

# Perceptions of Students and Clinical Instructors of Academic Learning Environments at Yazd University of Medical Sciences

Hamideh Montazeri<sup>1</sup>, Amin Beigzadeh<sup>1\*</sup>, Mostafa Shokoohi<sup>2</sup>, Azam Bazrafshan<sup>3</sup>, Maryam Esmaili<sup>4</sup>

<sup>1</sup>Medical Education Development Center, Kerman University of Medical Sciences, Kerman, Iran

<sup>2</sup>Research Center for Modeling in Health, Institute of Future Studies in Health, Kerman University of Medical Sciences, Kerman, Iran

<sup>3</sup>Scientometrics and Webometrics Research Center, Kerman University of Medical Sciences, Kerman, Iran

<sup>4</sup>Regional Knowledge Hub for HIV/AIDS, Kerman University of Medical Sciences, Kerman, Iran

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## ABSTRACT

**Introduction:** The purpose of this cross sectional study is to gain insight into the students and clinical instructors' perception of learning environments at Yazd medical University in 2012. Various aspects of environment are compared between courses, gender and age. Students and instructors' perspectives are reported. **Methods:** The sample consisted of 158 undergraduate students in their final year of graduation in the nursing, anesthesia, operating room, laboratory, radiology, midwifery courses and their 20 clinical instructors at Yazd University. Data were obtained using the Dundee Ready Education Environment Measure (DREEM). Scores were compared across grouping variables identified via demographic information. **Results:** Scores were fairly high for both students and clinical instructors (M=110.0; SD=21.2 and M=93.1; SD=10.3 respectively), indicating an overall positive perception of learning environments between both groups. The perception of atmosphere subscale (PA) received the highest mean grade by both groups. Total DREEM scores didn't vary significantly between courses ( $p>0.05$ ) but the results of ANOVA test showed significant differences only for perception of teaching and perception of atmosphere domains. There was not a significant association between females and males regarding total DREEM score ( $p>0.05$ ). **Conclusions:** The more positive than negative perception held by the Yazd University health science students and instructors is hopefully indicative of a favorable teaching-learning environment. Overall; teachers' attention to principles of educational design and setting a favorable environment to promote better learning is recommended.

## Introduction

Medical Universities and institutes apply different tools to evaluate their activities because each year thousands of students graduate from these bodies and many of these professionals are then employed as one of a number of health care disciplines. Among these activities, evaluation of teaching and learning is of paramount importance since as these students enter their respective professions, their level of competence is not only a reflection of the educational institution they attended; it is of the utmost importance to all their future patients and the broader community generally. Of all the prominent factors in the process of teaching and learning such as teachers, curriculum, resources, etc the most important one is the educational environment. Therefore, academic strengthening, curricula renewal and the evaluation of the quality and structure of health science

programs must be taken into consideration. After all, it has been suggested that a positive learning environment is a major determinant of motivation for learning and can lead to increased satisfaction, achievement and success of a practitioner post-graduation.<sup>1-3</sup>

In health science courses, fieldwork is a vital part of the education for health science students and is a professional requirement for course accreditation by most professional bodies.<sup>4,5</sup> Students are therefore exposed to different educational climates. These climates are considered as the soul and spirit of the curriculum which is commonplace for health science courses. But the learning environment has been defined as everything that is happening in the classroom, department and/or in the university and is said to be influenced by the curriculum. Indeed, the curriculum's most significant indication will be as the environment,

\*Corresponding authors: Amin Beigzadeh, Email: beigzadeh.amin@gmail.com

educational, and organizational, which embraces what is happening in the medical school.<sup>6</sup> Hence, the quality of educational climates is crucial for effective learning,<sup>7</sup> but there is a scarcity of empirical evidence about the way health science students perceive their course learning environments.

The Dundee Ready Education Environment Measure (DREEM) inventory is a widely used valid and reliable inventory<sup>8,9</sup> to assess the educational climate of medical schools.<sup>10</sup> It has been used to comparatively analyze the learning environment of different healthcare institutions,<sup>11</sup> students at different stages of their course,<sup>9,12</sup> schools at different stages of curriculum reform,<sup>13</sup> gender differences<sup>14,15</sup> as well as other variables; adding a greater depth of information for both the university and the broader health science training community.

Applying the DREEM to a range of Yazd health science students would be invaluable on a range of levels. Firstly it would provide an insightful snapshot of the way these students view their respective courses and enable the institution to address any key issues, just as several medical institutions have done previously.<sup>2,16-18</sup> This would have a positive impact on the training. Secondly, many of these findings may infer parallel trends for other Universities that run one or more similar courses. Alternatively, the findings from such a study might be a useful point of reference for future DREEM studies that involve health science students.

The aim of the study was therefore to evaluate the educational environments from perspectives of senior health science students and their clinical instructors using the DREEM inventory. A second aim of this study is to investigate whether the education environment or aspects of it are perceived more or less favorably for students and their instructors, regarding different health majors, gender and age.

## Methods

### Participants

A cross-sectional study was conducted. Participants included 178 individuals [158 students and 20 training instructors] that were all in the department of health science programs at Yazd University of medical sciences, Iran in 2012, whose courses consisted of traditional classes and clinical fieldwork. This comprised of students and training instructors from bachelor degrees in nursing, anesthesia, operating room, laboratory sciences, radiology and midwifery.

For sampling purposes all students in their final year of graduation were asked to complete the DREEM inventory as well as their training instructors. Inclusion criteria for students and instructors participants were, a) being

an instructor or a student at Yazd University in a health science program, b) able to provide and complete an informed consent to take part in the study.

### Instrument

The instrument was developed using a Delphi panel of faculty members from international medical schools/health professions. The DREEM is a 50-item self-report questionnaire to assess students' and teachers' perspectives of the educational environment within health professionals and medical schools.

DREEM Items are rated via 5-point Likert scale, where 4 = strongly agree and 0 = strongly disagree. Item scores count towards an overall environment score as well as one of five subscales or domains (abbreviations and maximum subscale scores are in parenthesis): Perceptions of Learning (PL, 48), Perceptions of Teaching (PT, 44), Academic Self-perception (AP, 32), Perception of Atmosphere (PA, 48) and Social Self-perception (SP, 28). The DREEM has a maximum score of 200, representing an ideal educational environment. As such, previous studies<sup>19</sup> have used the following as an approximate guide to interpreting the overall scores: 0-50 (0-25%) = very poor; 51-100 (25.1-50%) = plenty of problems; 101-150 (50.1-75%) = more positive than negative; 151-200 (75.1-100%) = excellent. The ranges shown in brackets allow mean scores to be displayed as a percentage of the maximum possible score.

On the other hand to assess teachers' perspectives of the educational environment 2 subscales or domains, [Academic Self-perception (AP) and Social Self-perception (SP)] were omitted. Therefore the modified DREEM inventory with 3 remaining domains (PL, PT and PA) was distributed among the training instructors in the fieldwork. In this regard, the overall DREEM score is out of 140. As such, previous studies<sup>20</sup> have used the following as an approximate guide to interpreting the overall scores: 0-35 = very poor; 36-70 = plenty of problems; 71-105 = more positive than negative; 106-140 = excellent.

A short demographic questionnaire was constructed to collect information such as the participants' gender, age and course as well.

### Procedures

Ethical clearance was obtained from Yazd ethics committee. Participants received a brief explanation of the objectives and were informed of the voluntary participation. The DREEM questionnaire was answered anonymously by both students and clinical instructors.

### Statistical analysis

All tests were conducted using SPSS version 16. Means and standard deviations were calculated for DREEM total and subscale scores for the entire sample. The T-test and Mann-Whitney tests were used to analyze differences in gender variable in both groups. For variables with more

than two categories one-way ANOVA test was used to compare all groups (Significant differences were reported as  $p < 0.05$ ).

**Results**

**Participants' demographics**

The study comprised 178 individuals [158 students (88.8%) and 20 training instructors (11.2%)] with a mean age of  $22 \pm 1.12$  and  $37.9 \pm 4.73$  respectively. The overall response rate was 87% in students and 100% in instructors. Table 1 shows the number and percentage of participants by gender and courses.

**DREEM scores for students and instructors**

The mean total DREEM score was 110 out of 200 for students (55% of the maximum score and standard deviation was 21.2) and 93.1 out of 140 for instructors (66.5% of the maximum score and standard deviation was 10.3). Comparing total mean scores of PL, PT and PA subsections in both groups, it was evident that instructors' scores were higher than students' scores. In this respect, grades of 32.2, 27.0, 33.9 and 25.4, 21.5, 27.5 were obtained for instructors and students respectively. But both groups identified perception of atmosphere as the domain with the highest mean score. The mean domain scores obtained by students and instructors are displayed in table 2.

**DREEM scores among health science courses**

Comparing health science students' total score, the mean total grade for Nursing students was  $111.1 \pm 21.3$  (55.5%), Anesthesia  $112.4 \pm 19.4$  (56.2%), Operating Room  $108.0 \pm 23.8$  (54%), Laboratory  $102.0 \pm 21.7$  (51%), Radiology  $111.1 \pm 14.9$  (55.5%) and Midwifery  $114.6 \pm 25.3$  (57.3%) Results of one-way ANOVA test didn't show any significant differences between pairs of courses ( $p > 0.05$ ). Total scores indicated that Laboratory and Midwifery students yielded significantly lower and higher total DREEM scores respectively.

Comparing the total score of each of the five subscales or domains from students' vantage point indicated that only perception of teaching (PT,  $P \leq 0.001$ ) and perception of atmosphere (PA,  $P = 0.001$ ) scores varied significantly between courses but PL, AP and SP scores didn't vary significantly between courses ( $p > 0.05$ ). Subscale means, standard deviations and significant differences for the entire sample as well as each course are displayed in table 2.

**DREEM scores by gender**

The overall mean score for female students was  $111.3/200 \pm 3.8$  (55.6%) and male students was  $107.0/200 \pm 23.7$  (53.5%) in students group. The result of independent sample T-test didn't show any significant differences between females and males ( $p > 0.05$ ). For female and

**Table 1.** Demographic information of participants

Students	N	%	Instructors	N	%
<b>Gender</b>					
Male	49	31	Male	12	60
Female	109	69	Female	8	40
<b>Course</b>					
Nursing	32	20.3	Nursing	5	25
Anesthesia	31	19.6	Anesthesia	3	15
Operating room	25	15.8	Operating room	4	20
Laboratory	24	15.2	Laboratory	3	15
Radiology	24	15.2	Radiology	3	15
Midwifery	22	13.9	Midwifery	2	10
<b>Total</b>	<b>158</b>	<b>100</b>	<b>Total</b>	<b>20</b>	<b>100</b>

**Table 2.** Mean (SD) subscale and total DREEM scores among disciplines

Perceptions	Nursing	Anesthesia	Operating Room	Laboratory	Radiology	Midwifery	All	P-value
PL	25.6(6.9)	27.2(5.5)	24.1(8.4)	23.6(6.6)	25.2(7.7)	26.9(7.7)	25.4(7.1)	0.404
PT	22.8(4.4)	23.4(3.0)	23.2(5.3)	18.1(6.6)	16.1(5.8)	24.3(6.5)	21.5(6.0)	<b>0.000</b>
AP	19.2(4.8)	19.3(4.6)	18.6(5.4)	19(5.1)	21.5(5.4)	21.9(6.3)	19.8(5.3)	0.159
PA	27.1(5.3)	26.3(6.4)	25.7(7.5)	28.1(4.2)	32.4(3.7)	25.5(7.5)	27.5(6.2)	<b>0.001</b>
SP	16.4(3.9)	16.2(4.1)	16.4(3.2)	13.2(5.1)	15.9(4.2)	16.0(3.2)	15.8(4.2)	0.057
<b>Total DREEM</b>	<b>111.1(21.3)</b>	<b>112.4(19.4)</b>	<b>108.0(23.8)</b>	<b>102(21.7)</b>	<b>111.1(14.9)</b>	<b>114.6(25.3)</b>	<b>110.0(21.2)</b>	0.395
N	32	31	25	24	24	22	158	-

PL, Perceptions of learning; PT, Perceptions of teaching; AP, Academic self-perception; PA, Perception of atmosphere; SP, Social self perception

**Table 3.** Mean (SD) subscale and total DREEM scores by gender

Perceptions	Groups	Female	Male	P-value
PL	Students	26(6.8)	24.4(7.8)	0.255 <sup>†</sup>
	Instructors	33.1(5.8)	31.6(4.9)	0.571 <sup>††</sup>
PT	Students	22.1(5.5)	20(6.7)	0.038 <sup>†</sup>
	Instructors	25.7(3.2)	28.0(5.7)	0.734 <sup>††</sup>
AP	Students	20(5.2)	19.4(5.5)	0.587 <sup>†</sup>
PA	Students	27.1(6.0)	28.2(6.6)	0.345 <sup>†</sup>
	Instructors	33.2(3.3)	34.3(5.3)	0.473 <sup>††</sup>
SP	Students	16.1(3.8)	15(4.9)	0.130 <sup>†</sup>
N	Students	109	49	-
	Instructors	8	12	-
Total DREEM	Students	<b>111.3(3.8)</b>	<b>107.0(23.7)</b>	0.273 <sup>†</sup>
	Instructors	<b>92.0(6.5)</b>	<b>93.9(12.4)</b>	0.678 <sup>††</sup>

PL, Perceptions of learning; PT, Perceptions of teaching; AP, Academic self-perception; PA, Perception of atmosphere; SP, Social self perception; † T-test, †† Mann-Whitney test

male instructors, total mean score was  $92.0/140 \pm 6.5$  (65.7%) and  $93.9/140 \pm 12.4$  (67%) for females and males respectively. The result of Mann-Whitney test didn't indicate any significant correlations ( $p > 0.05$ ). A summary of mean scale scores and indication of significant differences (if any) by gender is presented in table 3.

## Discussion

This study aimed to evaluate the education environment as perceived by students and clinical instructors of a range of health science courses at Yazd University of medical sciences. It also aimed to investigate whether the educational environment or aspects of it are perceived more or less favorably among students and instructors from different health professions, genders or ages.

### *Perception of academic learning environments for entire health science student and instructor group*

Total DREEM scores were high across the study, indicating that students' perceptions of classroom learning environments were quite positive across the health science courses. The mean of 110.0 (55%) fell well inside the range (101-150) said to indicate a "more positive than negative" perception of environment.<sup>18,19</sup> This was fairly consistent across the different aspects of the learning environments. As a percentage of the maximum possible score, mean scores ranged from 51% to 57% for each subscale. Admittedly, it should be conceded that the vast majority of past studies appear to have also yielded mean overall scores within this range, anything from 45% to 65% of the maximum score.<sup>11,17,19,21</sup> Besides; instructors' perceptions of classroom learning environment were seen as quiet positive too ( $93.1 [66.5\%]$ ) fell well inside the range 71-105). A few studies have yielded higher total DREEM scores than the present study for students,<sup>3,9,12,22</sup> and their instructors<sup>20</sup> which may reflect that these institutions are

fairly innovative in terms of providing a student-centered approach to education.<sup>9</sup> Indeed, main findings in this study of significantly higher-than-average overall scores on the DREEM inventory among students and instructors are encouraging and lend support to the idea that health science courses at Yazd University use innovative approaches to teaching and learning and are also student-centered. These are factors that are likely to have positive impact on the students' achievement, satisfaction and success.<sup>1,21,23</sup>

Comparing the data between students and instructors from PL, PT and PA domains showed that instructors gave higher scores to these domains than students which can be an indication of different perception of the learning environment. The reason for a higher mean score in perception of atmosphere domain received from instructors can lay in the prominent educational activities which are important to instructors and have a priority for them in comparison to other domains. Conversely; lower mean score in perception of teaching domain received from instructors can be assumed to the dissatisfaction of their roles in curriculum planning. It is clear that instructors' role in creating a favorable educational climate is of great concern which leads to students' motivation to achieve educational goals. This result aligns with the study conducted in Canada.<sup>24</sup>

### *Perception of academic learning environments by health science discipline*

The positive perception of the university learning environments was shared by students of all health science disciplines, indicated by total means ranging from 102.0 to 114.6. A few trends were also found between the different cohorts. Most notably, Anesthesia and Midwifery students appeared to view their learning environments a bit more favorable than other students, particularly in regard to their perception of the learning, teachers and academic self-perception. Radiology and Laboratory students also rated atmosphere as the domain with the highest scores,

conversely; they appeared to rate teaching and social self perception less favorably than did other student groups.

### **Perception of academic learning environments by gender**

Although female health science students indicated a more positive perception of their environment than did males but this was not statistically significant ( $P=.273$ ). This trend was the same for instructors ( $P=.678$ ). Overall, this trend was the same across all aspects of environment (PI, PT, AP, PA and SP).

The lack of any significant differences between female and male students suggests that perceived factors such as curriculum, structure, focus and goals are not different for females and males. Although on one hand, there is long-standing evidence that males and females typically exhibit different learning styles,<sup>25</sup> but on the other hand, a study, which investigated the perceptions of mainly applied science students, found that males and females perceived their courses in an almost identical way, which is consistent with the result of our study.<sup>26</sup> The same educational climate for females and males show that considering students' needs and paying attention to their problems outside the university premises should be thought as a motivator for establishing a favorable educational environment.<sup>27</sup> Overall; gender is not a determining factor in setting students' educational needs.

### **Conclusion**

This study suggested students in their final year of graduation in Yazd health science programs generally hold positive perceptions toward their course environment. This suggests a student-centered approach from the university and may lead to positive outcomes for the students. We suggest that our findings be further investigated by analysis of specific items and sub-cohorts in similar studies. Eventually, we explore a number of issues which are beneficial for having a favorable educational environment: try to hold special workshops at times to improve teaching and learning skills, provide constructive and effective feedback through faculty development programs, implement the educational design and place a greater emphasis on helping students in clinical placements.

### **Limitations and recommendations**

This research was conducted only on a small size of population. Therefore, research studies with much larger sample size would be required to ensure appropriate generalization of the findings of the study. In this study, individual items were not analyzed and qualitative data was not collected in order to more deeply address specific problems or highlight strengths within the university or particular courses.

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### **Competing interests**

The authors report no competing interests.

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