

<https://doi.org/10.22502/jlmc.v8i2.403>

Original Research Article

Perception of Educational Environment among Nursing Students of Different Colleges: A Cross-Sectional Study

Chandra Kumari Garbuja,^{a,c} Sunita Rana,^{a,c} Pratima Thapa,^{a,d} Mohan Singh Rana^{b,e}

ABSTRACT:

Introduction: Learners are key figures for whom the provision and perception of positive, progressive and encouraging interactive educational environment at any educational institution is very crucial. The study aimed to find the perception of nursing students of two different medical colleges regarding their educational environment. **Methods:** A cross-sectional descriptive study was conducted among 190 students through the use of internationally validated, non-culturally specific questionnaire. The responses were made on five points Likert scale scored from 0 to 4. The overall score was interpreted as very poor, plenty of problems, more positive than negative and excellent based on obtained score of 0-50, 51-100, 101-150 and 151-200 respectively. Descriptive statistics and one way analysis of variance test was used to analyze the collected data. **Results:** There were 98 (51.6%) participants from College of Medical Sciences and 92 (48.4%) from Lumbini Medical College and Teaching Hospital. The overall score of perception of educational environment were 142.13 ± 14.90 (74.64%) and 144.34 ± 15.59 (76.14%) in the two centers respectively which means more positive than negative perceptions. Only nature of accommodation was found statistically significant with students' perception of teachers ($p = 0.014$). **Conclusion:** Majority opined a more positive than negative perception towards educational environment. Good communication skills of teachers, knowledgeable teachers, teaching to develop their competence level were some positive perceptions. Whereas, teachers being authoritarian, focus on short term and factual learning, lack of support system were the areas which could be improved.

Key words: Educational Environment, Nursing Students, Perception

INTRODUCTION:

Learners are the key figures in any teaching learning process on whom desired modification in behaviors are expected. Learning environment had always been an integral part of human existence since the beginning. As Dewey and Child said, "*Organisms, selves, characters, minds, are so*

intimately connected with their environment that they can be understood only in relation to them", the understanding of associated factors to teaching-learning process is very important for effective enhancement of learning process.[1]

Learning is a complex, and demanding process which demands an ideal provision of academic environment, as well as a teacher equipped with virtues of sound knowledge, credibility, preparedness and effective communication skills.[2,3] Moreover, the horizon is not only limited within classroom but is beyond that which encompasses other factors like student-teacher relationship, teaching-learning strategies, physical facilities as well as address to

Submitted: 19 September, 2020

Accepted: 2 December, 2020

Published: 9 December, 2020

a- Lecturer, College of Nursing,

b- Program coordinator,

c- Lumbini Medical College and Teaching Hospital, Palpa, Nepal.

d- College of Medical Sciences, Bharatpur, Chitwan, Nepal.

e- United Mission Hospital, Palpa, Nepal.

Corresponding Author:

Chandra Kumari Garbuja

e-mail: : garbujachandra@gmail.com

ORCID: <https://orcid.org/0000-0002-6540-3391>

How to cite this article:

Garbuja CK, Rana S, Thapa P, Rana MS. Perception of Educational Environment among Nursing Students of Different Colleges: A Cross-Sectional Study. Journal of Lumbini Medical College. 2020;8(2):251-258. DOI: <https://doi.org/10.22502/jlmc.v8i2.403> Epub: 2020 December 9.



students' psychological and emotional needs to list some.[4] Various studies revealed that educational environment in terms of self-perception of self, self-perception of teachers, academic self-perception, self-perception of atmosphere and social perception are important to understand and have found that students' satisfaction is strongly linked with quality of educational program.[2,5,6,7,8,9,10]

Many studies were conducted to assess the perception of educational environment of students of other various academic fields. But, to our best knowledge, very limited studies have been conducted regarding perception of nursing students in context of Nepal. Thus, this study aimed to find the perception of nursing students of Lumbini Medical College and Teaching Hospital (LMCTH), Palpa and College of Medical Sciences (CMS), Chitwan regarding their educational environment.

METHODS:

A cross sectional descriptive study design was adopted to find the perception of educational learning environment of all academic years (1st, 2nd, 3rd and 4th) of Bachelor of Science in Nursing (B.Sc Nursing) students of two medical colleges affiliated to Kathmandu University- LMCTH, Palpa and CMS, Chitwan. Ethical clearance was obtained from the Institutional Research Committee of both institutions (IRC-LMC 05-G/020 and Ref number: 2020-072).

Required sample size was estimated using formula, $n = z^2 \sigma^2 / d^2$. Based on a study conducted by Imanipour et al.[11], where mean=2.09, standard deviation (σ)=0.49, absolute precision (d^2)=0.006 (4% of mean) and $Z_{5\%} = 1.96$, and adding 10% of non-response rate, the calculated sample size was 169. As, there were total 197 students in both colleges, total enumerative sampling method was applied. All B.Sc Nursing students of both colleges who gave voluntary consent to participate were included. Those who did not give voluntary consent or were absent during data collection period were excluded. The data was collected over a period of two weeks from 5th to 19th August 2020 via google form. Confidentiality and anonymity was maintained strictly.

Internationally validated, non-culturally specific inventory- Dundee Ready Education Environment Measure (DREEM) whose Cronbach's

alpha coefficient value was 0.86, was used for data collection.[2] The self-administered questionnaire consisted of two sections:

Section A: Socio-demographic characteristics: Age, ethnicity, residence (province), year of enrollment and nature of accommodation.

Section B: Items related to perception of learning environment based on DREEM.

DREEM consists of 50 items with five-point Likert scale where 0=Strongly Disagree, 1=Disagree, 2=Uncertain, 3=Agree and 4=Strongly agree. The items are categorized into five subscales as:

Student's Perception of Learning (SPL) - 12 items, Student's Perception of Teachers (SPT) - 11 items, Student's Academic Self Perception (SASP) - 8 items, Student's Perception of Atmosphere (SPA) - 12 items and Student's Social Self Perception (SSSP) - 7 items.

There are nine negative items (items 4,8,9,17,25,35,39,48 and 50) for which reverse scoring was done while entering the data. The maximum score obtained is 200 which is interpreted as: 0-50=very poor, 51-100= plenty of problems, 101-150= more positive than negative and 151-200= excellent. Regarding individual items, those with a mean score of ≥ 3.5 are regarded as especially strong areas, items with a mean score of ≤ 2.0 need particular attention and items with mean scores between 2 and 3 are areas of the educational environment that could be improved.[7,12]

The data collected was checked for completeness, coded and entered in Microsoft Excel 2007 and transformed in Statistical Package for Social Sciences (SPSS™) software version 16. Descriptive statistics- frequency, percentage, mean and standard deviation and inferential statistics- one-way analysis of variances (ANOVA) based on normality test was used to find statistical association between subscales of DREEM and selected demographic variables. The confidence interval was set at 95 % and the p value < 0.05 was considered as statistically significant.

RESULTS:

The total number of participants involved were 190 among which 98 (51.6%) were from CMS and 92(48.4%) from LMCTH making a response rate of 96.44%. The mean age of participants was

21.06±1.35 years. Majority (46.9% in CMS and 58.7% in LMCTH) of participants were Brahmin in both colleges. More than half (66.4% and 77.2%) of participants were from Bagmati in CMS and province 5 in LMCTH respectively. The details are depicted in Table 1.

Table 1. Demographic Characteristics of Participants

Variables		College	
		LMCTH (n=92)	CMS (n=98)
		N (%)	N (%)
Age, in years	≤ 19	9 (9.2)	11 (12.0)
	20-22	79 (80.6)	63 (68.4)
	>22	10 (10.2)	18 (19.6)
	Mean ± SD = 21.06 ± 1.35, range = 18-26 years		
Ethnicity	Brahmin	46 (46.9)	54 (58.7)
	Chhetri	19 (19.4)	13 (14.1)
	Janajati	29 (29.6)	22 (23.9)
	Dalit	3 (3.1)	3 (3.3)
	Muslim	1 (1.0)	0 (0)
Residence (province)	1	2 (2.0)	0 (0)
	2	2 (2.0)	3 (3.3)
	Bagmati	65 (66.4)	11 (12.0)
	Gandaki	14 (14.3)	3 (3.3)
	5	14 (14.3)	71 (77.2)
	Karnali	1 (1.0)	2 (2.1)
	Sudurpas-chim	0 (0)	2 (2.1)
Year of enrollment	1st	13 (13.2)	12 (13.0)
	2nd	27 (27.6)	24 (26.1)
	3rd	29 (29.6)	30 (32.6)
	4th	29 (29.6)	26 (28.3)
Nature of Accommodation	Hostel	24 (24.5)	43 (46.7)
	Own house	55 (56.1)	17 (18.5)
	Rent room	16 (16.3)	30 (32.6)
	Relatives' home	3 (3.1)	2 (2.2)

The overall score of perception of participants on educational environment of both colleges are more positive than negative with mean scores of 142.13±14.90 (74.64%) in CMS and 144.34±15.59 (76.14%) in LMCTH. Among the five subscales, participants of both colleges scored less in students' social self-perception with

mean percent of 58.27% in CMS and 73.29% in LMCTH respectively. Whereas, participants from CMS scored more (68.77%) in students' perception of learning subscale and participants from LMCTH scored 80.77% in students' academic self-perception which is presented in Table 2.

On analysis of individual items based on year of enrollment of both colleges, first year participants perceived teaching is less stimulating as they scored less (2.92±0.49) than other years. All the participants had scored more than 3.5 which mean that the teaching had helped to develop their confidence level. The participants of fourth year scored highest (2.09±1.06) in teaching being too teacher centered item. In items- teachers being authoritarian (2.16±1.28) and teachers get angry in class (2.56±1.15), participants of first year had scored highest. In learning empathy in nursing profession item, fourth year participants had scored more (3.41±0.65). The participants of second year scored less (1.92±1.10) in atmosphere being relaxed during ward teaching item. The details are listed in Table 3.

It was found that age and year of enrollment of participants had no significant difference in perception of educational environment and its subscale ($p>0.05$). Significant difference was found only between nature of accommodation and students' perception of teachers ($p=0.014$) as depicted in Table 4.

DISCUSSION:

The study was conducted with the aim to assess perception of educational environment among nursing students of two different colleges. The participants of both colleges responded a more positive than negative perception of their educational environment. This finding is similar to studies conducted among nursing students' of Nepal, Sri Lanka, India, Pakistan and Iran.[2,6,9,13,14] The finding of positive perception is also comparable with other studies conducted among other undergraduates. [3,8,15,16,17] In contrast to this, studies conducted in Egypt and Iran had negative perception.[18,19] Disparities in targeted population, and sample size, experiences and challenges faced by students over time could be some possible reasons.

Regarding the analysis of subscales of DREEM, the results had higher scores which mean

Table 2. Scores of Overall Perception of Educational Environment and its subscales using Dundee Ready Educational Environment Measure (DREEM) (N=190)

Characteristics	No. of Items	Obtainable Score	Mean \pm SD (Mean percent)		Interpretation
			CMS	LMCTH	
Student's Perception of Learning	12	0-48	34.91 \pm 3.95 (68.77%)	35.29 \pm 4.14 (77.76%)	More positive approach
Student's Perception of Teachers	11	0-44	30.36 \pm 4.53 (66.04%)	32.13 \pm 4.38 (76.18%)	Moving in the right direction
Students' Academic Self-Perception	8	0-32	23.73 \pm 3.86 (67.31%)	23.51 \pm 3.77 (80.77%)	Feeling more on the positive side
Students' Perception of Atmosphere	12	0-48	35.20 \pm 5.49 (65.58%)	34.58 \pm 5.20 (80.32%)	A more positive atmosphere
Students' Social Self-Perception	7	0-28	17.90 \pm 2.92 (58.27%)	18.82 \pm 3.50 (73.29%)	Not too bad
Overall Perception of Educational Environment	50	0-200	142.13 \pm 14.90 (74.64%)	144.34 \pm 15.59 (76.14%)	More positive than negative

Table 3. Mean scores of Individual items of DREEM(N=190).

SN	Domain Items	Year of Enrollment			
		1st	2nd	3rd	4th
A	Student's Perception of Learning				
1	I am encouraged to participate in teaching sessions.	3.12 \pm 0.83	3.15 \pm 0.60	3.34 \pm 0.63	3.31 \pm 0.57
2	The teaching is often stimulating.	2.92 \pm 0.49	3.12 \pm 0.73	3.07 \pm 0.69	3.02 \pm 0.56
3	The teaching is student centered.	2.96 \pm 0.67	2.85 \pm 0.63	3.12 \pm 0.85	2.98 \pm 0.85
4	The teaching helps to develop my competence.	3.52 \pm 0.58	3.50 \pm 0.78	3.54 \pm 0.67	3.59 \pm 0.59
5	The teaching is well focused.	3.28 \pm 0.61	3.06 \pm 0.75	3.20 \pm 0.73	3.30 \pm 0.66
6	The teaching helps to develop my confidence.	3.56 \pm 0.50	3.52 \pm 0.67	3.54 \pm 0.67	3.61 \pm 0.49
7	The teaching time is put to good use.	3.08 \pm 0.70	3.19 \pm 0.86	3.19 \pm 0.73	3.24 \pm 0.61
8	The teaching over-emphasizes factual learning.®	1.16 \pm 0.80	0.90 \pm 0.63	0.97 \pm 0.66	0.91 \pm 0.75
9	I am clear about the learning objectives of the course.	2.80 \pm 0.57	3.17 \pm 0.58	3.41 \pm 0.69	3.33 \pm 0.61
10	The teaching encourages me to be an active learner.	3.24 \pm 0.52	3.37 \pm 0.56	3.49 \pm 0.62	3.50 \pm 0.54
11	Long term learning is emphasized over short term learning.	2.84 \pm 0.64	2.77 \pm 0.61	3.07 \pm 0.76	2.74 \pm 0.85
12	The teaching is too teacher centered. ®	1.64 \pm 0.99	1.65 \pm 0.98	1.86 \pm 1.05	2.09 \pm 1.06
B	Student's Perception of Teachers				
13	The teachers are knowledgeable.	3.48 \pm 0.58	3.62 \pm 0.63	3.47 \pm 0.59	3.41 \pm 0.56
14	The teachers are patient with students.	3.08 \pm 0.64	2.77 \pm 0.89	2.97 \pm 0.71	2.57 \pm 0.86
15	The teachers ridicule the students. ®	2.88 \pm 1.09	2.73 \pm 1.14	2.61 \pm 1.24	2.41 \pm 1.01
16	The teachers are authoritarian. ®	2.16 \pm 1.28	1.83 \pm 1.06	1.71 \pm 1.06	1.93 \pm 1.04
17	The teachers have good communication skills with students.	3.32 \pm 0.62	3.33 \pm 0.70	3.27 \pm 0.63	3.20 \pm 0.68
18	The teachers are good at providing feedback to students.	3.04 \pm 0.67	3.48 \pm 0.72	3.32 \pm 0.68	3.35 \pm 0.78
19	The teachers provide constructive criticism here.	2.32 \pm 1.21	2.42 \pm 0.99	2.80 \pm 0.94	2.46 \pm 1.02
20	The teachers give clear examples.	3.24 \pm 0.52	3.48 \pm 0.54	3.19 \pm 0.65	3.26 \pm 0.62
21	The teachers get angry in class. ®	2.56 \pm 1.15	2.02 \pm 1.12	1.85 \pm 1.09	2.09 \pm 1.20
22	The teachers are well prepared for their classes.	3.44 \pm 0.58	3.63 \pm 0.59	3.34 \pm 0.54	3.37 \pm 0.56

23	The students irritate the teachers. ®	2.64±0.99	2.42±1.10	2.53±1.22	2.43±1.14
C Students' Academic Self-Perception					
24	Learning strategies which worked for me before continue to work for me now.	2.68±0.62	2.50±0.85	2.73±0.63	2.46±0.94
25	I am confident about my passing this year.	2.88±0.52	2.71±0.69	3.44±0.65	3.17±0.74
26	I feel I am being well prepared for my profession.	2.92±0.70	2.69±0.85	3.20±0.68	3.06±0.81
27	Last year's work has been a good preparation for this year's work.	2.40±0.70	2.52±0.93	3.05±0.72	2.87±0.72
28	I am able to memorize all I need.	2.60±0.57	2.12±0.85	2.64±0.82	2.67±0.80
29	I have learned a lot about empathy in my profession.	2.96±0.79	3.27±0.68	3.29±0.94	3.41±0.65
30	My problem solving skills are being well developed here.	3.08±0.49	3.08±0.58	3.24±0.75	3.26±0.52
31	Much of what I have to learn seems relevant to a career in healthcare.	3.04±0.45	3.13±0.59	3.37±0.61	3.31±0.54
D Students' Perception of Atmosphere					
32	The atmosphere is relaxed during the ward teaching.	2.40±0.91	1.92±1.10	2.53±0.89	2.11±1.00
33	This school is well timetabled.	3.08±0.49	3.29±0.63	3.36±0.80	3.04±0.75
34	Cheating is a problem in this school. ®	2.56±1.29	2.65±1.20	2.68±1.16	2.80±1.13
35	The atmosphere is relaxed during lectures.	2.80±0.76	3.04±0.71	3.07±0.76	2.78±0.88
36	There are opportunities for me to develop interpersonal skills.	3.04±0.45	3.15±0.72	3.36±0.71	3.26±0.62
37	I feel comfortable in class socially.	3.16±0.55	3.23±0.70	3.39±0.74	3.30±0.60
38	The atmosphere is relaxed during seminars/tutorials.	2.92±0.70	3.10±0.63	3.14±0.68	2.91±0.65
39	I find the experience disappointing. ®	2.60±0.86	2.33±1.09	2.66±1.01	2.72±0.99
40	I am able to concentrate well.	2.84±0.37	2.79±0.82	2.97±0.52	3.04±0.51
41	The enjoyment outweighs the stress of the course.	2.60±0.81	2.50±0.91	2.49±0.87	2.61±0.89
42	The atmosphere motivates as a learner.	2.92±0.70	3.10±0.63	3.08±0.67	3.09±0.68
43	I feel able to ask questions I want.	3.08±0.49	2.94±0.93	3.03±0.89	3.07±0.64
E Students' Social Self-Perception					
44	There is a good support system for students who get stressed.	2.80±0.57	2.46±1.30	2.58±1.22	2.65±0.80
45	I am too tired to enjoy the course. ®	2.28±1.13	2.13±0.99	2.58±0.96	2.46±0.98
46	I am rarely bored on this course.	1.72±1.02	1.63±0.99	1.98±1.23	2.00±1.11
47	I have good friends in this school.	3.16±0.74	3.12±0.80	3.46±0.59	3.54±0.60
48	My social life is good.	3.04±0.61	3.10±0.72	3.17±0.91	3.52±0.63
49	I seldom feel lonely.	1.92±1.25	1.79±1.27	2.22±1.11	2.11±1.11
50	My accommodation is pleasant.	2.76±0.66	2.60±0.97	3.05±0.70	3.11±0.53

*®- Reverse scoring

participants were directed towards more positive approaches of educational environment in both colleges. These positive findings in all subscales were similar with other studies as well.[2,5,13,20] But other studies showed only lower score in students' social self-perception subscale.[7,21] Lack of good support system, unfriendly social life and unpleasant nature of accommodation might be the possibilities.

According to Miles et al., individual items with mean scores of ≥ 3.5 are regarded as strong areas, 2 and 3 are the areas which could be improved and ≤ 2.0 requires particular attention. [12]The participants determined that teaching had helped them to develop their competence level as a strong area. This finding is inconsistent with the study conducted in Dharan, Nepal where none of the items had scored as such.[2] The items related

Table 4. Association of Perception of Educational Environment and its subscales with Nature of Accommodation of Participants(N=190).

Scales	Hostel	Own House	Rent room	Relatives' home	p-value
Student's Perception of Learning	35.68±3.52	34.37±4.50	35.43±3.99	34.60±3.20	0.250
Student's Perception of Teachers	31.73±4.53	30.25±4.29	32.39±4.59	27.60±3.84	0.014
Student's Academic Self-perception	23.88±3.76	23.86±3.46	22.86±4.35	23.80±4.26	0.499
Students' Perception of Atmosphere	35.16±4.81	34.63±4.44	35.02±7.22	34.20±5.35	0.932
Students' Social Self-perception	18.52±2.92	18.05±3.17	18.63±3.88	17.80±1.92	0.739
Overall Perception of Educational Environment	144.98±13.86	141.18±14.07	144.34±19.01	138.00±16.32	0.390

to teachers and teaching practices- teachers being knowledgeable and providing feedback to students, teaching time being put to good use, teaching being well focused, well prepared teachers for classes, good communication skills among teacher-students were the areas that had scored above 3. Whereas, school being well time-tabled, enhancement of problem-solving skills of students, learning seems relevant to career in healthcare, social comfort in classroom, having good friends in schools, good social life were the items that also showed in positive direction. And these findings were similar with other studies. [2,7,17]

The positive perception of educational environment of participants means that they have good teaching-learning process and fosters deeper learning outcomes.[22] But still, the present findings revealed some problematic areas in some individual items which requires major improvements or could be improved. All the participants opined that teaching over emphasizes in factual learning, teaching being too teacher centered, and teachers are authoritarian. These finding is similar with studies conducted among nursing students of Nepal and Pakistan.[2,9] Even participants from other disciplines of different countries had also marked the same mentioned items that required major improvements.[4,19,20,22,23] The other areas that could be improved are provision of constructive criticism, emphasis over long term learning, comfortable environment during ward teaching and provision of good support system when they are stressed. Other studies also support these areas that could be improved as their score range is in between 2 and 3.[2,4,7,11,22] Conclusively, staying away from home environment, difficulty to manage

theoretical and practical learning simultaneously could be the reasons so emphasis on the critical areas, provision of mentorships, personal and academic counseling sessions can be provided.

The study found significant association with only students' perception of teachers with nature of accommodation but not with other subscales and total scores of perception of educational environment which is consistent with the finding of study conducted by Salih et al.[15] Age of participants and year of enrollment had no impact on perception of educational environment in the current study. This is consistent with the study conducted by Urimubenshi et al.[24] But studies conducted in Dharan, Nepal and South Korea showed statistical relationship with year of enrollment.[2,4] The differences might be due to different study settings and sample size.

The study has highlighted the useful insights about the strong, weak and areas for improvement of effective educational environment for nursing undergraduates. Despite these, study has some limitations. Nature of the study design and also determination of impact of lockdown due to COVID-19 pandemic was not assessed, so the findings cannot be generalized.

CONCLUSION:

The perception of educational environment among nursing students of both colleges was directed towards positive direction rather than negative ones. The students opined positive perceptions towards learning environment, teachers, academic and social environment, but still some key factors like teachers being authoritarian, teacher centered teachings,

lack of support system, over emphasis on factual learning, focus on short term learning are to be noted and improved for effective learning outcomes.

Acknowledgement:

All the class coordinators of Lumbini Medical College and Teaching Hospital (LMCTH) and College of Medical Sciences (CMS).

Conflict of Interest: The authors declare that no competing interests exist.

Financial Disclosure: No funds were available for the study.

REFERENCES:

1. Indira S. Essentials of Education: Textbook for Nurses and Other Health Professionals. 5th Rev. ed. Jamal, Kathmandu: Hisi Offset Printers; 2012.
2. Shrestha E, Mehta RS, Mandal G, Chaudhary K, Pradhan N. Perception of the learning environment among the students in a nursing college in Eastern Nepal. BMC Medical Education. 2019;19(0):382. DOI: <https://doi.org/10.1186/s12909-019-1835-0>
3. Tripathy S, Dudani S. Students' perception of the learning environment in a new medical college by means of the DREEM inventory. International Journal of Research in Medical Sciences. 2013;1(4):385-91. Available from: <https://www.msjonline.org/index.php/ijrms/article/view/2632/2498>
4. Ahn YJ, Hu W. Evaluation of the Educational Environment at a Graduate Medical School in South Korea using the DREEM Questionnaire. MedEdPublish. 2019;8(2):41. DOI: <https://doi.org/10.15694/mep.2019.000111.1>
5. Farooq S, Rehman R, Hussain M, Dias JM. Comparison of undergraduate educational environment in medical and nursing program using the DREEM tool. Nurse Educ Today. 2018;69(0):74-80. PMID: 30015219. DOI: <https://doi.org/10.1016/j.nedt.2018.06.031>
6. Farajpour A, Raisolsadat SMA, S Moghadam S, Mostafavian Z. Perception of educational environment among undergraduate students of health disciplines in an Iranian university. Int J Med Educ. 2017;8(0):300-6. PMID: 28829330. DOI: <https://doi.org/10.5116/ijme.5977.7129>
7. Umber A, Khan S, Hussnaian MU, Ihsan S. Educational Environment at University Medical and Dental College, FSD. Annals of King Edward Medical University. 2011;17(3):292-8. DOI: <https://doi.org/10.21649/akemu.v17i3.552>
8. Prashanth GP, Ismail SK. The dundee ready education environment measure: A prospective comparative study of undergraduate medical students' and interns' perceptions in Oman. Sultan Qaboos Univ Med J. 2018;18(2):e173-81. PMID: 30210847. DOI: <https://doi.org/10.18295/squmj.2018.18.02.009>
9. Victor G, Ishtiaq M, Parveen S. Nursing students' perceptions of their educational environment in the bachelor's programs of the Shifa College of Nursing, Pakistan. J Educ Eval Health Prof. 2016;13(0):43. PMID: 28013314. DOI: <https://doi.org/10.3352/jeehp.2016.13.43>

10. Lechthaler F, Arigoni M, Khamidova M, Davlyatova D, Prytherch H, Wyss K. Assessing the effects of the nursing education reform on the educational environment in Tajikistan: a repeated cross-sectional analysis. *BMC Nursing*. 2020;19(0):11. DOI: <https://doi.org/10.1186/s12912-020-0405-4>
11. Imanipour M, Sadooghiasl A, Ghiyasvandian S, Haghani H. Evaluating the Educational Environment of a Nursing School by Using the DREEM Inventory. *Glob J Health Sci*. 2015;7(4):211-6. PMID: 25946923. DOI: <https://doi.org/10.5539/gjhs.v7n4p211>
12. Miles S, Swift L, Leinster SJ. The Dundee Ready Education Environment Measure (DREEM) : a review of its adoption and use. *Med Teach*. 2012;34(9):e620-34. PMID: 22471916. DOI: <https://doi.org/10.3109/0142159x.2012.668625>
13. Youhasan P, Sathaananthan T. Educational Environment for Undergraduate Medicine and Nursing Programme at Eastern University, Sri Lanka; Students' Perceptions. *OUSL J*. 2016;11(0):23-35. DOI: <http://doi.org/10.4038/ouslj.v11i0.7341>
14. Sunkad MA, Javali S, Shivapur Y, Wantamutte A. Health sciences students' perception of the educational environment of KLE University, India as measured with the Dundee Ready Educational Environment Measure (DREEM). *J Educ Eval Health Prof*. 2015;12:37. PMID: 26268829. DOI: <https://doi.org/10.3352/jeehp.2015.12.37>
15. Salih KMA, Idris MEA, Elfaki OA, Osman NMN, Nour SM, Elsiddig HA, et al. Measurement of the educational environment in MBBS teaching program, according to DREEM in College of Medicine, University of Bahri, Khartoum, Sudan. *Advances in Medical Education and Practice*. 2018;9:617-22. DOI: <https://doi.org/10.2147/AMEP.S160218>
16. Patil AA, Chaudhari VL. Students ' perception of the educational environment in medical college : a study based on DREEM questionnaire. *Korean J Med Educ*. 2016;28(3):281-8. PMID: 27363503. DOI: <https://doi.org/10.3946/kjme.2016.32>
17. Hongkan W, Arora R, Muenpa R, Chamnan P. Perception of educational environment among medical students in Thailand. *Int J Med Educ*. 2018;9(0):18-23. PMID: 29374764. DOI: <https://doi.org/10.5116/ijme.5a4a.1eda>
18. Sharkawy SA, El-Houfey AA, Hassan AK. Students ' Perception of Educational Environment in the Faculties of Nursing at Assiut, Sohag and South Valley Universities. *Assiut University Bulletin for Environment Research*. 2013;16(2):167-97. Available from: <https://www.researchgate.net/publication/276061302>
19. Andalib MM, Malekzadeh MM, Agharahimi Z, Daryabeigi M, Yaghmaei B, Ashrafi M, et al. Evaluation of Educational Environment for Medical Students of a Tertiary Pediatric Hospital in Tehran , Using DREEM Questionnaire. *Iran J Pediatr*. 2015;25(5):e2362. PMID: 26495091. DOI: <https://doi.org/10.5812/ijp.2362>
20. Riaz Q, Sadaf S, Talpur AH. Learning Environment: Students' Perceptions Using DREEM Inventory at an Optometry Institute in Pakistan. *The Journal of the Association of Schools and Colleges of Optometry*. 2016;42(1):1-8. Available from: <https://journal.opted.org/article/learning-environment-students-perceptions-using-dreem-inventory-at-an-optometry-institute-in-pakistan/>
21. Sengupta P, Sharma A, Das N. Perception of learning environment among undergraduate medical students in two different medical schools through DREEM and JHLES questionnaire. *J Clin Diagnostic Res*. 2017;11(2):JC01-JC04. PMID: 28384888. DOI: <https://doi.org/10.7860/jcdr/2017/23810.9248>
22. Irum S, Iqbal MZ, Naumeri F. Perception of Medical Students Regarding Educational Environment in a Public Sector Medical College: A Cross-Sectional Survey Using the Dundee Ready Education Environment Measure (DREEM) Questionnaire. *Annals of King Edward Medical University*. 2018;24(1):643-7. DOI: <https://doi.org/10.21649/akemu.v24i1.2340>
23. Bakhshialiabad H, Bakhshi G, Hashemi Z, Bakhshi A, Abazari F. Improving students' learning environment by DREEM: An educational experiment in an Iranian medical sciences university (2011-2016). *BMC Medical Education*. 2019;19(0):397. DOI: <https://doi.org/10.1186/s12909-019-1839-9>
24. Urimubenshi G, Songa J, Kandekwe F. Assessment of the educational environment of physiotherapy students at the University of Rwanda using the Dundee Ready Educational Environment Measure (DREEM). *African Journal of Health Professions Education*. 2017;9(3):103-6. DOI: <https://doi.org/10.7196/AJHPE.2017.v9i3.828>