RESEARCH ARTICLE

Workplace learning: learning experiences of pre-clerkship students in their clinical learning environment at a medical university in UAE

Nooreen Adnan[1], Syeda Rubaba Azim[2], Farah Azhar[3], Lubna Ahmed[4], Pankaj Lamba[5]

Abstract

Objective: To explore how students in the pre-clerkship phase perceive the workplace clinical learning environment based on their experiential learning and social participation.

Method: The cross-sectional study was conducted at the Gulf Medical University, United Arab Emirates in June 2019 and comprised 2nd and 3rd year medical students. Data was collected using the undergraduate clinical education environment measure tool which is a valid and reliable instrument to measure clinical learning environment for undergraduate medical students.

Results: There were 858 students, and 70.3% of the students expressed satisfaction with clinical learning environment categories.

Conclusion: The average satisfaction level of the students regarding the quality of supervision was better than that of workplace environment and learning opportunities provided.

Keywords: Clinical learning environment, UCEEM, Medical students, Clinical workplace, Supervision quality, Learning opportunities, Feedback. (JPMA 72: 1794; 2022) **DOI: https://doi.org/10.47391/JPMA.6758**

Submission completion date: 26-05-2022 - **Acceptance date:** 20-04-2023

Introduction

Students' learning in a clinical placement is a central component of undergraduate medical education, and an educationally favourable clinical environment is essential to augment opportunities of learning for students. Medical students progressively move towards gaining practical knowledge in a clinical atmosphere, and clinicians and academicians regulate their learning processes. The allotted period of time for learners and their learning are usually compromised due to high service demands on the practitioners. Hence, efforts can be focussed on ensuring a better supervision quality and to enhance the opportunities for learning for the learners in order to academically improve the clinical learning environment (CLE) for them.[1] Clerkship is a transition of learners from an academic environment to a clinical environment as they progress to become medical graduates.[2] The progression from pre-clerkship to clerkship stage modifies the perceptions of students about their learning environment, and understanding these changes in their perception would help make relevant changes to facilitate their learning experiences. Students experience a rapid shift in their roles, responsibilities and learning environment while transitioning from a preclinical to clinical environment.[3] To facilitate students' entry into the clerkship phase and help them alleviate the apprehension associated with the change, various medical colleges have introduced multiple courses and training programmes into the pre-clerkship phase, which include transition-to-clerkship courses (TTCCs), clinical postings etc.[4] Workplace postings were introduced for the pre-clerkship students at the Gulf Medical University (GMU) in the United Arab Emirates (UAE) to help the students in making the transition to the clerkship phase.

The undergraduate medicine programme at the GMU is spread over six years, including a one-year internship. Workplace learning was lately made part of the curriculum for medical students in the second and third years of their studies, which is the pre-clerkship phase of the programme. The students are posted to the clinics daily in the morning shift in a characteristic five-day week at the hospital and undergo rotations in various departments. The pre-clerkship phase is followed by the clerkship phase in the fourth and final years of the undergraduate programme.

Work-based learning is widely known as learning in, through and for work, and consists of learning by performing daily tasks. Workplace learning is an amalgamation of discrete, structural, and communal processes that blend to produce an optimum learning environment. In other words, it is the application of learned knowledge at the workplace. This phenomenon is called as

[1,2]Dow Institute of Health Professionals Education, Dow University of Health Sciences, Karachi, Pakistan; [3]Department of Biomedical Sciences, College of Medicine, Gulf Medical University, Ajman, UAE; [4]College of Medicine, Ajman University, Ajman, UAE; [5]Department of Ophthalmology, College of Medicine, Gulf Medical University, Ajman, UAE.

Correspondence: Nooreen Adnan. e-mail: nooreen.adnan@duhs.edu.pk
ORCID ID. 0000-0002-7984-7284

contextualisation of knowledge.[5] Assessing an educational learning environment by identifying the strengths, limitations and its upgradation is essential to define the training quality. As workplace rotations have been newly embedded into the curriculum, there is a need to determine the perception of students about different aspects of their CLE and to obtain feedback to improve training quality and clinical performance.[6] There are many studies that have attempted to measure CLE in healthcare settings.[7] The current study was planned to explore how the pre-clerkship students perceived their CLE based on their experiential learning and social participation.

Subjects and Methods

The cross-sectional study was conducted at the Gulf Medical University, United Arab Emirates, in June 2019 and comprised 2nd and 3rd year medical students. Social and pedagogical aspects of the workplace environment, including interaction and participation, from the viewpoint of students was established quantitatively using the undergraduate clinical education environment measure (UCEEM) tool which is well-recognised as an authentic, effective, reliable and practical measure to assess the learning environment for undergraduate medical students.[8] A pilot study was conducted with a small group of students to ascertain whether they can steer easily through it.[9] The UCEEM tool incorporates aspects of educational environment linked with insights of invitational, organisational and pedagogical aspects of the workplace. Invitational aspect is shaped by the extent of experiential learning and comprises students' viewpoint of contribution in the activities of workplace and their collaborations with rest of the people. Organisational quality reflects the readiness of healthcare staff for student postings and access to space and other resources. Pedagogical quality represents student-centred supervision, self-directed workplace environments that promote students' independence to learn and taking ownership of their role.[10] The 25-item tool is scored on a Likert scale, varying from strongly disagree to strongly agree.[8] It consists of two central aspects: experiential learning and social participation It has further subdivisions: prospects of learning through work, supervision, readiness for student posting, and collaboration at workplace8. It may be utilised by medical educators to gather reference data for the purpose of evaluation and betterment of CLE for medical students in a limited time. UCEEM helps measure workplace environment and provides answers regarding learners' observation of the cognitive, social and emotional aspects of the workplace environment. It also helps establish a meaningful learning environment for medical students.[11]

Using an already established tool has the advantage of validity and reliability assurance.[12,13] However, the UCEEM tool was pilot-tested before data collection, as it was being used for the first time on the current sample and the understanding ability of the students for this tool could not be anticipated beforehand.[9] The number of items was reduced to 22 after pilot-testing. Some questions were restated for improved understanding, two statements were combined into one statement, and another two statements were removed due to repetition.

The sample was raised using non-probability purposive sampling technique, and those included were all medical students in the second and third years of their academic programme who had workplace postings.[13] Students who did not undergo workplace learning course before starting the clerkship phase were excluded. After approval for the institutional ethics review board, the sample size was computed by using OpenEpi calculator presuming a 50% positive outlook about workplace learning with an error margin of 3.5% and a confidence interval (CI) of 95%.[14] The formula used was:

Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)]

where N=size of population, P=proportion (or prevalence), D=margin of error margin, and

DEF=design effect (taken as "1").

The students were notified through an email, which included the consent form. They were then directed to the online link to the tool which was self-administered. They had a chance to edit their responses as well before submission. The privacy of the students was maintained by making their responses anonymous and not obtaining any name or registration number which could lead to their identification.[15]

Data was organized into different groups, namely, readiness of entry of students, workplace atmosphere, supervision, and prospects for learning. These subgroups were created so that an appropriate contrast of subdivisions could be done statistically.[16,17] Data was analysed using SPSS 23. Reliability was calculated by Cronbach's alpha. Data was expressed as frequencies and percentages or as mean and standard deviation, as appropriate. $P<0.05$ were taken as significant.

Results

There were 858 students. The response rate was 86% and 91% for second year and third year students, respectively. The experience of students related to the transition to a predominantly patient-centred learning environment differed from their expectations based on various factors,

Table-1: Students' response to the Undergraduate Clinical Education Environment Measure (UCEEM) tool (n=858).

Items	Mean±SD	Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)
Outcomes on Preparedness for student entry						
I received appropriate orientation to this course	3.9±1.21	41 (4.8)	85 (9.9)	129 (15)	191 (22.3)	412 (48)
The clinicians were expecting me when I arrived.	3.7±1.38	91 (10.6)	94 (11)	127 (14.8)	175 (20.4)	371 (43.2)
I had a clinician there whom I could ask for help	3.6±1.40	83 (9.7)	143 (16.7)	129 (15)	160 (18.6)	343(40)
It is clear that the clinicians are familiar with my learning objectives.	3.6±1.47	104 (12.1)	150 (17.5)	89 (10.4)	153 (17.8)	362 (42.2)
The supervisors were well prepared for supervising.	3.8±1.34	54 (6.3)	137 (16)	120 (14)	143 (16.7)	404 (47.1)
Outcomes on Workplace environment						
There was sufficient physical space in the doctor's clinic for the number of medical students on posting there	3.6±1.39	78 (9.1)	134 (15.6)	146 (17)	142 (16.6)	358 (41.7)
As a student I was received in a positive way by the staff there.	3.9±1.22	55 (6.4)	60 (7)	132 (15.4)	198 (23.1)	413(48.1)
I felt included in the medical team who work over here.	3.7±1.35	76 (8.9)	113 (13.2)	93 (10.8)	213 (24.8)	363(42.3)
Communication between the doctors, nurses and other staff is good working here is good	4.1±1.13	35 (4.1)	48 (5.6)	145 (16.9)	181 (21.1)	449(52.3)
Everyone is treated equally, regardless of gender and cultural background.	4.1±1.21	47 (5.5)	36 (4.2)	182 (21.2)	81 (9.4)	512(59.7)
Outcomes on Quality of Supervision						
I was supervised during my tasks	3.9±1.31	66(7.7)	87(10.1)	121(14.1)	168(19.6)	416(48.5)
I was comfortable to ask questions to my supervisor	4.0±1.26	57(6.6)	49(5.7)	192(22.4)	97(11.3)	463(54)
I received useful feedback from my supervisors	4.0±1.23	57(6.6)	41(4.8)	173(20.2)	145(16.9)	442(51.5)
Outcomes of Learning Opportunities						
My tasks are relevant to the learning objectives.	3.8±1.32	60 (7)	126 (14.7)	107 (12.5)	183 (21.3)	382(44.5)
I was fully occupied with meaningful tasks.	3.7±1.35	77 (9)	111 (12.9)	90 (10.5)	210 (24.5)	370(43.1)
My tasks were suitably challenging for my level of knowledge and skills	3.7±1.33	81 (9.4)	92 (10.7)	117 (13.6)	214 (24.9)	354(41.3)
I was exposed to adequate number of patients during my posting	3.7±1.31	53 (6.2)	148 (17.2)	99 (11.5)	205 (23.9)	353(41.1)
I was encouraged to participate actively by interacting with the patients there.	3.5±1.39	87 (10.1)	156 (18.2)	110 (12.8)	195 (22.7)	310(36.1)
My problem-solving skills are developing well in this posting	3.8±1.32	80 (9.3)	81 (9.4)	78 (9.1)	244 (28.4)	375(43.7)
I had the opportunity to put my theoretical knowledge into practice in this posting	4.0±1.38	99 (11.5)	42 (4.9)	95 (11.1)	141 (16.4)	481(56.1)
I had the opportunity to learn together with other medical students in this placement.	3.8±1.36	92 (10.7)	59 (6.9)	114 (13.3)	176 (20.5)	417(48.6)
The clinical environment had a positive influence on my learning process.	3.9±1.25	74 (8.6)	49 (5.7)	116 (13.5)	261 (30.4)	358(41.7)

SD: Standard deviation.

Table-2: Correlation analysis.

Categories		Preparedness for student entry	Workplace environment	Quality of Supervision
Preparedness for student entry	*r*-value	1		
	p-value	--		
Workplace environment	*r*-value	0.742	1	
	p-value	<0.01*	--	
Quality of Supervision	*r*-value	0.721	0.692	1
	p-value	<0.01*	<0.01*	--
Learning Opportunities	*r*-value	0.831	0.736	0.77
	p-value	<0.01*	<0.01*	<0.01*

*$p<0.05$ considered significant for correlation

and 70.3% of students considered readiness of students' entry, workplace atmosphere, and prospects for learning as suitable (Table 1).

The readiness for students' entry strongly correlated with learning opportunities (83.1%), workplace environment (74.2%) and quality of supervision (72%) ($p<0.05$). The workplace environment also positively correlated with prospects of learning (73.6%) and quality of supervision (69.2%), whereas there was 77% significant positive correlation between quality of supervision and learning opportunities ($p<0.05$) (Table 2).

Factors influencing CLE were noted, and, overall, the students were satisfied with their learning environment (Figure).

Discussion

The findings suggested that the insight of students differed greatly in transitioning to an experiential and clinical

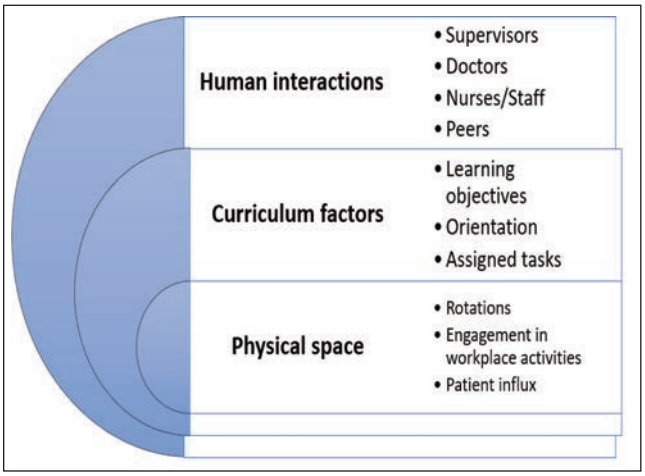

Figure: Factors affecting the clinical learning environment.[11]

environment. Hence, anxiety is very commonly observed in the students during this progress owing to various factors, like relatively newer surroundings, diverse expectations, self-directed learning style, and being ambiguous about their placement as well as teaching and assessment methodologies.[4]

The current results showed that 70.3% of the learners considered readiness of students' entry, workplace atmosphere, and prospects for learning as suitable (Table 1). Though, the physical space availability and the supervision quality were considered satisfactory by about 65% students, there was no significant variance from literature, which means such outcomes may be applied generally to undergraduate medical students across the world.[8,11]

The correlation among different subgroups in the current study is in line with literature.[4,12]

The current study tried to respond to the research objectives about students' perception on the readiness of entry of students, environment at the workplace, quality of supervision, and prospects for learning. Overall, the students were satisfied with their learning environment at the workplace (Figure).

The students viewed the clinical environment as student-friendly and the hospital staff was quite approachable and receptive. Despite the staff having a hospitable attitude, mostly the hospital staff were unaware of the students' placements and hardly had an idea about students' level of training and learning objectives. Therefore, the significance of suitable orientation for the hospital staff was stressed upon.

It has been advocated that it is essential to have proper orientations and training of the staff so that they are better prepared to welcome the new students for clinical placements.[9] Participation can be enhanced by encouraging the hospital staff towards the learning needs of the students, availability of physical facilities resources, and generating learning opportunities to provide support to the students.[18] Students' participation can be challenged by limiting the access of students to important patient data and information. Hence, it becomes evident that workplaces should be well-trained by involving students in workplace learning.[1]

Around 40% students in the current study were of the opinion that ample physical space facilities were present in the clinical posting places. The literature has also stressed upon the significance of the physical state of the clinical posting sites and the material dimensions, like physical space availability, as vital elements of constructive clinical learning environment.[10,19] The study revealed that a few students did not receive much encouragement to participate in the workplace and were not able to receive and could not get support from the hospital staff. As mentioned by an earlier study, participation in the workplace regulates the learning atmosphere and participation is well-supported in an appropriate workplace learning environment.[1] The connection between positive learning atmosphere and contribution at the workplace is greatly reinforced by various studies of undergraduate students at clinical workplaces.[2]

Many students in the current study were satisfied with the supervision quality in their clinical placements. The doctors were quite receptive and included the students in various case discussions and assisted them in identifying their learning gaps. Studies have also shown that regular feedback is very much appreciated by the students, and that an academically supportive learning atmosphere can be built by instilling constructive feedback practices before, during and after clinical rotation.[20] Also, improved supervision quality means helping learners identify their strengths and weaknesses, promoting reflective practice, and adopting multiple teaching strategies.[20] Clinical supervision quality can be measured effectively at regular intervals using valid and reliable instruments to obtain feedback from the students about their clinical supervisors.[20,21]

The current study has limitations. A qualitative approach would help to focus on some vital ways to additionally brace the learning environment for the students, and to provide richer quality of data.[6] Besides, the findings are restricted to just one group of stakeholders. To obtain a wider stance on CLE, clinical supervisors and curriculum designers should have been involved.

Despite the limitations, however, the study helped

determine CLE perception of pre-clerkship students. The average satisfaction level of the students regarding the quality of supervision was better than the workplace environment and learning opportunities provided.

The UCEEM used in the study tool has been meaningful in recent quality development activities of undergraduate clinical environment in Sweden, and is most likely to be an important and standard tool to compare and contrast observations of CLEs at different contextual levels.[11] Collaborative studies can also be carried out, including regional medical universities and institutions, and linked to obtain perceptions about CLE at various setups to improve the learning atmosphere for the students and ultimately the patient care.

The current findings can be applied by curriculum leaders and other stakeholders in the UAE and outside to improve the CLE for students. For instance, an appropriate orientation to the staff, including consultants, doctors and paramedics, for student entry would be very beneficial in reducing the anxiety and facilitating a smooth transition.[22]

Besides, providing the students with a welcome and introduction in the workplace would give them a sense of belonging and teamwork, which is important for an effective CLE.[23,24] Also, an awareness of the number of students posted and their learning outcomes may help make due arrangements for appropriate space and resources.[22] Finally, the UCEEM can be used as a baseline tool to compare the subsequent evaluations and follow-up on the steps that would be taken to improve the CLE.[11]

Conclusion

The feedback of the medical students was overall acceptable about the workplace learning atmosphere and the accessibility of the prospects for learning. They were received well at the workplace, participation in workplace responsibilities was encouraged, and the collaboration with the supervisors and healthcare staff was acceptable.

Acknowledgement: We are grateful to Prof. Manda Venkatramana for guidance and support.

Disclaimer: The text is based on an academic thesis.

Conflict of Interest: None.

Source of Funding: None.

References

1. Gallagher P, Carr L, Wang SH, Fudakowski Z. Simple truths from medical students: perspectives on the quality of clinical learning environments. Med Teach 2012; 34: e332-7.
2. Teunissen PW, Westerman M. Opportunity or threat: the ambiguity of the consequences of transitions in medical education. Med Educ 2011; 45: 51-9.
3. Dunham L, Dekhtyar M, Gruener G, CichoskiKelly E, Deitz J, Elliott D, et al. Medical student perceptions of the learning environment in medical school change as students transition to clinical training in undergraduate medical school. Teach Learn Med 2017; 29: 383-91.
4. Ryan MS, Feldman M, Bodamer C, Browning J, Brock E, Grossman C. Closing the gap between preclinical and clinical training: impact of a transition-to-clerkship course on medical students' clerkship performance. Acad Med 2020; 95: 221-5.
5. Evans K, Guile D, Harris J. Rethinking work-based learning: For education professionals and professionals who educate. The Sage handbook of workplace learning. 2011. [Online] [Cited 2023 May 20]. Available from: URL: https://sk.sagepub.com/reference/hdbk_workplacelearning/n11.xml
6. Duijn CC, Welink LS, Mandoki M, Ten Cate OT, Kremer WD, Bok HG. Am I ready for it? Students' perceptions of meaningful feedback on entrustable professional activities. Perspect Med Educ 2017; 6: 256-64.
7. Bari A, Khan RA, Rathore AW. Postgraduate residents' perception of the clinical learning environment; use of postgraduate hospital educational environment measure (PHEEM) in Pakistani context. J Pak Med Assoc 2018; 68: 417-22.
8. Strand P, Sjöborg K, Stalmeijer R, Wichmann-Hansen G, Jakobsson U, Edgren G. Development and psychometric evaluation of the undergraduate clinical education environment measure (UCEEM). Med Teach 2013; 35: 1014-26.
9. Findyartini A, Utami DB. Development of Clinical Learning Environment Measure in the Undergraduate Medical Program. Adv Sci Lett 2018; 24: 6097-108.
10. Dyar A, Lachmann H, Stenfors T, Kiessling A. The learning environment on a student ward: an observational study. Perspect Med Educ 2019; 8: 276-83.
11. Roberts R, Cleland J, Strand P, Johnston P. Medical students' views of clinical environments. Clin Teach 2018; 15: 325-30.
12. Hyde S, Hannigan A, Dornan T, McGrath D. Medical school clinical placements–the optimal method for assessing the clinical educational environment from a graduate entry perspective. BMC Med Educ 2018; 18: 7
13. Tim Swanwick, Kirsty Forrest, Bridget C. O'Brien. Understanding medical education. Understanding Medical Education: Evidence, Theory, and Practice. The Association for the Study of Medical Education (ASME); 2018, 1-6.
14. Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version: 3.01. [Online] 2013 [Cited 2023 May 20]. Available from: URL: https://www.openepi.com/Menu/OE_Menu.htm
15. Tavakol M, Sandars J. Quantitative and qualitative methods in medical education research: AMEE Guide No 90: Part II. Med Teach 2014; 36: 838-48.
16. Taherdoost H. How to design and create an effective survey/questionnaire; A step by step guide. International Journal of Academic Research Management 2016; 5: 37-41.
17. Jain S, Dubey S, Jain S. Designing and validation of questionnaire. Int Dent Med J Adv Res 2016; 2: 1-3.
18. Atherley AE, Hambleton IR, Unwin N, George C, Lashley PM, Taylor CG. Exploring the transition of undergraduate medical students into a clinical clerkship using organizational socialization theory. Perspect Med Educ 2016; 5: 78-87.

19. Gruppen LD, Irby DM, Durning SJ, Maggio LA. Conceptualizing learning environments in the health professions. Acad Med 2019; 94: 969-74.

20. Bearman M, Tai J, Kent F, Edouard V, Nestel D, Molloy E. What should we teach the teachers? Identifying the learning priorities of clinical supervisors. Adv Health Sci Educ Theory Pract 2018; 23: 29-41.

21. Attrill S, Dymmott A, Wray A. Clinical supervisor training: using critical incidents to identify learning outcomes. Clin Teach 2020; 17: 401-7.

22. Quinlivan L, Sookraj-Bahal S, Moody J, Levington A, Taylor C. Comprehensive orientation and socialisation. In Facilitating Learning in Practice. 1st ed. London: Routledge; 2019, pp. 6-17.

23. Gilbert J, Brown L. The clinical environment-do student nurses belong?: A review of Australian literature. Aust J Adv Nurs 2015; 33: 23-8.

24. Vivekananda-Schmidt P, Sandars J. Belongingness and its implications for undergraduate health professions education: a scoping review. Educ Prim Care 2018; 29: 268-75.