The Clinical Learning Environment of Intensive Care Unit as Perceived by International Islamic University Malaysia (IIUM) Undergraduate Nursing Students

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ABSTRACT

Background: Clinical learning environment (CLE) is an environment in which any person who could influence the care of a patient learns. The CLE affects the effectiveness of clinical practicum that is a significant part of the nursing curriculum. However, there are limited studies that focus on the CLE of the Intensive Care Unit (ICU). **Objectives**: To assess the nursing students' perception of the clinical learning environment of ICU, and to determine the associated socio-demographic characteristic with the clinical learning environment of ICU. **Methods**: A cross-sectional study was conducted via purposive sampling at Kulliyyah of Nursing, IIUM Kuantan. The Adopted Students Evaluation of Clinical Education Environment (SECEE) version 3 questionnaire was used to assess the students' perception of CLE of ICU within three subscales (instructor facilitation of learning (IFL), preceptor/staff nurse facilitation of learning (PFL) and learning opportunities (LO)). **Results**: A total of 141 nursing students participated in this study. Based on the mean score, the students have a positive perception of the CLE of ICU (79.41%). The subscale IFL was the most positively perceived (84.44%) followed by subscale LO (77.49%) and subscale PFL (75.64%). There was a significant difference seen for subscale LO between gender (p-value=0.008), male students gave a higher score compared to the female student. A significant mean difference was also found for subscale IFL between years of study (p-value=0.002), suggesting that the senior student had a more positive score compared to their junior. No association was found between students' age and duration of clinical practicum in ICU with the CLE score. **Conclusion:** The nursing students' perception of the CLE of ICU is positive. However, the score for subscale PFL is the lowest compared to another subscale. Hence, the nursing faculty should work together with the ward management to enhance the role and engagement of staff nurses in students learning. By doing this, the CLE of ICU will get better and eventually improve the clinical learning outcome.

Keywords: Clinical Learning Environment, Intensive Care Unit, Nursing Student, Clinical Practicum

INTRODUCTION

Nursing education is divided into two major components, which are theoretical learning and clinical practicum. The clinical practicum is significant in nursing education as it promotes nursing student's understanding of the theory they learn in class as they learn in a real-life situation (1). The Clinical Learning Environment (CLE) is an environment in which any person who has the opportunity to influence the care of a patient learns and it comprises of physical aspects such as the setting and social aspect such as staff-student relationship(2). The environment of the clinical setting is a significant aspect of clinical practicum as it impacts nursing students learning (3). Papastavrou et. al (4) support that the clinical setting is a good place for learning, based on nursing student's positive feedbacks and satisfaction with the clinical learning environment (CLE). However, learning in a clinical setting is more complex compared to classic classroom settings. Students need to adjust as they become both the learner and worker in a challenging territory, which is why having a supportive clinical learning environment is important for the success of the teaching-learning process (5).

Nursing students were sent to many ward settings for clinical practicum such as medical ward, surgical ward, paediatric ward, and intensive care unit (ICU). Despite its reputation as a scary setting among students, clinical practicum in ICU is beneficial for them because it provides exposure

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to the multisystem health issue, an abundance of knowledge, and an opportunity to work with a multidisciplinary care team (6). There were mixed opinions about ICU being an ideal placement for undergraduate nursing students. Some papers suggest that ICU is a suitable placement for nursing student's clinical practicum as it provides exposure to the multisystem health issue, an abundance of knowledge, and an opportunity to gain valuable experience working with a multidisciplinary care team (6). However, another paper proposed that clinical practicum in ICU is inefficient as the learning process of the students was hindered by the stressful environment of the place (7). This is also supported by Masilaca et al. (2) which proved the learning outcomes of ICU are at a moderate level compared to another clinical setting that is at a high level of learning outcome. Clinical practice in ICU is optional in Malaysia. Hence, not all undergraduates nursing programs offer clinical practicum at ICU. There are several past studies found to be conducted that explain nursing students' CLE (3,8). But there are limited studies that focus on the CLE of ICU. Thus, this study aims to explore the clinical learning environment of ICU as perceived by undergraduate nursing students.

METHODS

A cross-sectional study was done in IIUM Kuantan where Undergraduate Nursing students were given a set of close-ended questionnaire that comprised of two parts: Part A consisted of socio-demographic data such as age, gender, year of study, and duration of clinical practicum in ICU; Part B was the Students Evaluation of Clinical Education Environment (SECEE) version 3 [9]. The internal consistency reliability of SECEE based on coefficient alpha was .94, with subscale alphas ranging from .82 to. 94. The instrument consists of 32 items with 3 subscales (instructor facilitation of learning (IFL), preceptor/staff nurse facilitation of learning (PFL), and learning opportunities (LO). A 5-point Likert Scale was used with a higher score indicates a more positive perception of the clinical learning environment. From a total of 32 items, 11 questions were related to subscale IFL and PFL and 10 questions related to LO. However, 2 items were not included in the scoring formula. Scores for each item within the subscale are added to obtain the subscale score. The overall total score for CLE of ICU was also calculated. The possible score range is as follows:

Figure 1: Score range of CLE

Subscale	Possible Score Range
IFL	11 – 55
PFL	10 – 50
LO	9 – 45
TOTAL SCORE	30 – 150

A total of 141 undergraduate nursing students who had ICU clinical experience from Kulliyyah of Nursing IIUM were purposively recruited for the survey (Year 3 and Year 4 nursing students following the Ethical approval from Kulliyyah of Nursing Postgraduate Research Committee (KNPGRC) and IIUM Research Committee (IREC). A pre-test was conducted to test the reliability and validity of the instrument (Cronbach's alpha 0.946).

Statistical Analysis

All quantitative data were analysed using the Statistical Package for Social Sciences (SPSS) 20 software. Descriptive analysis of socio-demographic data and CLE of ICU were carried out and presented in percentage, mean and standard deviation. The normality test showed that the data is normally distributed. Hence, parametric tests were used to run the statistical analysis Independent T-test, One Way ANOVA, and Pearson correlation were used to identify any association between socio-demographic characteristics and CLE of ICU.

RESULTS

Socio-demographic data

A total of 141 nursing students from Kulliyyah of Nursing IIUM, Kuantan participated in this study (response rate is 83%). 22 of them are male students (15.6%) and the rest 119 respondents were female students (84.4%). The participants comprise 38 nursing students of year 3 semester 2 (27.0%), 48 nursing students of year 4 semester 1 (34.0%), and 55 nursing students of year 4 semester 2 (39.0%). The sample's age was between 22 to 31 years old with a mean age of 23.38 (±0.986). The duration of clinical practicum in ICU ranging between 5 to 15 days with a mean of 9.16 (±2.924). The socio-demographic data of the respondents is shown in Table 1.

Table I: Socio-Demographic Data

Variables	N	%	Mean ± SD
Age			23.38 ± 0.986
Gender			
Male	22	15.6	
Female	119	84.4	
Year of study			
Year 3 Sem 2	38	27.0	
Year 4 Sem 1	48	34.0	
Year 4 Sem 2	55	39.0	
Duration of clinical practicum in ICU			9.16 ± 2.924

Clinical learning environment of ICU

The CLE of ICU was assessed within three subscales, namely instructor facilitation of learning (IFL), preceptor/staff nurse facilitation of learning (PFL), and learning opportunities (LO). The mean score for the subscale IFL is 46.44 out of 55 possible maximum scores, meanwhile, subscale PFL has a mean score of 37.82 out of 50 possible maximum scores, and subscale LO has a mean score of 34.87 out of a possible maximum score of 45. The mean score percentage was calculated to compare the score within the three subscales. Based on the mean score percentage, nursing students have the most positive perception for the subscale IFL with a mean score percentage of 84.44%, followed by subscale LO, 77.49%, and PFL, 75.64%. Overall, the total mean score for the clinical learning environment of ICU is 119.12 out of a possible maximum score of 150, with a total mean score percentage of 79.41%, indicating a positive perception as it is more than 50%.

Table II: Clinical learning environment of ICU

Subscale	Min	Max	Mean ±SD	Mean Percentage (%)
Instructor facilitation of learning (IFL)	22	55	46.44 ±5.92	84.44
Preceptor/staff nurse facilitation of learning (PFL)	16	50	37.82 ±6.56	75.64
Learning opportunities (LO).	18	45	34.87 ±4.87	77.49
Total CLE	60	150	119.12 ±15.37	79.41

Association between Socio-demographic characteristic and CLE of ICU

1. Gender and CLE

An Independent T-test was used to determine any significant mean difference between gender and CLE. The data shows that there is no significant mean difference between gender and subscale IFL and PFL. Meanwhile, there is a significant mean difference between gender and LO (p-value=0.008), where male nursing students gave a higher score for subscale LO compared to female nursing students.

Table III: Association between gender and CLE of ICU

Subscale	Mean ± SD		t-stat (df)	p-value
	Male (n=22)	Female (n=119)		
IFL	47.23 ± 6.488	46.29 ± 5.821	0.678 (139)	0.499
PFL	39.77 ± 7.355	37.45 ± 6.372	1.530 (139)	0.128
LO	37.36 ± 5.332	34.40 ± 4.655	2.678 (139)	0.008

p<0.05 as significant at 95% CI

2. Year of study and CLE

Next, a one-way ANOVA test was used to analyse any significant mean difference between the year of study and perception towards CLE of ICU. The test result is significant between subscale IFL and the year of study where the p-value is 0.002. The subsequent posthoc test suggests that the mean score of IFL is higher among Year 4 Sem 1 compared to the other two groups. The result was presented in Table IV.

Table IV: Association between Year of Study and CLE of ICU

	Mean ± SD			F-stat (df)	p-value
	Year 3 Sem 2 (n=38)	Year 4 Sem 1 (n=48)	Year 4 Sem 2 (n=55)		
IFL	44.82 ± 5.29	48.83 ± 6.44	45.47 ± 5.25	6.583 (140)	0.002
PFL	37.24 ± 5.304	37.98 ± 7.788	38.07 ± 6.262	0.203 (140)	0.817
LO	33.97 ± 4.39	35.75 ± 5.05	34.71 ± 4.97	1.469 (140)	0.234

p<0.05 as significant at 95% CI

3. Age, duration of clinical practicum in ICU and CLE

Based on the result from the Pearson correlation test performed, there is a minor and insignificant correlation between age and CLE where all p-value is more than 0.05. The test also reveals that there is no correlation between the duration of clinical practicum in ICU with the clinical learning environment as perceived by undergraduate nursing students.

Table V: Association between age, duration of clinical practicum in ICU and CLE of ICU

Variables	Subscale	r-value	p-value
Age	IFL	0.111	0.189
	PFL	0.103	0.225
	LO	0.023	0.789
Duration of Clinical Practicum in ICU	IFL	0.163	0.054
	PFL	-0.20	0.810
	LO	0.071	0.404

p<0.05 as significant at 95% CI

DISCUSSION

Socio-demographic characteristic

Out of 141 nursing students who participated in this study, there were more female students (n=119, 84.4%) compared to male students (n=22, 15.6%) and the age range between 22 to 31 years old. The duration of clinical practicum in ICU among participants in this study varies with a range of 5 to 15 days based on credit hours stipulated in the curriculum. Other studies stated the nursing students were sent to ICU for 2 days per week for 13 weeks, with a total of 26 days of clinical practicum in ICU 6) Douche. The finding from this study didn't show any significant difference between age, gender, and duration of the ICU clinical placement onto their response to the clinical learning environment. This is different from a study finding by Gemuhay and colleagues [10] that found a significant association between factors affecting clinical environment such as barriers to gender (chi-square 0.786, p=0.020). More male nursing students (62.1%) significantly reported an unsupportive environment as a barrier and anxiety was more common in female nursing students (48.9%) (p=0.020). Reporting of barriers to effective clinical learning by students from different schools of nursing was not significant (p=0.696). Besides, the age of participants did not have a significant association with effective clinical practice (p=0.606). Student factors and placement-based factors played an important role to influence clinical learning experiences.

Clinical Learning Environment of ICU

In this study, the mean score for three subscales in the CLE of ICU was analyzed and compared. The result shows that subscale instructor facilitation of learning (IFL) was the most positively perceived by nursing students compared to the other two subscales. However, this is contradicting with the previous study finding that found the students confirmed the ward manager's leadership style as the most significant influencing their perceptions. However, the nursing teacher's role had the lowest mean score, suggesting the need for its enhancement and clarification and indicating the need for better communication and collaboration between nursing schools and the clinical training hospital [11]. Overall, nursing students' perceptions towards the clinical learning environment of ICU in this study are positive with a total mean score percentage of 79.41%. The same result was found in a previous study conducted by Shalaby and Aljezani [12] that reveals the students have more positive than negative perceptions towards CLE of ICU with a total mean score percentage of 69.29%. Besides that, Truong (13) also shows in their study that the CLE of ICU was positively perceived by the nursing students with a total mean score percentage of 60%.

As mention before, the subscale instructor facilitation of learning (IFL) was more positively scored by the participants compared to the other two subscales. The clinical instructor has a significant role in the ICU because they provide encouragement, reassurance, and help students to find solutions for their concerns and issues [6]. Hence, their presence and availability in the setting are a key determinant towards a positive learning environment. In this study, 64 (45.4%) of the nursing students agreed and 63 (44.7%) students strongly agreed that their clinical instructor was available to answer and provide assistance during their clinical practicum in ICU. This shows that the clinical instructor was there when they needed assistance or to answer questions.

For subscale preceptor/staff nurse facilitation of learning (PFL), 76 (53.9%) of the respondents answered as agree to statements saying that their preceptor/staff nurse was available to answer questions, help with patient care and also provide guidance as they learned to perform new skills. Another study also found that ICU nurses did supervise the students adequately [1]. However, two previous studies reported some of the students' preceptor in ICU were too loaded with responsibilities of taking care of the patients that they often focused more on delivering care and left the students unattended [14,15] Because of this, the students' learning needs were not catered by the preceptor/staff nurses.

Additionally, that, 72 (51.1%) of the nursing students in this study agree that the equipment,

supplies, and material resources needed to provide patient care and teaching were available in this department (ICU). These study findings can be supported by a qualitative study finding done in Malawi. The study finding reveals that despite it is more challenging than classroom teaching and learning, there are adequate resources in the ICU as compared to other wards [1]. Availability of these resources is important as it allowed the students to apply theoretical knowledge and practice technical skills, as well as alleviating self-confidence in the practice of nursing in ICU [14]. The majority of students (n=71, 50.4%) in this study agreed that they were allowed to perform "hands-on care" at the level of their clinical abilities at the ICU. In a similar study finding, it was found that the student stated that were allowed to perform a certain procedure and also handle equipment such as mechanical ventilator and infusion pump [18]. However, from a previous qualitative study by Vatansever & Akansel [7] on the experience of nursing students during their clinical placements, found that are some student who expressed that their learning was hindered during practicing in ICU as they were not allowed to perform any procedure [7]. Nursing students' expressions related to ICU usually focus on their negative experiences although they reported that the ICU environment was useful for their learning at some points. Since lack of professional knowledge in caring for critically ill patients can cause negative feelings in beginning level nursing students the accuracy of assigning nursing students in highly stressed and complex areas such as ICUs should be discussed carefully both by nursing faculty and clinical staff.

Association between Socio-demographic characteristic and CLE of ICU

The findings of this study show that there is a significant difference between gender and subscale learning opportunities (LO). However, no significant difference was seen between gender and subscale IFL or subscale PFL. Based on the statistical findings, male nursing students gave a higher score (37.36 ±5.332) as compared to female nursing students (34.40 ±4.655) for subscale LO. This response may indicate that male students have a more positive perception of CLE for subscale learning opportunities than female students. This result is inconsistent with one previous study where they found no association between gender and clinical learning environment of ICU (11).

Additionally, One-way ANOVA test results showed that there is no significant mean difference between the year of study and subscale PFL and LO. But there is a significant mean difference between the year of study and subscale IFL with a p-value of 0.002. Year 4 semester 1 nursing students have a higher mean score for subscale IFL compared to the other two groups. This suggests that senior students have a more positive perception towards CLE (for subscale IFL) than the junior students. This result is in contrast with a previous study where they reported that the clinical learning environment of ICU decreases as the students progressed to a higher level of study [4]. This could be because they developed their confidence level as they became senior students. Meanwhile, one article stated that there is no association between the year of study and the clinical learning environment of ICU [11].

The findings of this study also suggested that there is no significant association between age and perception towards any subscale in the clinical learning environment of ICU. This is because the p -value is more than 0.05 and the null hypothesis is accepted. Thus, it can be concluded that the nursing students' age does not influence the perception of the clinical learning environment of ICU. This result is in line with previous papers that reported the same findings, which is there is no association between participants' age with the clinical learning environment of ICU.

Finally, there is no significant association between duration of clinical practice and perception towards clinical learning environment of ICU for any of the three-subscale tested in this study. From the result, there are negligible correlation between duration of the clinical practicum and subscale IFL (r = 0.16), subscale PFL (r = - 0.20) and LO (r = 0.07). This result is supported by one past study that showed that there is no association between the duration of clinical practicum and clinical learning environment (11). In contrast, one paper reported that students with longer clinical timeframe scored lower CLE compared to students with a shorter clinical timeframe [13]. In this study, the finding shows that students' perceptions were correlated negatively with the timeframe of clinical practice. The finding also consistent with the findings of studies where causal relationships between short duration of clinical practice and insufficient practice opportunities for students are reported [16; 17]. These studies identified that short clinical rotations limited the chance for students to learn by being exposed to the real 'world of work', and thus, reduced their learning opportunities. Considering these findings, students' perceptions are consistent with the literature in that they expressed a desire to practice longer in clinical sites because the learning opportunities they were provided with

were not sufficient for their learning needs. This suggests that the length of clinical rotation should be reconsidered to improve students' learning experiences.

LIMITATION

This study had been successfully conducted. However, some limitations may affect the overall findings in this study. First, the data was collected online due to global Covid-19 pandemic. This may affect the responds rate, as some of the targeted sample were not be able to be reached or were not able to answer questionnaire because of poor internet connection. Furthermore, going online creates problem to data collection as it may cause error during the process of answering or submitting answered questionnaires. Next, the students had to recall back on their past memory to answer the questionnaire regarding ICU. This is because, the students went for clinical practicum in ICU during their third year. Therefore, they had to rely on their memory to answer the questionnaire. This may have affected their perception towards clinical learning of ICU and the overall findings of the study.

CONCLUSION

In conclusion, overall, the study shows that undergraduate nursing students have a positive perception of the clinical learning environment of ICU. Between the three-subscale studies, the instructor facilitation of learning (IFL) was given the highest score, followed by learning opportunities (LO) and preceptor/staff nurse facilitation of learning (PFL). The implication and recommendation to nursing education are that to improve the PFL subscale, the nursing faculty should improve their facilitation and preceptorship skills and duration and work together with the hospital or ward management to assist the students during their clinical practice. For example, the role of nurses as a resource or mentor for students during clinical practicum must be clearly described. As for clinical nursing, the nurses have also required some improvement and acknowledgment on their role in assisting the learning process of students in the clinical setting. Besides that, formal training on clinical teaching, clinical and bedside supervision, educational theory, and communication can also be given to assist the nurses to prepare themselves as resources for the students and help to achieve students' clinical learning goals [14].

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