Preventive Care in Nursing and Midwifery Journal
2022; 12(4): 43-53

The Clinical Learning Environments of Undergraduate Nursing Students in Iran Context: A Cross-Sectional Multicenter Study

Zeinab Ghahremani[1], Masoume Moqaddam[2], Masoumeh Asgari[3], Seyyed Meisam Ebrahimi[4], Kourosh Amini[5*]

[1]Department of Psychiatric Nursing, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Iran
[2]Department of Community Health Nursing, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Iran
[3]Faculty of Nursing (Psychiatric Nursing), Abhar Islamic Azad University, Zanjan, Iran
[4]Department of Medical Surgical Nursing, Abhar School of Nursing, Zanjan University of Medical Sciences, Zanjan, Iran
[*5]Department of Psychiatric Nursing, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Iran

Corresponding Author Address: Zanjan University of Medical Sciences , Dr. Sobouti Blvd. School of Nursing and Midwifery, Zanjan, Iran

Tel*:* 0098-9183111178

Email: korosh@zums.ac.ir

Received: 21 Aug 2022 **Accepted**: 26 Oct 2022

Abstract

Background: Clinical environments are one of the most effective areas for acquiring the clinical skills of nursing students.
Objectives: This study aimed to evaluate and compare the actual and preferential clinical learning environments.
Methods: This cross-sectional study was conducted from March 1, 2019, to February 6, 2020 in Zanjan province. Samples included 380 nursing students who had the experience of one semester of internship were entered the study by stratified random sampling. Data collection tools were the Demographic Profile Questionnaire and Clinical Learning Environment Inventory (CLEI). The range of CLEI scores in both actual and preference learning environments is equal to 42-168. We analyzed data using SPSS software, version 22.0. We used descriptive and inferential statistics included independent t-test and one-way ANOVA to analyze the data. A significance level of 0.05 was considered.
***Results*:** The mean (SD) score of the actual clinical learning environment was 109.50(12.25), and the preferred learning environment was 131.08 (14.54). The difference between the two variables was statistically significant (t=22.39, P<0.001). There was a difference in the mean of some dimensions of the nursing students' preference and actual forms of clinical learning environment based on educational grade, different internships.
Conclusion: There is a significant difference between the actual learning environment and students' expectations. This finding emphasizes the need for attention by managers and decision-makers in nursing education to change and improve the clinical learning environment.

Keywords: nursing education; clinical learning environment; practice nursing; students' satisfaction

Introduction

The learning environment is generally defined in terms of the psychological, social, cultural, and physical conditions in which it occurs [1]. One of the most important learning environments for students in various medical disciplines, including nursing, which equips them with clinical skills, is the Clinical Learning Environment (CLE) [2]. By definition, CLE is: "the social, cultural and material context is in which students learn while they work" [3]. As nursing students are expected to be highly qualified to provide effective and safe

care for post-graduate clients, the updated EU guidelines (2013/55/EU) define at least 2300 hours of clinical learning in the nursing curriculum [4]. This learning takes place in a range of environments, each with its complex social context. The complexity of the social context of clinical learning environments, on the one hand, and lack of clinical situations for education doubles the need to pay attention to the appropriateness of these environments with students' perceptions and expectations [5].

It has been shown that the clinical learning environment is related to the formation of professional identity among nursing students [6], clinical skills, clinical role-play [7,8], attitudes toward the patient [9], clinical decision-making ability [8], integration of theoretical knowledge with practice [10], student motivation [5], strengthening critical thinking [11,12], and a desire to work as a nurse after graduation [13].

Literature review shows that in the field of nursing students' views of the clinical learning environment, few studies have been conducted using different approaches and tools, and their results are also varied [5,14-16]. In Iran, in the recent years, only one study has been conducted by Yazdankhahfard et al, (2020) and showed that nursing students do not have a positive perception of their actual clinical education environment, and this perception is different from their perception of their preference environment. It has been shown that if the clinical learning environment is in a way that is in line with students' preferences, achieving the desired results of clinical education will increase [17]—this congruent causes students' satisfaction [18].

Student satisfaction is a complex phenomenon that can have significant positive effects such on the patient's care quality [19], wards' educational atmosphere [20], and educational motivation [21]. Therefore, to help nursing students learn and achieve the educational goals in the curriculum of this field, determining the current situation of CLE and recognizing its distance from the desired condition can help plan to fill the gap.

Considering the importance of the clinical learning environment in nurse students' education, the role and importance of identifying the real clinical learning environment and its distance from the preferred learning environment and considering the limitations mentioned in previous studies such as the lack of generalizability of their results due to being studied concept depend on the socio-cultural context [22], a limited number of participants and poor sampling methods, this study was conducted to answer the following three questions:

1-What is the status of the actual clinical learning environment from the perspective of nursing students?

2-What are the students' preferences in the clinical learning environment?

3-What is the difference between the actual and a preferred clinical learning environment?

Methods

This study was a cross-sectional study conducted from March 1, 2019, to February 6, 2020 in Zanjan province. The study was reported based on the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

The study population was all nursing students in four nursing faculties located in Zanjan province (Zanjan faculty of Nursing and Midwifery, Zanjzn Azad University, Abhar faculty of Nursing and Emergency Medicine, and Abhar Azan University) in the three and higher semesters (second, third, and fourth academic year). It should be noted that undergraduate nursing education in Iran is four years. In the first year, most of the students' lessons are theory and accompanied by a laboratory. In this academic year, basic science courses such as physiology, anatomy, biochemistry, etc., are taught. From the second year, students enter the wards of teaching hospitals for training. Faculty for each hospital ward define a fixed instructor (faculty member). Students of a class do internships in rotation and in groups of 6 to 10 people, under the instructor's supervision, with a planned and approved lesson plan. The duration of the internships in each ward is usually ten days. Therefore, students do at least one internship in all hospital wards during their 4-year study. In some wards, such as ICUs and psychiatric wards, each student trains twice and each time for ten days. We had defined two inclusion criteria: 1- Having a desire and consent to participate in the study. 2- Employment to study at least in the second year.

We proceeded to estimate the sample size based on a pilot study involving 40 nursing students, power, 0.8, S=10.35, d=1, and $Z_{1-\alpha/2}$ =1.96. The

minimum sample size required was estimated 412 students. However, due to attrition and incomplete questionnaires, 450 questionnaires were prepared and distributed among eligible students. The sampling method based on the four faculties was stratified random sampling. The classification was based on the faculties of the study environment. We sampled from each stratify using the random number table and a simple random sampling method. Out of 450 distributed questionnaires, 70 questionnaires were excluded due to incompleteness. Data analysis was done based on 380 fully completed questionnaires. Students excluded from the study were homogeneous with those who entered the analysis stage based on demographic and academic variables.

Two questionnaires we used to collect data: (a) Demographic and educational characteristics form; this form included questions to assess gender, academic level, faculty of study, recent internship name, age, and total grade point average. (b) Clinical Learning Environment Inventory (CLEI).

There are different forms of CLEI in literature with a different number of items, and they have been psychometric to examine students' views of the clinical learning environment. At the time of this study, we had access to the 42-item version and were able to purchase it in our country. The 42-item version by Chan has been developed and introduced in 2002 [23].This questionnaire was developed in two versions; actual and preferred. Each version consists of 42 items. CLEI measures six social-psychological dimensions that students value in the clinical learning environment, including (a) personalization, (b) involvement, (c) task orientation, (d) innovation, (e) individualization, and (f) satisfaction. Seven questions are designed to measure each dimension [23], Table 1.

The actual form measures perceptions of the real learning environment. The preferred form measures what students consider ideal in a clinical setting. For each question in the actual form, a question in the preferred form is defined [5,24]. The form of CLEI questions is in 4-point Likert: Strongly disagree (score one), Disagree (score two), Agree (score three), Strongly agree (score four). Some CLEI questions are negatively designed and scored in reverse. Depending on the number of questions in each dimension, they have a range of scores 7-28. The total CLEI score also varies between 42 and 168.

The validity and reliability of actual and preferred forms of CLEI have been assessed and confirmed in various studies in the past, and α-Cronbach's values for it have been reported in the range of 0.61-0.88 [25-27]. Since CLEI was not psychometric in Zanjan, so we used the forward-backward translation method to determine its validity. In this process, first, the scale was translated into Persian by two expert translators. The research team agreed to apply some changes by reviewing two Persian versions on one version. We sent the approved version to another fluent in Persian and an English translator to translate it back into English. We assessed the final form and approved it. After ensuring that the translation was correct, we used the expert panel comments. For this purpose, we sent it to ten specialists in health education and nursing education, and we applied some small editing changes to the Persian version of the tool. We used the internal stability test by Cronbach's alpha coefficient to determine the instrument's reliability, which was calculated to be α=0.899 for the preferred form and α=0.799 for the actual form, which is a desirable value [28]. Cronbach's alpha coefficient for the six dimensions of CLEI is shown in Table 1.

Table 1: CLEI Dimensions, Dimensions Descriptions, and Related Cronbach's Alpha Coefficients

CLEI dimensions and items	Description	α-Coefficient actual form	α-Coefficient preferred form
Personalization 1-7-13-19-25-31-37	Emphasizing the opportunity for the student to interact with the clinical teacher and concern for the student's personal well-being	0.560	0.611
Involvement 2-8-14-20-26-32-38	The amount of active and accurate participation of students in the activities of the hospital ward	0.419	0.591
Task orientation 4-10-16-22-28-34-40	The degree of clarity and well-organized activities of the department	0.760	70.91
Innovation 5-11-17-23-29-35-41	The extent of clinical instructor planning for new, interesting, and effective ward experiences, teaching techniques, learning activities, and patient allocation	0.474	70.49
Individualization 6-12-18-24-30-36-42	The degree of difference in allowing students to make decisions, taking into account the student's ability or interest	0.539	0.437
Satisfaction 3-9-15-21-27-33-39	The amount of enjoyment of the clinical situation	0.423	0.427
CLEI (total)		0.799	0.899

Before starting the study, the study proposal was approved by the Biomedical Ethics Committee of Zanjan University (Ethics Code: IR.ZUMS.REC.1397.165). Due to participants' limited time and facilitating the informed consent process, the suggestion of oral informed consent was explained to ZUMS.REC and approved to replace the written informed consent. The confidential identity of participants was preserved during the study. We tied observing the principle of anonymity and confidentiality throughout the study process.

After completing the questionnaires, we analyzed data using Statistical Package for Social Sciences (SPSS, Chicago, IL, USA) software, version 22.0 we used both descriptive and inferential statistics to analyze the data. Frequency and percentage were used to describe the qualitative demographic variables of the participants. To illustrate the quantitative demographic characteristics and the dimensions and total scores of CLEI, we used the mean and standard deviation. We used Cronbach's alpha coefficient to determine the internal stability of CLEI and its dimensions. Before using statistical tests, we evaluated data distributions. Parametric tests were used because the data followed the normal distribution based on the Shapiro-Wilks test. To compare the mean CLEI scores of the participants based on demographic and educational variables, we applied an independent t-test and one-way ANOVA. $p<0.05$ was considered significant.

Results

The mean (SD) of participants age was 23.24 (2.66). Two hundred and thirty (59.8%) of participants were female. Other characteristics of the participants has been summarized in Table 2.

Table 2: Demographic Characteristics of the Participants (n=381)

Variable		N	%
Gender	Female	230	59.8
	Male	150	40.2
Grade (years)	2	75	19.5
	3	188	49.5
	4	117	31.0
Faculty	Zanjan faculties of Nursing and Midwifery	104	27.4
	Abhar faculties of Nursing and Emergency Medicine	66	17.4
	Zanjan Azad University	151	39.7
	Abhar Azad University	59	15.5
Internship type	Intensive care	87	22.9
	Medical-surgical	198	51.9
	Maternal and neonatal care	46	12.1
	Community health	6	1.6
	Psychiatric nursing	43	11.5
Age	**mean (SD)**	23.24 (2.66)	
Grade point average	**mean (SD)**	16.70 (1.51)	

The mean (SD) score of the students in the actual form was 109.50 (12.25) and in the preferred form, it was 131.08 (14.54). In the actual form, the highest mean (SD) was related to personalization 19.36 (2.93) and satisfaction 20.45 (2.59). In the preferred form, the highest mean was related to the task orientation 23.59 (3.11) and satisfaction 23.66 (3.34) dimensions, Table 3.

Table 3: Comparison of the Mean scores of the CLEI preferred form with Actual

CLEI dimensions	Actual mean±SD	Preferred mean±SD	Sig.
Personalization	19.36±2.93	22.52±2.99	t = -15.133, p < 0.001
Involvement	17.94±2.63	21.16±3.00	t = -15.360, p < 0.001
Task orientation	19.27±3.75	23.59±3.11	t = -16.057, p < 0.001
Innovation	16.19±2.85	20.21±2.63	t = -18.515, p < 0.001
Individualization	16.16±2.61	20.28±2.72	t = -18.793, p < 0.001
Satisfaction	20.45±2.59	23.66±3.34	t = -17.242, p < 0.001
Total	109.50±12.25	131.08±14.54	t =- 22.396, p < 0.001

Our study showed a significant mean difference between the scores based on gender in the dimension of involvement in the actual form (t=-2.24, p=0.016) and individualization in the preferred form (t=2.59, p=0.010). In the actual form, based on different grades of educating in nursing faculty, there were statistically significant differences in the dimensions of personalization (F=6.50, p=0.002), involvement (F=7.85, p<0.001), task orientation (F=6.52, p=0.002), satisfaction (F=12.50, p<0.001), and total score (F=7.97, p<0.001). Students' perceptions differed in task orientation (F=6.94, p=0.001), innovation (F=9.74, p<0.001), satisfaction (F=6.53, p=0.002), and total preferred form score (F=4.65, p=0.010) based on different academic years in the preferred form. In the actual form, students' perceptions differed based on internship types in personalization and innovation dimensions, and in the preferred form, their scores differed in only innovation (p<0.05). In the studied nursing schools, total mean score of actual form (F=4.68, p=0.003), and its dimensions including personalization (F=12.95, p<0.001), individualization (F=10.50, p=0.000) and innovation (F=6.44, p=0.000) were significantly different. There were significant differences in the preferred form based on faculties between students' perceptions of personalization (F=3.74, p=0.011), involvement (F=3.54, p=0.015), task orientation (F=7.61, p<0.001), satisfaction (F=3.92, p=0.009) and the scale's total score

(F=4.33, p=0.005). Age was related only to the dimension of task orientation in actual form (r=0.12, p=0.032). In the preferred form, age did not correlate with any of the dimensions (P>0.05). The grade point average had a statistically significant relationship with personalization in the actual (r=-0.20, p=0.008) and also preferred forms (r=-0.25, p=0.001), Table 4.

Table 4: Comparison of the CLEI scores' Mean and Standard Deviation and its Dimensions Based on the Individual and Educational Variables of the Participants

Variables		Actual form (mean ± SD)						
		Personalization	Involvement	Task orientation	Innovation	Individualization	Satisfaction	Total score
Gender	Male	2.91±19.55	2.55±17.55	2.42±20.50	2.88±16.17	2.49±15.99	3.76±18.90	12.50±108.56
	Female	2.93±19.29	2.63±18.24	2.74±20.44	2.78±16.28	2.71±16.36	3.67±19.63	12.42±109.74
Sig.		t=0.820, p=0.413	t=-2.24, p=0.016*	t=0.21, p=0.833	t=0.34-, p=0.727	t=1.319-, p=0.188	t=1.799, p=0.073	t=0.791-, p=0.430
Grade (years)	2	2.52±19.96	2.53±17.73	2.71±20.46	2.76±15.95	2.94±20.19	3.51±19.38	12.18±109.76
	3	2.93±19.62	2.46±18.48	2.50±20.79	2.79±16.37	2.55±20.14	3.30±20.16	11.32±111.72
	4	2.99±18.59	2.73±17.29	2.44±19.89	2.91±16.11	2.85±20.40	3.93±18.06	13.05±106.03
Sig.		F=6.50, p=0.002**	F=7.85, p < 0.0001**	F=6.52, p=0.002**	F=0.67, p=0.509	F=0.23, p=0.792	F=12.50, p=<0.001**	F=7.97, p<0.001**
Faculty	Zanjan faculties of Nursing and Midwifery	2.93±20.33	2.75±18.30	2.70±20.21	2.88±16.62	2.52±16.70	3.59±18.93	13.68±111.09
	Abhar faculties of Nursing and Emergency Medicine	3.02±20.11	2.97±18.21	2.13±20.67	3.05±15.70	2.56±16.31	3.35±19.83	13.38±111.13
	Zanjzn Azad University	2.66±18.28	2.34±17.51	2.78±20.61	2.71±15.66	2.63±15.35	3.83±19.10	10.88±105.74
	Abhar Azad University	2.46±19.68	2.49±18.11	2.49±20.21	2.33±17.36	2.17±17.32	3.91±19.87	10.37±111.30
Sig.		F=12.95, p<0.001**	F=2.26, p=0.080	F=0.78, p=0.504	F=6.44, p<=0.001**	F=10.50, p<0.001**	F=1.34, p=0.261	F=4.68, p=0.003**
Internship type	Intensive care	2.69±18.57	2.44±17.85	2.49±20.60	2.57±16.63	3.23±16.04	4.25±18.82	12.68±107.23
	Medical-surgical	3.06±19.51	2.84±17.84	2.68±20.31	3.00±16.01	2.56±16.15	3.67±19.22	13.37±109.17
	Maternal and neonatal care	2.17±19.55	2.19±18.34	2.38±20.38	2.25±16.71	2.04±16.30	3.38±19.80	8.79±109.32
	Community health	2.91±22.00	3.20±20.25	3.96±20.20	5.07±18.80	1.64±18.80	5.26±19.50	19.80±116.25
	Psychiatric nursing	2.70±20.36	2.40±18.22	2.71±21.30	2.84±15.51	2.53±15.98	3.12±20.28	10.326±111.94
Sig.		F=3.91, p=0.004**	F=1.17, p=0.321	F=1.22, p=0.300	F=2.57, p=0.037*	F=1.34, p=0.251	F=1.20, p=0.308	F=1.10, p=0.355
Age		r=-0.09, p=0.084	r=0.05, p=0.310	r=0.12, P=0.032*	r=0.08, P=0.166	r=0.01-, P=0.907	r=0.03, p=0.614	r=0.03, p=0.664
Grade point average		r=-0.20, p=0.008**	r=-0.01, p=0.913	r=0.04, p=0.617	r=0.03, p=0.723	r=0.01, p=0.913	r=0.03-, p=0.711	r=0.10-, p=0.222
Variables		Preferred form (mean ± SD)						
		Personalization	Involvement	Task orientation	Innovation	Individualization	Satisfaction	Total score
Gender	Male	22.80±2.96	21.23±2.81	23.60±3.01	20.47±2.38	20.71±2.80	23.64±3.42	133.71±14.18
	Female	22.31±2.98	23.60±3.10	23.48±3.29	20.10±2.78	19.95±2.59	23.75±3.28	132.12±14.33

Sig.		t=1.49, p=0.136	t=0.41, p=0.685	t=0.34, p=0.730	t=1.29, p=0.196	t=2.59, p=0.010*	t=-0.29, p=0.796	t=0.93, p=0.355
Grade	**2**	22.68±2.90	21.39±2.67	24.06±3.15	20.71±2.52	20.19±2.94	24.41±3.13	133.46±13.70
	3	22.60±2.89	21.32±2.88	23.78±2.94	20.63±2.52	20.14±2.55	23.88±3.25	132.37±13.90
	4	22.14±2.96	20.55±3.27	22.58±3.36	19.39±2.65	16.06±2.85	22.75±3.58	127.84±15.68
Sig.		F=1.11, p=0.330	F=2.81, p=0.061	F=6.94, p=0.001**	F=9.74, p<0.001**	F=0.34, p=0.714	F=6.53, p=0.002**	F=4.65, p=0.010*
Faculty	**Zanjan faculties of Nursing and Midwifery**	22.85±3.10	20.98±2.97	23.57±2.92	20.04±2.72	20.24±2.55	23.89±3.11	132.78±14.26
	Abhar faculties of Nursing and Emergency Medicine	22.77±2.86	21.66±2.60	23.21±3.09	20.76±2.41	20.06±2.63	23.35±3.30	133.12±13.18
	Zanjzn Azad University	22.62±3.00	21.44±3.18	24.26±3.20	20.32±2.58	20.60±3.05	24.18±3.28	134.98±14.07
	Abhar Azad University	21.28±2.49	20.06±2.73	21.90±3.07	20.00±2.88	19.57±2.36	22.43±3.66	125.59±14.92
Sig.		F=3.74, p=0.011*	F=3.54, p=0.015*	F=7.61, p<0.001**	F=1.19, p=0.315	F=1.91, p=0.128	F=3.92, p=0.009**	F=4.33, p=0.005**
Internship type	**Intensive care**	22.41±2.98	21.29±3.25	23.74±3.20	19.74±3.03	20.28±3.04	23.53±3.43	133.29±15.70
	Medical-surgical	22.53±2.94	21.07±3.00	23.47±3.22	20.58±2.52	20.33±2.78	23.88±3.35	132.99±14.14
	Maternal and neonatal care	22.00±2.81	20.84±3.00	23.07±2.91	19.30±2.47	19.742.66±	23.64±3.03	129.76±13.11
	Community health	23.00±2.34	20.80±1.78	22.50±3.00	20.00±1.15	20.50±2.51	25.25±1.89	132.50±0.707
	Psychiatric nursing	23.71±3.11	21.95±2.50	24.32±3.05	21.24±2.35	20.60±2.53	23.62±3.45	136.06±14.19
Sig.		F=1.89, p=0.111	F=0.88, p=0.476	F=0.99, p=0.411	F=4.37, p=0.002**	F=0.54, p=0.704	F=0.38, p=0.822	F=0.78, p=0.533
Age		r=-0.10, p=0.075	r=-0.02, p=0.680	r=-0.01, p=0.835	r=-0.09, p=0.097	r=-0.01, p=0.862	r=-0.04, p=0.466	r=-0.03, p=0.551
Grade point average		r=-0.25, p=0.001**	r=0.09, p=0.241	r=-0.14, p=0.068	r=-0.13, p=0.092	r=-0.04, p=0.558	r=-0.08, p=0.306	r=-0.11, p=0.186

***p<0.05, **p<0.01, ***p<0.001**

Discussion

In the present study, we assessed the perception of a group of nursing students about the actual and preferred clinical learning environment. Besides comparing students' actual and preferential perceptions of the clinical learning environment as a whole, we also compared the dimensions of the two CLEI forms together. In addition, we compared the total CLEI score (actual and preferred form) and its dimensions based on students' specifications. Based on the study results we can interpret that students' perceptions of the mean score of the learning environment in the clinics are not favorable. In contrast, a review of the available literature shows that the results are different among nursing students from other countries. In some of these countries, the perception of the clinical environment is positive [29], in others, it is moderate [30],and in the third group, it is poor [31]. This finding can be explained by the diversity and differences in the organizations where clinical learning occurs, different regulatory models, and inconsistencies in the definition of clinical education responsibility between countries [4], or it may be due to the difference in cut-off point considered in different studies.Therefore, such discrepancies in the findings can't be surprising because the learning

environment as a variable influenced by socio-economic, cultural, and political factors in hospitals of different countries can be completely different.

Our study showed that the difference between the actual environment and what students expect is significant. In addition, the difference between students' perception scores from the actual and preference clinical learning environment was substantial in all dimensions. In all dimensions, the mean score of the actual form was less than the preferred one. This finding showed that students expected more from their clinical environment regarding personalization, involvement, task orientation, innovation, personalization, and satisfaction. This finding confirms the results of some studies conducted in the past, such as Yazdankhahfard and et al in 2020 [16].

Similar to Shivers et al. in 2017 [5], in our study, the highest mean score was related to personalization and satisfaction. The lowest mean was about dimensions of innovation and individualization. However, in the study of Bigdeli et al. in 2015 [32], the lowest average belonged to the dimension of innovation, which confirms our finding. This finding is while some researchers suggest that clinical educators should spend more time ensuring that students are provided with innovative and creative experiences [33]. But the lack of courses to support creativity, the lack of planning activities to support innovation by educational institutions in less developed countries are among the obstacles to achieving such goals [34]. In Egypt, the lack of technologies and innovations has been introduced as critical practical obstacles in empowering nursing students' creativity [35].

Consistent with some previous studies [32,35], students' perception means score in the dimension of "satisfaction" was high. Satisfaction has been introduced by Chan (2002) as a critical criterion for a general understanding of the learning environment [36].Various factors play a role in creating students' satisfaction with the learning environment in the clinic. Some authors [37] believe that the clinical environment has a significant effect on student satisfaction, while others [38] report that staff or personnel in the clinical environment have an essential role on student satisfaction. Other studies [39] have also shown that the attitude and methods of the instructor or educator in the clinic affect student satisfaction. In Iran, like in many other countries, the instructor is constantly present with the students in the clinical environment and usually tries to provide conditions for students to be involved in work.

Our study showed that the mean difference between students' perceptions of innovation in the clinical learning environment varies according to the type of internship wards. In justifying the higher mean score of creativity in some sectors compared to others, studies in the past have shown that two groups of internal factors (such as learning styles, thinking styles, interest in nursing, and intrinsic motivation for progress) and external factors (i.e., workplace issues, clinical problems, shortage of nurses, etc.) play a role in creativity [33]. About the external factors affecting innovation, it can be said that creating challenging conditions for students by the instructor in some parts of the internship can encourage nursing students to think and take creative measures to deal with difficult situations [40]. However, little evidence confirms the overall impact of such factors on nurses and nursing students. In their study, Shivers et al. (2017) specifically emphasize the role of the clinical instructor in students' creativity [5].

Our study showed that the difference in the mean score of students' perceptions of personalization from the learning environment varies based on the type of internship ward. In other words, the results showed that personalization is felt differently by students from one hospital ward to another. In some previous studies [41], while emphasizing the different personalization of nurses in various work environments, some factors of the clinical environment affecting personalization have been mentioned. Such as ward stress, degree of performance independence, power hierarchy, teamwork status, stability or instability in ward patients, treatment programs, and even gender [42].

There was a weak significant relationship between the age variable only with the task orientation dimension. However, in the study of Shivers et al. (2017), a significant difference was reported between the age groups of 18-24 and 35-34 in terms of involvement [5].This finding necessitates further research in the future on the impact or

relationship between students' ages and their perceptions of their learning experience.

This study showed based on the students' academic grades, the total score of the scale of the actual form and some of its dimensions, i.e., personalization, involvement, task orientation, and satisfaction, were different. There was a significant difference between the students' scores on the whole scale of preferred form and some of its dimensions such as task orientation, innovation, and satisfaction. In other words, fourth-year students had lower average scores in the mentioned dimensions than others. The study of Shivers et al. in 2017 [5] and the study of Ip and Chan in 2005 (25)also showed that CLEI scores are influenced by academic years. While O'Reilly-Knapp, M (1994) showed no difference between upper and lower grade students' perceptions of the college's social support needed and received [43]. It has been offered the first year is a transitional period for nursing students and may be considered a culture shock [5,25]. Higher grade students may have more insight into the learning environment and what is expected of them and their educators and may feel that this is not happening.

Although the number of samples, sampling method, and students' involvement in this study was appropriate, sampling was done from four nursing faculties in Zanjan province. Like any other study, it had its limitations. The second limitation of this study was the generalizability of its results to other research communities due to the dependence of the primary variable (clinical learning environment) on the context. Third, the responses may have been vulnerable due to the nature of the study and the use of a self-report questionnaire for data collection. It should be noted by explaining the survey's objectives to students participating in the research on the confidentiality of data and the attention to the principle of anonymity in questionnaires and other ethical considerations, we attempted to control these limitations.

Conclusion

This study showed a significant difference between what exists in the clinical learning environment and what students prefer. The students under investigation prefer an environment in which: (a) they can make decisions and be treated differently according to their abilities or interests; (b) internships (training courses) have opportunities for exciting experiences and productive learning; (c) be able to take an active role in the activities of the hospital or ward, and care; (d) be able to interact with their coach without restriction; (e) there-be clear and orderly Instructions, for hospital activities; and (f) they can enjoy from internship and feel satisfied. Considering the low score of innovation and individualization in both forms, the need for serious attention to these two areas in clinical education in nursing and planning in this regard is felt. When designing a training course, it is recommend that clinical instructors enhance students' creativity and decision-making ability, define hard and somewhat challenging activities and tasks for students and ask them to present solutions. In addition, educators need to allow students to use their creativity freely. Clinical instructors should value all students' ideas, encourage students to think, and give them feedback. Teamwork should also be considered as this may reinforce creative thinking. In colleges, too, curricula need to be revised to develop students' decision-making abilities.

Acknowledgments

This paper is part of an approved research project (ID: A-11-86-12) conducted with IR.ZUMS.REC.1397.165 code of ethics at Zanjan University of Medical Sciences. We are grateful to the research administration of Zanjan University of Medical Sciences, Zanjan, Iran, that financially supported the study. Moreover, we thank the students who participated in the study.

Conflict of interest

The author acknowledges that there is no conflict of interest in this article.

Funding:

This work was supported by the Research and Technology Deputy of Zanjan University of Medical Sciences, Zanjan, Iran [grant number: A-11-86-12].

References

1. Rusticus SA, Wilson D, Casiro O, Lovato C. Evaluating the quality of health professions learning environments: development and

validation of the health education learning environment survey (HELES). Eval health prof. 2020; 43(3): 162-168.
2. Mbakaya BC, Kalembo FW, Zgambo M, et al. Nursing and midwifery students' experiences and perception of their clinical learning environment in Malawi: a mixed-method study. BMC Nurs. 2020; 19(1): 87.
3. Kilty C, Wiese A, Bergin C, et al. A national stakeholder consensus study of challenges and priorities for clinical learning environments in postgraduate medical education. BMC Med Educ. 2017;17(1): 226.
4. Visiers-Jiménez L, Suikkala A, Salminen L, et al. Clinical learning environment and graduating nursing students' competence: A multi-country cross-sectional study. Nurs Health Sci. 2021; 23(2): 398-410.
5. Shivers E, Hasson F, Slater P. Pre-registration nursing student's quality of practice learning: Clinical learning environment inventory (actual) questionnaire. Nurse Educ Today. 2017; 55: 58-64.
6. Elhosieny E, Abdel Aleem MM, Elhosany W. Influence of Quality of Clinical Learning Environment on the Development of Nursing Students' Professional Identity. Port Said Scientific Journal of Nursing. 2020;7(2):43-56.
7. Arkan B, Ordin Y, Yılmaz D. Undergraduate nursing students' experience related to their clinical learning environment and factors affecting to their clinical learning process. Nurse education in practice. 2018;29:127-132.
8. Jayasekara R, Smith C, Hall C, et al. The effectiveness of clinical education models for undergraduate nursing programs: A systematic review. Nurse educ pract. 2018; 29: 116-26.
9. Suikkala A, Koskinen S, Katajisto J, Leino-Kilpi H. Congruence between nursing students' and patients' views of student–patient relationships. Adv Health Sci Educ Theory Pract. 2021; 26(1): 79-115.
10. Tolsgaard MG, Kulasegaram KM, Ringsted C. Practical trials in medical education: linking theory, practice and decision making. Med Educ. 2017; 51(1): 22-30.
11. Luder A. Assessment of Clinical Education. Active Education for Future Doctors. Springer; 2020; 38(4): 67-78.
12. Qutieshat AS, Abusamak MO, Maragha TN. Impact of Blended Learning on Dental Students' Performance and Satisfaction in Clinical Education. J Dent Educ. 2020; 84(2): 135-42.
13. Boyd-Turner D, Bell E, Russell A. The influence student placement experience can have on the employment choices of graduates: A paediatric nursing context. Nurse Educ Pract. 2016; 16(1): 263-8.
14. Serena P, Anna B. Italian nursing students' perception of their clinical learning environment as measured with the CLEI tool. Nurse Educ Today. 2009; 29(8): 886-90.
15. Moh'd Alraja AA. Undergraduate Nursing Students' Perceptions of the Psychosocial Characteristics of the Clinical Learning Environment during Their Clinical Placements [Dissertation]. Degree of Master of Nursing thesis, University of Manitoba, Winnipeg, Canada. 2011.
16. Yazdankhahfard M, Ravanipour M, Mirzaei K. The gap in the clinical learning environment: The viewpoints of nursing students. J Educ Health Promot. 2020; 26; 9: e311.
17. Chan DS. Combining qualitative and quantitative methods in assessing hospital learning environments. Int j nurs stud. 2001; 38(4): 447-59.
18. Mokadem NME, Shimaa E, Ibraheem S. Nursing Students' Satisfaction with Their Clinical Learning Environments. Am J Nurs Res. 2017; 5(4): 104-8.
19. Abdullah MZ, Othman AK, Hamzah MI, Anuar A, Tobi SNM, Solat N. The Influence of Healthcare Service Quality on Public University Students' Satisfaction and Behavioural Intention: Moderating Role of Trust. J Health Manag. 2022.
20. d'Souza MS, Karkada SN, Parahoo K, Venkatesaperumal R. Perception of and satisfaction with the clinical learning environment among nursing students. Nurse Educ Today. 2015; 35(6): 833-840.
21. Karaoğlan Yılmaz FG. An investigation into the role of course satisfaction on students' engagement and motivation in a mobile-assisted learning management system flipped classroom. Technol Pedagogy Educ. 2022; 31(1): 15-34.
22. Mikkonen K, Merilainen M, Tomietto M. Empirical model of clinical learning environment and mentoring of culturally and linguistically diverse nursing students. J Clin Nurs. 2020; 29(3-4): 653-61.

23. Chan D. Development of the clinical learning environment inventory: using the theoretical framework of learning environment studies to assess nursing students' perceptions of the hospital as a learning environment. J Nurs Educ. 2002; 41(2): 69-75.
24. Poon, WS. Nursing students" perception of the clinical learning environment in Macao. In: Presentation Sigma Theta Tau International the Honor Society of Nursing, 25th International Nursing Research Congress. 2014. [cited 25 Feb 2020]; Available from: URL: http://www.nursinglibrary.org/vhl/handle/10755/335152
25. Ip WY, Chan DSK. Hong Kong nursing students' perception of the clinical environment: a questionnaire survey. Int J Nurs Stud. 2005; 42(6): 665-72.
26. Chan D. Development of the clinical learning environment inventory: using the theoretical framework of learning environment studies to assess nursing students' perceptions of the hospital as a learning environment. J Nurs Educ. 2002; 41(2): 69-75.
27. Henderson A, Twentyman M, Heel A, Lloyd B. Students' perception of the psycho-social clinical learning environment: an evaluation of placement models. Nurs Educ Today. 2006; 26(7): 564-71.
28. Taber KS. The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. Res Sci Educ. 2018; 48(6): 1273-96.
29. Woo MWJ, Li W. Nursing students' views and satisfaction of their clinical learning environment in Singapore. Nurs Open. 2020; 7(6): 1909-19.
30. Ramsbotham J, Dinh H, Truong H, et al. Evaluating the learning environment of nursing students: A multisite cross-sectional study. Nurs Educ Today. 2019; 79: 80-5.
31. Alnajjar H, Asif U, Bano N. Faculty Experiences with Emergency Transition to Online Teaching amid COVID-19 Pandemic in a Health Science University. Prensa Med Argent. 2020; 2: 1-5.
32. Bigdeli S, Pakpour V, Aalaa M, et al. Clinical learning environments (actual and expected): perceptions of Iran University of Medical Sciences nursing students. Med j Islamic Repub Iran. 2015; 29: 110-117.
33. Ma X, Yang Y, Wang X, Zang Y. An integrative review: Developing and measuring creativity in nursing. Nurs Educ Today. 2018;62:1-8.
34. CEYLAN S. Innovativeness Levels and Perceived Barriers to Innovativeness of Nursing Students. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi. 2019; 8(4): 363-71.
35. Mansour NY, Yousef HR. Clinical Learning Environment as Perceived by Students of Technical Institutes of Nursing in Assuit City. Assiut Scientific Nurs J. 2018; 6(13): 126-34.
36. Chan DS. Validation of the clinical learning environment inventory. West J Nurs Res. 2003; 25(5): 519-32.
37. Nyante G, Asare E, Quartey J, Kwakye SK. Physiotherapy Students Satisfaction on Clinical Learning Environment and Supervision at University of Ghan. J Prev Rehabil Med. 2020;2(1):32-39.
38. Ashktorab T, Hasanvand S, Seyedfatemi N, Salmani N, Hosseini SV. Factors affecting the belongingness sense of undergraduate nursing students towards clinical setting: A qualitative study. J Caring Sci. 2017; 6(3): 221-35.
39. Ekstedt M, Lindblad M, Löfmark A. Nursing students' perception of the clinical learning environment and supervision in relation to two different supervision models–a comparative cross-sectional study. BMC Nurs. 2019; 18(1): 1-12.
40. Isfahani SS, Hosseini MA, Khoshknab MF, Peyrovi H, Khanke HR. What really motivates Iranian nurses to be creative in clinical settings?: A qualitative study. Glob J Health Sci. 2015; 7(5): 132-42.
41. Bjørk IT, Berntsen K, Brynildsen G, Hestetun M. Nursing students' perceptions of their clinical learning environment in placements outside traditional hospital settings. J clin nurs. 2014; 23(19-20): 2958-67.
42. Fernandez R, Tran DT, Johnson M, Jones S. Interdisciplinary communication in general medical and surgical wards using two different models of nursing care delivery. J Nurs Manag. 2010; 18(3): 265-74.
43. O'ReiIly-Knapp M. Reports by baccalaureate nursing students of social support. Image J Nurs Sch. 1994; 26(2): 139-42.