursing education and simulation types, *Journal of Education and Research in Nursing*, 2015,12(2),121-125.
14. Cobbet, S, Snelgrove-Clark, E, Virtual versus face-to-clinical simulation in relation to student knowledge, anxiety, and self-confidence in maternal-newborn nursing:A randomized controlled trial, *Nurse Education Today*, 2016,45, 179-184.
15. Demir Acar M, Bulut E. A qualitative study on the motivations of neonatal ıntensive care nurses, *Journal of Hacettepe University Faculty of Nursing*, 2021,8(2),223-230.
16. Azizi-Fini, I, Hajibagheri, A, Adib-Hajbaghery, M, Critical thinking skills in nursing students: a comparison between freshmen and senior students, *Nursing Midwifery Studies*, 2015, 4 (1), e25721.
17. Braeckman, L, Kint, L.T, Bekaert, M, Cobbaut, L, Janssens, H, Comparison of two case-based learning conditions with real patients in teaching occupational medicine, *Journal of medical Teaching*, 2014,36 (4),340-346.
18. Yoo, M.S, Park, J.H, Effect of case-based learning on the development of graduate nurses' problem-solving ability. *Nurse Education Today*, 2014, 34 (1),47-51.
19. Chan, A.W, Chair, S.Y, Sit, J.W, Wong, E.M, Lee, D.T, Fung, O.W, Case-based web learning versus face-to-face learning: a mixed-method study on University nursing students, J. Nurs. Res, 2016, 24 (1),31-40.
20. Thistlethwaite, J.E, Davies, D, Ekeocha, S, Kidd, J.M, MacDougall, C, Matthews Purkis, J, Clay, D, The effectiveness of case-based learning in health professional education. A BEME systematic review, *Medical Teacher*, 2012,34(6), e421-e444.
21. Hacıalioğlu, N, Hemşirelikte öğretim öğrenme ve eğitim. 3th ed. Nobel Tıp Kitabevleri; 2013.
22. Sanemoglu, N, Gelişim öğrenme ve öğretim, kuramdan uygulamaya. 21th ed. Yorum Matbaası; 2005.
23. Van Gaalen, A.E.J, Brouwer, J, Schönrock-Adema, J, et al. Gamification of health professions education: a systematic review, *Advances in Health Science Education*, 2021, 26(2), 683-711.
24. Demir Acar, M, Bayat, M, The Effect of diet-exercise trainings provided to overweight and obese teenagers through creative drama on their knowledge, attitude and behaviors, *Childhood Obesity*, 2019,15(2), 93-104.
25. Adiguzel, O, Eğitimde Yaratıcı Drama. 5th ed. Naturel Publishing; 2010.
26. Joronen, K, Rankin, S.H, Astedt-Kurki, P, School-based drama interventions in health promotion for children and adolescent: systematic review, *Journal of Advanced Nursing*, 2008,63,116-131.
27. Bektaş, I, Yardimci, F, Bektaş, M, White, K, Psychometric properties of the Turkish version of nursing anxiety and self confidence with clinical decision making scale (NASC-CDM-T), *Dokuz Eylul University E-Journal of Nursing Faculty*, 2017,10 (2),83-92.
28. Thompson, C, Aitken, L, Doran, D, Dowding, D, An agenda for clinical decision making and judgement in nursing research and education, *International Journal of Nursing Studies*, 2013, 50(12),1720-1726.
29. Bektas, I, Yardimci, F, The effect of web-based education on the self-confidence and anxiety levels of paediatric nursing interns in the clinical decision-making process, *Journal of Computer Assisted Learning*, 2018,34(6), 899-906.
30. Hong, S, Yu, P, Comparison of the effectiveness of two styles of case-based learning implemented in lectures for developing nursing students' critical thinking ability: A randomized controlled trial, *International Journal of Nursing Studies*, 2017,68,16-24.
31. Yuan, H.B, Williams, B. A, Fang, J.B, The contribution of high-fidelity simulation to nursing students' confidence and competence: a systematic review, *International Nursing Review*, 2012,59(1), 26-33.
32. Norman, G, Dore, K, Grierson, L, The minimal relationship between simulation fidelity and transfer of learning, *Medical Education*, 2012, 46(7), 636-647.
33. Ruzgar Emir, M, Aslan, B, Eğitim programlarının ve öğretimin temel ilkeleri. 5th ed. Pegem Akademi Baskı; 2014.
34. Bowling, A.M, Underwood, P.W, Effect of simulation on knowledge, self-confidence, and skill performance in the USA: A quasi-experimental study, *Nursing & Health Sciences*, 2016, 18(3), 292-298.
35. Li, S, Ye, X, Chen, W, Practice and effectiveness of "nursing case-based learning" course on nursing student's critical thinking ability: A comparative study, *Nurse Education in Practice*, 2019,36, 91-96.
36. Lee, W.S, Cho, K.C, Yang, S.H, Roh, Y.S, Lee, G.Y, Effects of problem-based learning combined with simulation on the basic nursing competency of nursing students, *Journal of Korean Academy Fundamental Nursing*, 2009,16, (1), 64-72.
37. Tadeu-Shinyashiki, G, Costa-Mendes, I.A, Trevizan, M.A, Day, R.A, Professional socialization: students becoming nurses, *Rev Latino-am Enfermagem*, 2006,14(4),1-10.
38. Ma, C, Zhou, W, Effects of unfolding case-based learning on academic achievement, critical thinking, and self-confidence in undergraduate nursing students learning health assessment skills, *Nurse Education in Practice*, 2022, 60, 103321.
39. Kim, Y.J, Noh, G.O, Im, Y.S, Effect of step-based prebriefing activities on flow and clinical competency of nursing students in simulation-based education, *Clinical Simulation in Nursing*, 2017, 13(11), 544-551.
40. Kang, K.A, Kim, S, Kim, S.J, Oh, J, Lee, M, Comparison of knowledge, confidence in skill performance (CSP) and satisfaction in problem-based learning (PBL) and simulation with PBL educational modalities in caring for children with bronchiolitis, *Nurse Education Today*, 2015, 35(2), 315-321.