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Educational Atmosphere during Preclinical Science Courses from the Perspective of Medical Students in Bushehr University of Medical Sciences

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Abstract

Background: Educational atmosphere is one of the influential factors in teaching and learning processes. This study aimed to investigate the educational atmosphere during the preclinical science courses from the perspective of medical students.

Materials and Methods: In this descriptive cross-sectional study, educational environment was evaluated using the Dundee Ready Educational Environment Measure (DREEM). Sampling was conducted via census and the study population included all medical students passing their basic courses in the faculty of medicine affiliated to Bushehr University of Medical Sciences in Bushehr, Iran. The measuring tool of educational environment of DREEM is a 50-item questionnaire on a five-item Likert type (0-4) in five domains (ranging from 0 to 200 points). Data were analyzed using SPSS software version 16.0.

Results: Ninety medical students participated in this study with a mean age of 25.18 $\pm$ 1.15. Of the participants, 53.3% were male and 91.1% were single. The results showed that, in general, medical students assessed the educational environment of the medical school as semi-favorable. The maximum scores of the dimensions of the educational environment belonged to the areas of social conditions, interaction with professors, and students' perception of learning, respectively. The lowest mean belonged to the educational atmosphere of the faculty. There was a significant relationship between gender, marital status, and age of the students and comments on the five areas of the educational environment ($P < 0.05$).

Conclusion: The students evaluated the educational environment of the faculty as semi-favorable and the lowest satisfaction score was related to the educational atmosphere of the faculty. Attitudes of female and single students towards the educational environment were more positive.

Key Words: Atmosphere, Learning, Medical students, Social conditions, Professors.

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1- INTRODUCTION

Improving the quality of higher education and the continuous advancement of educational and research processes in the universities of Iran is of vital importance. The evaluation of the teaching and learning process is one of the important activities in educational institutions because the training of skilled and competent teachers is dependent on this process. There are many factors involved in the teaching process, each with individual effects on learning. The most important of all, however, is the learning atmosphere. It is mostly affected by the implementation of curriculum, the teachers' attitudes toward learning, the behavioral and organizational culture of the educational institution, the students' view of the learning atmosphere, and their understanding of social conditions. The atmosphere governing education is a determinant of learning motivation because reinforcing positive behaviors in the learning process leads to better academic achievements. In fact, if learning is considered as the teacher-student interaction with a relatively stable behavior in the three areas of knowledge, attitude, and practical skills (1), then the student regulates motivation and learning by understanding the atmosphere. Educational institutions use different tools to evaluate their activities (2-5). One of the diagnostic tools in this field is the evaluation of the educational atmosphere and ambience. The World Federation for Medical Education (WFME) has emphasized the importance of the impact of educational atmosphere on learning, and has declared the educational atmosphere evaluation as one of the requirements for the development of medical education programs (6). Other global studies have referred to measuring the educational atmosphere as an important indicator in learning and have emphasized its evaluation (2-6). One of the most common models for the quantitative measurement of the educational atmosphere is the Dundee Ready Educational Atmosphere Measure (DREEM) model, introduced by Roff (1997) at Dundee University in Scotland (7, 8). On the other hand, the customer-oriented perspective with almost three decades of history has entered the fields of health, treatment, and also educational system. Today, the opinions of customers and service recipients are the basis for measuring executive processes and planning, and a way to empower service providers as well as demanders in making important decisions. In knowledge-based organizations, knowing the opinions of service recipients is a basic and vital management mechanism (9, 10). Considering the importance of knowing students' opinions in the context of higher education and the fundamental effect of students' satisfaction and opinions on the quality of educational systems (11), the present study aimed at investigating the educational atmosphere in the preclinical science courses from the perspective of medical students of Bushehr University of Medical Sciences.

2- MATERIALS AND METHODS

2-1. Study design and population

In this descriptive cross-sectional study, the educational atmosphere of the Faculty of Medicine of Bushehr University of Medical Sciences in Bushehr, Iran was examined using Dundee Ready Educational Atmosphere Measure (DREEM). The study population included medical students of Bushehr University of Medical Sciences and sampling was carried out by the census method.

2-2. Inclusion and exclusion criteria

All medical students who had successfully completed the basic sciences were included in the study. Guest students, students who did not want to participate in

the study, and incomplete questionnaires were excluded from the study.

2-3. Measuring tools

The questionnaire validity was confirmed by seven faculty members (two Health Education experts, one Medical Education expert, one Nursing expert, two Pediatrics specialists, and one Epidemiologist). A pilot study was performed on ten medical students to determine the questionnaire reliability, and the Cronbach's alpha coefficient of 0.78 was obtained. This questionnaire consisted of two parts and 50 questions scored based on a 5-point Likert scale. The first part consisted of the questions on demographic information, including gender, age, grade, and level of study. The second part consisted of items on the educational atmosphere.

In the DREEM questionnaire, the students answered questions about their views on the following five domains based on the 5-point Likert scale, ranging from strongly agree = 4 to strongly disagree = 0 with domains: students' perception of learning (SPoL; n = 12 questions with a maximum score of 48), students' perception of teachers (SpoT; n =11 questions with a maximum score of 44), students' academic self-perception (SASP; n=8 questions with a maximum score of 32), students' perception of atmosphere (SPoA; n =12 questions with a maximum score of 48), and students' social self-perception (SSP; n =7 questions with a maximum score of 28). Nine out of 50 questions (4, 8, 9, 17, 25, 35, 39, 48, and 50), containing negative statements, were reversely scored. Overall, a score of 200 indicated an optimal educational atmosphere based on this scale. Total scores of 0-50, 51-100, 101-150, and 151-200 indicated poor, moderate, good, and very good educational atmospheres, respectively (12).

2-4. Ethical consideration

The participants' personal information was extracted as a whole, and it was not compulsory to provide names and surnames. Participation in the study was optional, and the professors were assured that the information would be extracted in a general manner and their names would not be disclosed. Also, the study results were made available upon request.

2-5. Data Analysis

The collected data were analyzed with SPSS software ver. 16.0. The statistical tests included ANOVA with Tukey, a post-hoc test, and a t-test which compared the means of the variables at p-value<0.05. Descriptive statistics were also presented in the form of frequency distribution tables and statistical indicators (mean, standard deviation). Considering the different number of questions in each domain, the mean score of the domains did not clearly show their comparability. Therefore, it was possible to compare between different domains and at different levels of contextual variables by presenting the status of each domain in relative frequency. To this end, the researcher divided the mean score obtained in each domain by the maximum score that could be obtained in that domain to achieve a comparable statistic (percentage) regardless of the unit.

3- RESULTS

A total of 90 medical interns and apprentices who had successfully completed the preclinical science courses participated in the study. Their mean± SD age was 25.18 ± 1.15 years. A total of 53.3% of participants were male, and 91.1% were single. A total of 44.4% of the students had been admitted in 2016 (**Table.1**).

Table-1: General characteristics of medical students (n=90).

Variables	Sub-group	Number (%)
Gender	Male	48 (53.3)
	Female	42 (46.7)
Age, year	Mean± SD	25.18 ± 1.15
Marital status	Single	82 (91.1)
	Married	8 (8.9)
Year of University entrance	Forth year	8 (8.9)
	Fifth year	40 (44.4)
	Sixth year	30 (33.3)
	Seventh year	12 (13.3)

SD: Standard deviation.

Table-2: Percentage of students' response to SPoL, SpoT, SASP, SPoA, and SSP items.

Items	Totally agree	Agree	No comments	Disagree	Completely disagree
SPoL					
1	12.2	27.8	18.9	27.8	13.3
2	8.9	24.4	22.2	25.6	18.9
3	5.6	30	22.2	28.9	13.3
4	5.6	37.8	16.7	24.4	15.6
5	12.2	21.1	26.7	26.7	13.3
6	5.6	40	20	18.9	15.6
7	2.2	22.2	27.8	30	17.8
8	6.7	30	23.3	23.3	16.7
9	4.4	31.1	18.9	23.3	22.2
10	2.2	27.8	17.8	25.6	26.7
11	13.3	40	17.8	23.3	5.6
12	21.1	35.6	11.1	22.2	10
SpoT					
13	10	37.8	22.2	16.7	13.3
14	8.9	38.9	23.3	21.1	7.8
15	12.2	48.9	18.9	13.3	6.7
16	8.9	55.6	21.1	11.1	3.3
17	15.6	32.2	25.6	23.3	3.3
18	7.8	23.3	28.9	26.7	13.3
19	10	21.1	27.8	26.7	14.4
20	11.1	22.2	26.7	31.1	8.9
21	11.1	27.8	31.1	22.2	7.8
22	8.9	37.8	26.7	17.8	8.9
23	5.6	15.6	34.4	31.1	13.3
SASP					
24	4.5	31.5	25.8	28.1	10.1
25	10	26.7	21.1	23.3	18.9
26	10	22.2	20	25.6	22.2
27	10	20	23.3	26.7	20
28	7.8	27.8	27.8	16.7	20
29	16.7	34.4	23.3	16.7	8.9
30	12.2	25.6	31.1	18.9	12.2
31	7.8	36.7	22.2	23.3	10
SPoA					
32	10	43.3	17.8	11.1	17.8
33	11.1	35.6	23.3	20	10
34	8.9	34.4	28.9	15.6	12.2
35	10	33.3	24.4	23.3	8.9

36	10	30	23.3	20	16.7
37	13.3	27.8	14.4	25.6	18.9
38	8.9	31.1	25.6	13.3	21.1
39	8.9	32.2	25.6	16.7	16.7
40	7.8	36.7	21.1	14.4	20
41	7.8	27.8	18.9	22.2	23.3
42	8.9	26.7	15.6	35.6	13.3
43	7.8	21.1	32.2	26.7	12.2
SSP					
44	27.8	34.4	20	10	7.8
45	16.7	21.1	22.2	22.2	17.8
46	20	26.7	33.3	12.2	7.8
47	11.1	26.7	21.1	22.2	18.9
48	11.1	26.7	21.1	22.2	18.9
49	13.3	31.1	23.3	18.9	13.3
50	13.3	31.1	23.3	18.9	13.3

SPoL: Students' perception of learning, SpoT: Students' perception of teachers, SASP: Students' academic self-perception, SPoA: Students' perception of atmosphere, SSP: Students' social self-perception.

The maximum scores of the dimensions of the educational atmosphere (five domains), and the average and the percentage of scores are shown in **Table.3**. Comparison of the mean scores in each of the five domains by gender showed a significant relationship between SPoL and gender so that female students had more positive opinions (p=0.039) (**Table.4**).

Table-3: The mean scores of the dimensions of the educational atmosphere.

Dimensions of educational environment	Maximum item score	Mean ± SD	Relative frequency
Students' perception of learning	48	23.855±5.32	49.69
Students' perception of teachers	44	22.711±5.57	51.61
Students' academic self-perception	32	15.831±5.37	49.4
Students' perception of atmosphere	48	23.555±6.36	49.06
Students' social self-perception.	28	14.877±2.83	53.13
General learning environment	200	100.829±5.09	50.41

SD: Standard deviation.

Table-4: Comparison of the mean scores in each of the five domains of educational atmosphere by gender.

Variables		Sub-group, number	Mean	F	P-value*
Gender	Students' perception of learning	Male, 48	23.041 (5.75)	4.414	0.039
		Female, 42	24.785 (4.69)		
	Students' perception of teachers	Male, 48	22.020 (5.90)	1.198	0.277
		Female, 42	23.500 (5.13)		
	Students' academic self-perception	Male, 48	14.645 (5.30)	0.175	0.676
		Female, 42	17.219 (5.18)		
	Students' perception of atmosphere	Male, 48	22.958 (6.21)	0.180	0.672
		Female, 42	24.238 (6.55)		
	Students' social self-perception.	Male, 48	14.666 (2.88)	0.024	0.876
		Female, 42	15.119 (2.80)		

*independent samples t-test.

Comparison of the mean scores in each of the five domains by marital status showed a significant relationship between SSP and marital status so that single students had more positive opinions (p=0.039) (**Table.5**).

Comparison of the mean scores in each of the five domains by age showed a significant relationship between the SpoT domain and the age of students (p=0.006) (**Table.6**).

Table-5: Comparison of the mean scores in each of the five domains of educational atmosphere by marital status.

Variables		Sub-group	Mean	F	P-value*
Married status	Students' perception of learning	Single	23.902 (5.44)	1.271	0.263
		Married	23.375 (4.27)		
	Students' perception of teachers	Single	22.585 (5.67)	0.399	0.529
		Married	24.000 (4.59)		
	Students' academic self-perception	Single	15.629 (5.37)	0.002	0.967
		Married	17.875 (5.35)		
	Students' perception of atmosphere	Single	23.414 (6.43)	0.259	0.612
		Married	25.000 (5.80)		
	Students' social self-perception	Single	14.975 (2.92)	4.388	0.039
		Married	13.875 (1.45)		

*independent samples t-test.

Table-6: Comparison of the mean scores in each of the five domains of educational atmosphere by age.

Variables		Mean square	df	F	*P-value
Students' perception of learning	Between groups	329.265	6	2.072	0.65
	Within groups	2197.858	83		
	Total	2527.122	89		
Students' perception of teachers	Between groups	533.633	6	3.300	0.006
	Within groups	2236.856	83		
	Total	2770.489	89		
Students' academic self-perception	Between groups	93.977	6	0.524	0.789
	Within groups	2452.495	82		
	Total	2546.472	88		
Students' perception of atmosphere	Between groups	186.666	6	0.754	0.608
	Within groups	3423.556	83		
	Total	3610.222	89		
Students' social self-perception	Between groups	23.428	6	0.467	0.831
	Within groups	694.228	83		
	Total	717.656	89		

*One-way ANOVA test.

Comparison of the mean scores in each of the five domains by academic year showed no significant relationship between the five domains and the academic year (p>0.05) (**Table.7**).

Table-7: Comparison of the mean scores in each of the five domains of educational atmosphere by academic year.

Variables	Status	Mean square	df	F	*P-value
Students' perception of learning	Between groups	115.889	4	1.021	0.401
	Within groups	2411.234	85		
	Total	2527.122	89		
Students' perception of teachers	Between groups	21.423	4	0.166	0.955
	Within groups	2749.066	85		
	Total	2770.489	89		
Students' academic self-perception	Between groups	67.175	4	0.569	0.686
	Within groups	2479.297	84		
	Total	2546.472	88		
Students' perception of atmosphere	Between groups	310.453	4	1.999	0.102
	Within groups	3299.769	85		
	Total	3610.222	89		
Students' social self-perception	Between groups	72.498	4	2.388	0.057
	Within groups	645.157	85		
	Total	717.656	89		

*One-way ANOVA test.

4- DISCUSSION

The aim of the present study was to investigate the educational atmosphere during preclinical science courses from the perspective of medical students of Bushehr University of Medical Sciences in Iran. According to the results of the present study, students evaluated the overall educational atmosphere of the faculty as semi-favorable. This finding means that there is space for improvement in all five domains of the educational atmosphere. Findings also showed that the maximum scores of the educational atmosphere domains were related to the domains of SSP, SpoT, and SPoL, respectively. There was a significant relationship between students' gender, marital status, and age, according to students' comments on the five domains of the educational atmosphere ($p<0.05$). This is consistent with the studies by Al Hazmi et al., Mayya and Roff, and Nahar et al. (13-15). Al Hazmi et al. performed a study on students' perception of the educational atmosphere in the medical school at Abdul Aziz University of Saudi Arabia. They found an overall average of 102 (51%), which is consistent with the finding of the present study (15). In their study, Maya and Ruff showed that students rated all five domains of the educational atmosphere as moderate (14). Nahar et al. reported that the mean overall score of the educational atmosphere in Bangladesh was 110.44 (55%) (13). However, the findings of the present study were not consistent with all studies (16-19) and in some cases were lower. The results of the present study showed that the lowest and highest mean scores were related to the educational atmosphere and SSP, respectively, which is not consistent with the findings by Al Hazmi (15), and Al-Ayed (16). The study by Pierre et al. evaluated five domains of DREEM in Jamaica and reported a poor educational atmosphere (20). In a study in Jahrom, Iran, Managheb et al. showed that the educational atmosphere was poor and needed to be improved (21). It appears that in universities where modern teaching methods are used less frequently, students' attitudes toward the educational atmosphere are less positive. On the other hand, the use of student-centered educational methods and teacher-student interaction can be effective in improving the learning process (6). In the present study, students assigned the highest score

to the SSP domain, which indicates optimal social conditions. This finding is not consistent with the results of studies by Al-Ayed et al. (16), Nahar et al. (13), Bakhshi et al. (22), and Till et al. (23). In the present study, the educational atmosphere of the faculty was better from the viewpoint of female students, which is consistent with the study conducted in Rafsanjan University, Iran (21). Researchers working on the atmosphere of educational institutions in Canada distributed DREEM among 342 first, second, and third year students in one day to find out whether the students' perception of the ideal educational atmosphere can be used for planning and using resources. They asked students about how they would like their university to be or what they wanted. They found that the DREEM could show the difference between what was already available and what the students wanted to have (22). Despite the power of this instrument in evaluating the educational atmosphere, it seems unlikely that DREEM domains are independent of each other and, rather than measuring the atmosphere, it is a measurement of students' overall motivation and attitude (23). Addressing the indicators of quality in education can be effective in bringing positive changes and thus ensuring a more effective learning experience. Instruments such as DREEM can be valuable tools to improve and enhance the educational atmospheres. In addition to intrinsic motivation, factors such as social conditions, educational atmosphere and environment, and interaction with teachers should also be considered (24).

5- CONCLUSION

The results of the present study showed that in general, medical students evaluated the educational atmosphere of the medical school as semi-favorable. This finding means that there is room for improvement in all five domains of the education atmosphere. Findings also showed that, from among the domains of the educational atmosphere, the maximum scores belonged to social conditions, interaction with professors, and students' perception of learning, respectively. The lowest average belonged to educational atmosphere. There was a significant relationship between gender, marital status, and age of students and comments on the five domains of the educational atmosphere ($P<0.05$). That is, female, single, and younger students had more a positive evaluation of the educational atmosphere.

6- AUTHORS' CONTRIBUTIONS

Study conception or design: AY, ND, and NM; Data analyzing and draft manuscript preparation: ND, and NM, Critical revision of the paper: AY and NM, Supervision of the research: AY and ND; Final approval of the version to be published: AY, ND, and NM.

7- CONFLICT OF INTEREST: None.

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