Nursing Students' Perceptions of their Educational Environment Based on DREEM Model in an Iranian University

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Abstract

Background: The learning climate has been found to be significant in determining students' academic achievement and learning. The purpose of this study was to measure the viewpoints of nursing students toward their learning environment at Rafsanjan University of Medical Sciences (RUMS).

Methods: This descriptive, cross-sectional study was performed on 202 nursing students using the Dundee Ready Educational Environment Measure (DREEM). The items, as well as scale scores were compared among nursing students. Also, data was analysed by SPSS19 using t test and ANOVA.

Results: The total mean DREEM score was 114.3 (SD 20.6) out of 200 (corresponding to 57.15% of the maximum score), which was considered as more positive than negative. The subscale with the highest mean score was Students' Perceptions of learning. Mean score of this subscale was 27.3/48 0 (SD 5.9) corresponding to 56.87% of the maximum score. The lowest mean score was for the Academic Self-perceptions 20.31/32 (SD 4.51) (53.44%), The total DREEM score for female students was significantly higher than for males (P = 0.01). The total scores of new entry students were significantly higher than the others (P = 0.01).

Conclusion: The school's educational climate was generally perceived positively by students, but specific areas identified by students as needing improvement. It is essential for managers to make a greater effort to create an appropriate educational environment in order to provide and maintain high quality learning environments for students.

Keywords: environment, education, Iran, nursing students, Psychometrics perceptions

Introduction

The quality of an educational environment is indicative of the effectiveness of an educational program on student learning, motivation, and learning outcomes (1,2). Nursing as a profession is currently compelled to address the challenges posed by globalisation, and to respond by forming international alliances that will facilitate knowledge sharing in order to improve human health (3,4). The foundation for improving the health and safety of patients starts with the competency of health care providers. The education of nurses is fundamental to these health initiatives (5).

Each year, hundreds of nurses graduate from Iranian universities, many of whom are then employed as nurses or in one of a number of other health care disciplines. In a nursing program, the main objective is to produce nursing graduates who can provide comprehensive care and treatment to the community. The critical components of a learning environment are not restricted to student-teacher communication and activities, but include appropriate physical structures and services which reflects curriculum quality, teaching and learning as well as support for student outcomes as practitioners (6–9).

Many universities use a cooperative approach to verifying students' needs by viewing them as the main stakeholders in their own education (1). Therefore, students' perceptions of the learning environment should examined (10,11). A systematic approach to designing a learning environment can lead to positive outcomes for graduates (12–14).

The importance of the educational environment for student learning has been widely acknowledged (15,16). The learning environment has its own impact on the behaviour of learners and a strong effect on their achievements, satisfaction, success and sense of well-being as well (16–19).

The Dundee Ready Education Environment Measure (DREEM) has been used to quantify information on various aspects of the learning environment in nursing and medical sciences schools (4–18). By 2005, the DREEM (9,10) was in use for studies across Europe, Asia, Africa, North America, South America, and the Middle East and has since been applied in many other countries (11–17). These studies have been effective in generating profiles of an institution's/ course's strengths and weaknesses, conducting a comparative analysis or benchmarking between other institutions, and predictors of student performance (10,19). Roff et al., administered the DREEM to Nigerian medical students and were able to identify their perceptions about the strengths and weaknesses of their medical school (20,21). Till (2004), administered the DREEM for Canadian chiropractic students and reported a significant decrease in overall means for students in each year (6). Pimparyon et al., implemented the DREEM for Thailand nursing students, and concluded that the students' perceptions of the learning environment influenced their selection of learning approaches, which correlated with their academic achievement (10). The mean DREEM scores "117" for Indonesian nursing students at Gadjah Mada University, Shenyang nursing school at China Medical University (mean = 132.48) and Kulliyyah of nursing at the International Islamic University of Malaysia (mean = 120.12) were positive rather than negative (13,20,9). The overall DREEM scores in four major wards in hospitals at the Iranian University of Medical Sciences were excellent (22). The DREEM global scores for medical schools in Sri Lanka, Nepal, Nigeria, Chili ,Kuwait, Jamaica, Yemen, Canada, India were reported as more positive than negative (4,6–20). However, DREEM score for Saudi Arabia (King Saudi University) and Iran (Hormozgan University of Medical Sciences) indicated numerous problems (19,8).

Assessment of the student perception of the educational environment at the college of nursing would assist educators and college administration personnel in gauging the quality of the learning occurring within this important area (22). Critically, we can both measure and change the educational climate. Although students' perceptions of their educational environment have been studied and reported around the world (9), (23–27) we are unaware of any reports on nursing students' assessment of their learning environments, either in Iran or at the Rafsanjan University of Medical Sciences (RUMS). Therefore, the purpose of this study was to measure the viewpoints of nursing students toward various aspects of their learning environment, which were compared based on age, gender, year of enrolment, marital status, and native and non-native status, using the DREEM. This model was used to detect problem areas that should be remediated and to foster learning environments that may enhance academic achievement at the Rafsanjan University of Medical Sciences. This would have a positive impact on their training and therefore the industry and service provided to the broader Iranian healthcare sector. Secondly, many of these findings may infer parallel trends for other Iranian or international institutions. Alternatively, the findings from such a study might be a useful point of reference for future DREEM studies that involve nursing and health science students.

Materials and Methods

This study was conducted using a descriptive survey design method. The study was approved by the Medical Education Development Centre (MEDC) and Research Council of the Medical Sciences University of Rafsanjan (RUMS), Iran. Ethics approval for our study was granted by the RUMS Standing Committee on Ethics in Research Involving Humans in June 2009. The participants were all students in four grades: freshman, senior, sophomore, junior students (n = 202). Only the students who had enrolled in the Rafsanjan nursing college could participate in this study. Participants received an explanatory statement detailing the study and were informed that all data collected would remain anonymous. Students who were guest students were excluded from the study. Also incomplete questionnaires or false information led to the drop out of 14 students.

The Dundee Ready Education Environment Measure (DREEM), in the Persian language with

an accepted validity and reliability was used to collect data (8,22) on the student's demographic characteristics including: gender, marital status, year of enrolment, native, and non-native status and age. The questionnaires were distributed to students towards the end of a lecture; a non-teaching member of staff facilitated the process and collected the completed surveys. The DREEM questionnaire consists of 50 items, each scored 0–4 on a 5–point Likert scale (4 = strongly agree, 3 = agree, 2 = unsure, 1 = disagree and 0 = strongly disagree). However, 9 of the 50 items (numbers 4, 8, 9, 17, 25, 35, 39, 48 and 50) were negative statements and should be scored in reverse manner. The base for the overall DREEM score is 200.

The DREEM can also be used to pinpoint more specific strengths and weaknesses within the education climate (20). To do this, it is necessary to examine responses to individual items. Items with a mean score of 3.5 or over are true positive points. Any item with a mean score of 2 or less should be examined more closely since this indicates a problem areas. Items with a mean of between 2 and 3 indicate aspects of the education climate that are receptive to enhancement. The questionnaire generates an overall "score" for the course. The statements may also be subdivided to provide an indication of student perceptions of five major domains of educational environment perception of learning (12 items/maximum score 48), perception of teacher (11 items/maximum score 44), academic self-perception (8 items/maximum score 32), perception of atmosphere (12 items/maximum score 48), and social self-perception (7 items/maximum score 28). Roff et al., also provided an approximate guide to interpret the subscale (20) as shown in Table 1.

Analysis of data was performed using computer software Statistical Package for the Social Sciences (SPSS v.16, SPSS Inc., Chicago, IL). Continuous variables were summarised as means and standard deviation (SD), and the independent t test, one-way analysis of variance (ANOVA) and post-hoc multiple comparison by Tukey method were also utilised. In this study, $P < 0.05$ was considered as statistically significant.

Results

A total of 202 nursing students completed the questionnaire, giving an overall response rate of 93.5%. In the demographic data of the respondents (Table 2) the highest percentage was related to the group aged 17–20 (50.5%). Their ages ranged from 17 to 29 years, with a mean age of 22.5 years (SD 4.5). Most of the respondents were single (79.2%) and female (55%).

The mean total DREEM score was found to be 114.3 (SD 20.6) out of a maximum of 200 corresponding to 57.15% of the maximum score (95% CI: 110–118). This represents a more positive than negative educational environment. Eight items had mean scores of less than two, with a usual of one to two items in each domain. These are the problem areas requiring investigation and possible intervention, for example a lack of a support system for stressed students, teacher-centered teaching, school time-tabling and memorisation of facts. The maximum mean score was 3.18 (item 1: I am encouraged to participate in class), and the lowest mean score was 1.6 (item 9: The teachers are authoritarian). There were no individual areas of excellence (that is, no item scored > 3.5). A total of 39 items had aspects of the learning environment climate that could be enhanced.

Students' perceptions of the five domains of DREEM did not have any significant difference. The mean score was 27.3/48 (SD 5.9) for students' perception of learning, 24.33 ± 5.9 for perception of teachers, 20.31 (SD 4.51) for academic self-perception, 26.78 (SD 5.6) for perception of atmosphere and 15.56 (SD 4.22) for social self-perception. Mean scale scores indicated that students rated all five dimensions of the educational environment in this institution as average.

Female students, when compared to male students, perceived the environment to be significantly more positive (P = 0.05) (Table 3), and DREEM scores of the two groups were significantly different for social self-perception, academic self-perception and the perception of learning subscales (P = 0.05).

Analyses of the data showed no significant differences between the mean scores of educational climate and domains in singles and married, native and non-native nursing students (P = 0.1). But there were significant differences between the mean scores of the whole DREEM domains , 'Perceptions of Learning 'Academic Self-Perception' 'Perceptions of Atmosphere' among freshman, senior, sophomore, and junior students (P = 0.01). Scores for the first and fourth year students were significantly higher than those for the other students (P = 0.01) and multiple comparison with Tukey test indicated that there were statistical differences between the first and third year students in perception of learning, academic self-perceptions, and total DREEM Score (P = 0.02) (Table 4).

Discussion

There has been growing interest and concern about the role of the learning environment for nursing education. Students were interested in completing the inventory, as evidenced by the good response rate (93.5 %). The overall mean DREEM score for our nursing school was found to be 114.3/200. According to the practical guide of McAleer and Roff (20), this indicated a positive

Table 1: The approximate guide to interpreting DREEM subscales scores (Roff et al., 2001)

Total score	Students' perception of teachers	Students' academic self-perceptions
0–50 Very poor	0–11 Abysmal	0–8 Feelings of total failure
51–100 Plenty of problems	12–22 In need of some retraining	9–16 Many negative aspects
101–150 More positive than negative	23–33 Moving in the right direction	17–24 Feeling more on the positive side
151–200 Excellent	34–44 Model teachers	25–32 Confident
Students' perception of learning	**Students' social self-perceptions**	**Students' perception of atmosphere**
0–12 Very Poor	0–7 Miserable	0–12 A terrible environment
13–24 Teaching is viewed negatively	8–14 Not a nice place	13–24 There are many issues which need changing
25–36 A more positive perception	15–21 Not too bad	25–36 A more positive atmosphere
37–48 Teaching highly thought of	22–28 Very good socially	37–48 A good feeling overall

Table 2: Demographic information of participants sampled from nursing school of Rafsanjan University of medical sciences

Parameter	n (%)
Gender	
Male	91 (45)
Female	111 (55)
Marital status	
Single	160 (79.2)
Married	42 (20.8)
Year of enrolment	
One	102 (34.2)
Two	72 (24.2)
Three	91 (30.5)
Four	33 (11.1)
Native & non native status	
Native	120 (59.4)
Non native	82 (40.6)
Age (Year)	
17–20	102 (50.5)
20–23	71 (35.2)
23–30	29 (14.3)
Total	100 (202)

rather than a negative educational environment, which is below the highest category of achievable scores. According to previous studies, students of innovative curricula tend to show more satisfaction with their educational environments, compared to students of the traditional curricula. The higher DREEM scores of these students tended to indicate more student-centered curricula, while those offered conventional curricula commonly scored less than 120 out of 200 (8,9,20,28). This was reflected in the mean total DREEM scores for schools in the Middle East such as (Hormozgan University of Medical Sciences in Iran and King Faisal University in Saudi Arabia, which offer traditional curricula, compared with the Arab Gulf University in Bahrain and United Arab Emirates University, which offer innovative curricula (9,28).

The DREEM overall scores for nursing schools in China was 132.48 (66%) (29). In medical schools located in Sri Lanka, Saudi Arabia, Chili, Kuwait, Sweden, Jamaica, Yemen, and India, the scores were reported as 108, 130, 102, 127.5, 105, 145, 102.8, and 100, respectively (21), (30–33). A large-scale study, involving medical students from both final and earlier undergraduate training years, showed a mean DREEM score of 118 for a Nigerian medical school and 129 for a Nepalese medical school (20). Interestingly, in the Dental School of Malaysia, the mean DREEM was reported as 121.5 (3), while among Trinidad medical students, this score was 109.9 (34,35). The results of a study at the International Medical University (Malaysia) showed a mean score of 129.3 (17). One of the largest samples (n = 968) reported an overall mean DREEM score of 128.80 for medical students in the UK (8). The mean DREEM scores reported for a medical school in India and Australia were 107.44 and 137, respectively (7). Also, among IUM Bachelor of Nursing respondents, the mean DREEM score was 120 (9), while among Indonesian nursing students it was 123.14 (13).

A few studies have confirmed higher total mean DREEM scores. In studies of a private Malaysian nursing college by Intan (36), and in

Table 3: Mean (SD) subscale and total DREEM scores of Rafsanjan nursing students by sex (n = 202)

DREEM SubscalZ	Male	Female	*P* value
Perception of learning (max = 48)	26.15 (6.03)	28.58 (5.60)	0.03
Perceptions of teachers (max = 44)	24.42 (5.46)	24.17 (6.35)	0.20
Academic self-perceptions (max = 38)	21.58 (4.12)	18.81 (5.15)	0.04
Perceptions of atmosphere (max = 48)	26.9 (5.59)	26.54 (5.73)	0.09
Social self-perceptions (max = 28)	14.84 (4.32)	16.03 (4.00)	0.05
Total DREEM Score (max = 200)	114.9 (20.18)	113.16 (21.45)	0.05

Table 4: Mean (SD) subscale and total DREEM scores of Rafsanjan nursing Students by year of enrolment (n = 202)

Year of Enrolment Subscale(Domains)	1 Mean (SD)	2 Mean (SD)	3 Mean (SD)	4 Mean (SD)	*P* value	Tukey < 0.05
Perception of learning (max = 48)	28.1 (5.9)	27 (4.5)	25.9 (6)	28.8 (6.8)	0.03	1,3
Perceptions of teachers (max = 44)	26 (5.3)	23 (5.6)	23.24 (5.6)	25 (6.3)	0.001	–
Academic self-perceptions (max = 38)	20.7 (3.6)	20.5 (4.2)	19.4 (5.5)	20.9 (3.8)	0.1	–
Perceptions of atmosphere (max = 48)	28.1 (5.5)	25.6 (5)	25.7 (6)	27.7 (4.8)	0.005	1,3
Social self-perceptions (max = 28)	15.6 (4)	15.6 (3.4)	15.3 (5)	15.5 (3.7)	0.9	–
Total DREEM Score (max = 200)	118.7 (17.2)	112.1 (17.6)	109.7 (24.9)	118.18 (20.3)	0.01	1,3

the Harbin Nursing School of China, high mean DREEM scores of 134.42 and 131.26, respectively, were reported (37). In a series of UK learning environment studies, Miles and Leinster (2007), recorded the highest mean DREEM scores of 142.91 (27) and 139 in educational hospital centers (United Kingdom) (21). In fact, it is clear that no learning environment is without weaknesses, since DREEM scores above 139 have not been observed in the literature to date. Our sample's mean perceptions indicated that from the student's viewpoint there was consistent need for improvement at their school in the aspects measured by the DREEM. This picture is similar to that of validated DREEM studies (16,21,22,28).

Statistically, there was a difference between genders in whole DREEM scores. Scores for perception of learning, academic, and social were most different by genders. Moreover, cultural variation were indicated in the results of studies in countries such as Australia (7), Sweden (38), and Nigeria (20) which varied from results from Middle East (21), Trinidad (34), and Sri lanka (31). In India (39) and Greece, no significant gender differences were reported (40). This suggests that the female students perceived factors such as curriculum, structure, focus, and goals more positively than their male counterparts. The extent that this trend, and indeed the trend among females to perceive their learning environments more favourably overall, can be generalised to other institutions is not clear. On one hand, there is long-standing evidence that males and females typically exhibit different learning styles (41). This could partly explain differences in the way of learning, and how educational environments were generally perceived in the present study.

Perceptions of learning, teacher, and atmosphere are different, depending on the year of enrolment. In the present study, the total DREEM score for freshman students was the highest score. Total mean DREEM scores of students in all grades (freshman, senior, sophomore, and junior students) were in the range of 109.7 to 118.8. The findings are in line with those of the Kulliyyah of Nursing, IIUM (9) and Hla et al., who noted a trend for reduced scores in senior students (41). It is suggested that this trend could be due to the fact that students genuinely believed that their learning environment was deteriorating, and thus were psychologically tired of being a student and looking forward to leaving student life. Initially, the perceptions of freshman students were high, and dissatisfaction may have crept in as the novelty of joining a nursing student body declined. The greatest difference between these two groups was in their perception of learning; senior students not only produced a mean rating 2.99 points higher than junior students, but also outscored freshman students by a significant margin. Perceptions of teachers and atmosphere were also significantly superior for sophomore students than junior students. Unlike studies performed by other researchers (6,7). This variation does not follow a consistent pattern from year to year. Further analysis of each course separately, and perhaps individual items, is required to help explain these differences.

According to McAleer and Roff (20), score descriptors in determining the level of improvement are necessary for each subscale. These descriptors for the subscale scores for the actual DREEM indicated that students' perception of learning was "positive", and their perceptions of the teachers were "moving in the right direction". Their academic self-perception was "feeling more on the positive side", their perception of the atmosphere was that "a more positive perception" and the students' social self-perception was "not too bad".

Conclusion

In conclusion, participants assessed the educational environment as average and positive. Regarding the students' perceptions of subscales, improvements are required across all five domains toward a high quality educational environment. As the learning environment affects student motivation and achievement, it is important to elicit feedback from students on their perception of the learning environment. Subsequently, a focus group discussion should be performed to explore at the nursing school of RUMS. The recommendations arising from this DREEM study at RUMS includes the need for the creation of a supportive environment, and designing and implementing interventions to remedy unsatisfactory elements for more effective teaching and learning.

Acknowledgement

Conflict of Interest

None.

Funds

Authors' Contributions

Conception and design, analysis and interpretation of the data, statistical expertise, administrative, technical or logistic support, collection and assembly of data: HB
Drafting of the article: FA, FB
Critical revision of the article for the important intellectual content: MB
Final approval of the article and provision of study materials or patient: HB, FA, MB

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