

## Undergraduate nursing students' perceptions of educational environment: a national study in Egypt

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### Abstract

**Background:** the quality of the educational environment is indicative of the effectiveness of an educational program.

**Objectives:** this study aims to describe the viewpoints of undergraduate nursing students on the EE and its variation with demographic and academic features of students.

**Methods:** A descriptive study was performed on 677 nursing students from three colleges of nursing. The Arabic version of Dundee Ready Education Environment Measure (DREEM) Inventory was used as a standard tool.

**Results:** the mean total DREEM score was 118.4, which is considered to be more positive than negative. The total mean scores for student perception of learning, teachers, academic self-perception and social self-perception were 28.9 (more positive perception), 28.0 (moving to the right direction), 21.2 (feeling more on the positive side) and 16.8 respectively. Port Said College has higher means scores than the other two colleges in total score. Participation in students' activities is associated with significantly higher mean total score. Students with pass/good grade in the previous years have higher score than those with excellent grade in total score, SPL, and SPA subscales.

**Conclusions:** DREEM score and its subscales other than SPA are favorable categories. The Subscale SPA needs more improvement.

**Keywords:** DREEM, Educational environment, Egypt, Nursing students.

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### I. Introduction

Educational environment (EE) refers to the diverse physical locations, contexts, and cultures in which students learn [1]. It includes perception of infrastructure of the campus, learning opportunities, teacher's skills and attitudes and their interaction with peers as well as many other factors [2]. Studies had shown that the EE affects students' achievement, happiness, motivation, and success. The quality of the EE is indicative of the effectiveness of an educational program. The EE subscales correlate positively with academic success and satisfaction [3],[4],[5],[6], and [7].

The students' perceptions of the EE can be a basis for implementing modifications and thus optimizing the EE. Meaningful learning impacts on students' learning experiences and outcomes. It influences how, why, and what students learn [8]. It can help in modifying the educational environment [9].

A supportive learning climate is a critical element of human resource development. Institutions of higher education should measure their educational quality in order to function efficiently and effectively in a highly competitive environment [10].

Nursing as a profession is currently compelled to address the challenges posed by globalization [11]. The accomplishment and contentment of nursing students depends upon their EE. Despite the recent increase in number of nursing colleges in Egypt, the literature review identified only two local studies about learning environment in Egyptian nursing colleges. The first is a small scale-study in Mansoura Faculty of Nursing [12]. The other study was done in three nursing faculties in South Egypt [13]. The current study aimed to assess students' perceptions of EE in the governmental Faculties of Nursing in Egypt using the DREEM questionnaire.

## II. Population and methods

This cross-sectional study was carried out in three colleges of Nursing in Egypt during the period from November and December 2016. The target population is nursing students enrolled in Egyptian nursing colleges. These colleges apply a traditional 4-year course: the first year is the preclinical stage and is devoted to basic nursing and medical sciences while the last three years represent the clinical stage during which students rotate to different clinical departments. The curriculum depends heavily on lectures and practical training in hospitals and the community. Most of activities are teacher centered which consists of information gathering and few open discussions. The learning task is to reproduce the subject matter in the final examination. The faculties provide academic and social support to their students as well as non-academic students' activities such as sports, social events, exhibitions and tourism.

Sample size was calculated using Epi Info 7 of the CDC (<http://www.cdc.gov/epiinfo>). The total number of students of the 3 colleges was 1965 students. A previous study [12] revealed that students reported that at least 10% of DREEM items have a mean score of  $<2$  i.e. with problem areas, with alpha error of 5%, study power of 80% and a design effect of two due to cluster sampling method, and then the sample size is 642. A 10% was added to compensate for defaulters thus the final sample size is 706 at least.

There are 14 Nursing Colleges in the Governmental Universities of Egypt. These are distributed as 8, 2 and 4 colleges in North, Middle and South Egypt; respectively. One college was randomly selected (by lottery) from each region. This sample was distributed proportionally between the three colleges (21.6% Port Said, 50% Beni Suif and 28.4% Aswan). Students were selected through the cluster sampling method. A cluster (round/section) was selected from each grade in Port Said and Beni Suif colleges. In Aswan two clusters were selected from each grade. The questionnaire was distributed to 708 students (response rate is 95.6%).

Data was collected using a self-administered questionnaire covering students' demographic and educational background as well as the Arabic version of Dundee Ready Education Environment Measure (DREEM) questionnaire translated and validated by Al-Ayed and Sheik (2008) [4] in Saudi Arabia. The DREEM contains 50 items relating to topics relevant to educational environment. Students were asked to respond to each item using a 5 point Likert-type scale. Items are scored: 4 for Strongly Agree (SA), 3 for Agree (A), 2 for Uncertain (U), 1 for Disagree (D) and 0 for Strongly Disagree (SD). However, 9 of the 50 items (numbers 4, 8, 9, 17, 25, 35, 39, 48 and 50) are negative statements and scored 0 for SA, 1 for A, 2 for U, 3 for D and 4 for SD. The DREEM has a maximum score of 200 indicating the ideal educational environment as perceived by the students. The score is interpreted as follows: 0-50 Very Poor, 51-100 Plenty of Problems, 101-150 More Positive than Negative and 151-200 Excellent. Item with a mean of less than 2 indicate problem areas [14].

The total DREEM score was regrouped to five subscales. These are: Students' Perceptions of Learning (SPL) (12 items/ maximum score 48), Students' Perceptions of Teachers (SPT) (11 items/ maximum score 44), Students' Academic Self-perceptions (SASP) (8 items/ maximum score 32), Students' Perceptions of Academic Atmosphere (SPA) (12 items/ maximum score 48) and Students' Social Self-perceptions (SSSP) (7 items/ maximum score 28). The interpretation of the subscales is shown in table 1 (McAleer and Roff, 2001).

Study protocol was approved by the Research Ethics Committees of the three colleges. Students' participation was voluntary after their oral consent. No staff was present in class during completing the questionnaire.

Data were analyzed using Statistical Package for the Social Sciences (SPSS) Version 16.0. Qualitative variables were presented as number and percentage. Quantitative variables were presented as mean  $\pm$  SD. Unpaired test was used for the two groups comparison. F test (ANOVA) was used for more than two groups comparison with Bonferroni post hoc multiple comparison.  $P \leq 0.05$  was considered statistically significant.

## III. Results

Age of students ranged from 18 to 24 with a mean of  $20.6 \pm 0.5$ . Table 1 shows that the mean total DREEM score was 118.4 and 69.9% of scores were in the category of more positive than negative. The mean scores of the subscales are 28.9 for SPL with 53.6% of more positive perception, 28.0 for SPT with 77.4% in the category of moving in the right direction, 21.2 for SASP with 53.8% feeling more on the positive side, 23.6 for SPA with 53.8% of many issues need changes and 16.8 for SSSP with 62.0% not too bad category.

Table 2 reveals that the mean scores of the total scale and its 5 subscales do not vary with student's sex and educational year. Port Said College has higher mean scores than the Beni-Suif and Aswan Colleges in total score, SPL, SPA and SSSP. Participation in students' activities is associated with significantly higher mean total score and SPL, SPT, SPA and SSSP subscales. Students with pass/good grade in the previous years have higher score than those with excellent grade in total scale, SPL, and SPA subscales.

The number of items with score less than 50% (i.e.  $<2$  points) was 2, 2, none, 7 and 2 in the SPL, SPT, SASP, SPA and SSSP subscales; respectively (table 3).

**Table 1:** Mean scores and categories of DREEM and its subscales and their interpretation

	Score Mean±SD	Categories*	
		Interpretation	N(%)
Total score of DREEM	118.4±25.2	Very poor (0-50) Significant problem (51-100) More positive than negative (101-150) Excellent (151-200)	8(1.2) 131(19.4) 471(69.6) 67(9.9)
Students' Perception of Learning (SPL)	28.9±7.96	Very poor (0-12) Negatively viewed teaching (13-25) A more positive perception (25-37) Teaching highly regarded (37-49)	18(2.7) 189(27.9) 363(53.6) 107(15.6)
Students' Perception of Teachers (SPT)	28.0±5.0	Very poor (0-11) Needs re-education (12-22) Moving in the right direction (23-33) Model instruction (34-44)	3(0.4) 67(9.9) 524(77.4) 83(12.3)
Students' Academic Self-Perception (SASP)	21.2±5.1	Feeling of total failure (0-8) Many negative aspects (9-16) Feeling more on the positive side (17-24) Confident (25-32)	12(1.8) 108(16.0) 364(53.8) 193(28.5)
Students' Perception of Atmosphere (SPA)	23.6±8.2	Very poor environment (0-12) Many issues need changes (13-24) A more positive attitude (25-36) A good overall feeling (37-48)	48(7.1) 364(53.8) 210(31.0) 55(8.1)
Students' Social Self-Perception (SSSP)	16.8±4.3	Miserable (0-7) Not a nice place (8-14) Not too bad (15-21) Very good socially (22-28)	12(1.8) 159(23.5) 420(62.0) 86(12.7)

\*McAleer and Roff, 2001.

**Table 2:** Variation of DREEM scores and its subscales according to different factors

	Total students	DREEM Mean±SD	SPL Mean±SD	SPT Mean±SD	SASP Mean±SD	SPA Mean±SD	SSSP Mean±SD
Sex: Male	207	118.5±25.5	28.7±8.2	28.4±4.9	21.6±4.8	23.1±8.4	16.8±4.4
Female	470	118.4±25.1	28.9±7.9	27.9±5.1	21.0±5.3	23.8±8.1	16.7±4.2
P		0.9	0.7	0.4	0.2	0.3	0.75
Students' activities:							
Yes	389	121.4±25.3	29.8±7.7	28.4±5.1	21.4±5.1	24.4±8.4	17.1±4.5
No	288	114.6±24.6	27.6±8.1	27.4±4.8	20.9±5.3	22.4±7.9	16.3±4.0
P		0.001	≤0.001	0.008	0.2	0.001	0.009
University:							
Port Said	150	130.6±29.3 <sup>A</sup>	32.8±8.1 <sup>A,B</sup>	28.8±6.5	22.0±5.5	28.9±8.5 <sup>A,B</sup>	18.1±4.9 <sup>A</sup>
BeniSuif	330	114.7±23.3 <sup>A</sup>	27.6±7.7 <sup>A</sup>	27.8±4.6	21.0±5.1	22.0±7.5 <sup>A</sup>	16.3±4.0 <sup>A</sup>
Aswan	197	115.3±21.9 <sup>B</sup>	28.0±7.3 <sup>B</sup>	27.7±4.3	21.0±5.0	22.1±7.4 <sup>B</sup>	16.5±3.9 <sup>B</sup>
P		≤0.001	≤0.001	0.12	0.09	≤0.001	≤0.001
Enrolment year:							
1 <sup>st</sup>	122	117.0±24.4	28.7±6.9	27.9±5.0	20.8±5.0	22.5±8.1	17.1±4.1
2 <sup>nd</sup>	188	119.9±23.8	29.5±7.8	28.3±4.8	21.3±5.7	24.3±7.4	16.4±3.8
3 <sup>rd</sup>	175	119.1±24.4	29.4±7.6	28.1±4.8	21.7±4.7	23.5±8.7	16.5±4.3
4 <sup>th</sup>	192	117.2±27.7	27.8±5.4	27.8±5.4	20.9±5.1	23.6±8.9	17.1±4.7
P		0.7	0.16	0.8	0.4	0.3	0.2
Last grade*							
Pass/good <sup>#</sup>	121	123.2±25.1 <sup>B</sup>	30.4±8.1 <sup>B</sup>	27.7±5.5	22.1±4.7	25.9±8.2 <sup>A</sup>	17.1±3.4
Very good	269	118.5±26.5	28.8±8.0	28.0±5.2	21.2±5.4	24.0±8.8 <sup>B</sup>	16.5±4.7
Excellent	165	115.8±23.3 <sup>B</sup>	27.9±8.4 <sup>B</sup>	28.3±4.3	20.9±5.2	22.0±6.8 <sup>A,B</sup>	16.7±3.9
P		0.052	0.035	0.6	0.13	≤0.001	0.4

\*1<sup>st</sup> year students were excluded # Pass (6 students)

A,B significant between the corresponding groups by Bonferroni post hoc multiple comparison

**Table 3:** Items with scores less than 50% (< 2 points) in different subscales of DREEM

Subscale Items	Number of items	Mean
<b>Students' Perception of Learning (SPL)</b>	2	
The teaching time is put to good use		1.86
The teaching is over emphasized compared with factual learning		1.79
<b>Students' Perception of Teacher (SPT)</b>	2	
The teachers ridicule the student		1.62
The teacher are authoritarians		1.8

<b>Students' Academic Self-Perception (SASP)</b>	0	
<b>Students' Perception of Atmosphere (SPA)</b>	7	
The atmosphere is relaxed during the practical class		1.95
This school is well time-tabled		1.24
The atmosphere is relaxed during the lectures		1.57
I find the experience disappointing		1.83
The enjoyment outweighs the stress of the program		1.77
The atmosphere motivates me as a learner		1.96
I feel able to ask the questions I want		1.52
<b>Students' Social Self-Perception (SSSP)</b>	2	
There is a good support system for students who get stressed		1.55
I am rarely bored on this course		1.79

#### IV. Discussion

Providing quality education is a priority for the most of the countries [15]. Nursing education is expensive and academic failure is wasteful to society and the individual, especially with the shortage of qualified nurses in Egypt. A good approach to the systematic design of a learning environment can lead to positive outcomes for graduates [16], [17]. Consequently, it has to be ensured that the EE is as conducive as possible to learn, thus reducing the risk of academic underachievement. This national study provides an analysis of the strengths and weaknesses of the EE of the faculties of nursing using the DREEM questionnaire.

The mean total DREEM score was 118.4 and 69.9% of scores were in the category of more positive than negative. This means that the academic learning environment can still be improved to benefit the students. This is better than previous findings in Egypt. A mean 110.3 was reported by Abusaad et al, (2015) [8] and a much lower mean of 43.5 was reported by Sharkawy et al, (2013) [13]. This reflects a better EE in the studied colleges. This could be attributed to the on-going quality assurance and accreditation programs implemented in all Egyptian Universities. A comparable means were reported from Iran [18],[19],[ 20],[21],[ 22],and [23], in Gaza [24] and Malaysia [25]. However, higher means were reported from Saudi Arabia [26], Philippine [27];Pakistan [28] and UK [29].

The mean scores of the subscales are 28.9 for SPL with 53.6% of more positive perception, 28.0 for SPT with 77.4% in the category of moving in the right direction, 21.2 for SASP with 53.8% feeling more on the positive side, 23.6 for SPA with 53.8% of many issues need changes and 16.8 for SASP with 62.0% not too bad category. These are better than previous studies in Egypt [13] and [8]. Comparable results were reported from Iran [18], [19], [20], [21] and [22]; Malaysia [25]; UK [29]; Gaza [24] as well as in Philippine [27]. Much higher findings were reported from Saudi Arabia [26]and Pakistan [28].

The differences in the total DREEM score and its subscales may be attributed to several factors related to the curriculum, faculty profile, subjects offered, types of academic requirements, different educational programs, and teaching methods together with socio-demographic characteristics of studied students.

The mean scores of the total scale and its five subscales do not vary with student's sex. This agrees with a previous Iranian study [18]. 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. Both sexes could perceive their courses in an almost identical way and have the same learning style. A previous study in Saudi Arabia revealed the learning style did not vary with student's sex [30].

Differences in the total DREEM scores and mean scores for sub-domains between male and female students have been reported in other studies [31], [32],[ 13],[33],and [27] although the results have not been consistent regarding whether either gender has higher mean scores for the total score, sub-domain scores, or individual DREEM item scores. This inconsistency in the scores may be related to the gender profile of the respondents and may warrant further study.

The mean scores of the total scale and its five subscales do not vary with study year. All students are exposed to the same curricula, academic requirements and teaching methods together with the similarity of their socio-demographic characteristics. This agrees with [24] in Gaza. Previous studies reported inconsistent findings regarding which study year reported better EE. Most of studies found that freshmen students reported better either total DREEM scores or some of its subscales than seniors [25], [13],[ 29], [28]. However, the reverse was reported from Saudi Arabia [26] and Philippines[27].

Despite the fact that traditional didactic courses are still taught in the three colleges studied, Port Said College has higher means of scores than the Beni-Suif and Aswan Colleges in total score, SPL, SPA and SSSP. This reflects the inconsistency of the EE. Port Said College was founded many years before the other two colleges and enjoys established system and experienced staff with better educational facilities. Also this College had been accredited by the National Accreditation Committee one year ago.

DREEM can be used to assess the correlation of the overall mean score of the DREEM questionnaire with students' academic achievement and serve as a tool to identify students who are likely to be academic achievers and those who are at risk of poor academic performance [34].

In this study under-achievers (students with pass/good grade in the previous years) have higher score than those with excellent grade in total scale, SPL, and SPA subscales. Achievers may be worried about their future and are more ambitious than non-achievers. There were no studies comparing the perceptions between achievers and under-achievers conducted on nursing students. However previous studies in dental and medical students reported inconsistent results. In a recent study no significant difference was observed between achievers and non-achievers dental students in total and all subscales [35]. Other studies revealed that achievers had higher total DREEM score and/or one or more of its subscales [36], and [37]. On the other hand many studies reported that under-achievers had higher scores of DREEM or any of its subscales [38], and [39]. A recent study in Pakistan revealed that the SPT subscale was higher in lower achiever while SASP and SSSP higher in high achievers medical students [40]. Also, Al-Ansari et al, (2015) [41] identified that improvement in learning perception is associated with higher grades while perception of problems, perception in the environment and social life results in under-performance of Saudi Dental students.

There are 13 negative items with score less than 2 points. These include 2, 2, 7 and 2 items in the SPL, SPT, SPA and SSSP subscales; respectively. This is more than ten reported in a previous study in Egypt [8]. Much fewer number of items were reported by Sayed and El-Sayed (2012) [26] in Saudi Arabia (1 and 2 items in SPT and SPA; respectively). Furthermore a study in Philippine found only two negative items in the SPA subscales [27]. However, a much more number of negative items (14) were reported in Islamic University of Gaza [24]. Negative items were indicated as problem areas. These areas require further investigations and remedial steps [42]. These items might be due to the curriculum content overload, teachers' attitude towards student, stressful environment and too much formative assessment system [43].

## V. Conclusions

Most of the DREEM domains were perceived as positive by the students indicating a healthy educational environment in the Colleges. These can be much more improved with the ongoing accreditation program. Some problematic areas identified should be looked into for exact causes and rectification.

### Recommendations

The results indicate that there is need for further enhancement in EE for more effective learning. The problem areas require remedial steps. The findings of this study are important for the development of nursing education curricula in Egypt. Corrective measures are to be taken to address the areas of weakness in the EE. DREEM surveys need to be repeated periodically to monitor the situation after implementation of any corrective measures. In depth qualitative research relating to the items that were scored as unsatisfactory i.e. negative items may help to learn what the main problems are and how they might be addressed.

Study limitations: Nursing colleges of private universities were not included as they have different educational system and admission policy. The self-report nature of the study may contribute to bias. Qualitative data was not collected in order to address the specific problems more deeply or highlight strengths within the university or particular courses. Also the study offers no comparison with the students' expectation of learning environment.

Conflict of interest: None

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