EDUCATIONAL ENVIRONMENT OF HANOI MEDICAL UNIVERSITY IN 2023: AN EVALUATION FROM NURSING STUDENTS' PERSPECTIVES AND SOME ASSOCIATED FACTORS

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ABSTRACT

Objectives: Describe nursing students' assessment of the educational environment of Hanoi Medical University in 2023 and identify some related factors. **Methods:** The study included 409 nursing students at Hanoi Medical University. Participants completed the Vietnamese version of the Dundee Ready Educational Environment Measure (DREEM) questionnaire, including 50 questions divided into five subscales. We employed linear regression to identify factors associated with the DREEM score. **Results:** The overall student perception of the educational environment was more positive than negative, with the mean total DREEM score of 117.6/200 (SD = 48.6). The mean total DREEM score was 47.65 points lower among fourth-year students than among first-year students. Sex was also found to be associated with certain DREEM subscales. "Students' perceptions of teaching" mean scores were 6.36 points higher in female students than in male students (p < 0.05). **Conclusions:** The overall learning environment from the perspective of nursing students tends to be more positive, with the mean scores of all subscales are above average. Years of study and gender are associated with the DREEM scores. There is a need to implement mentorship programs, increase faculty support, and manage stress for senior students.

Keywords: Dundee Ready Education Environment Measure; DREEM; educational environment; medical university; nursing students

I. INTRODUCTION

The World Federation for Medical Education has identified educational environment as one of important aspects to evaluate an education program. The academic and social setting within an institution, known as the educational environment, plays a crucial role in shaping students' learning experiences. Increased interactions are fostered by a secure, valued, participatory, and supportive educational setting. Moreover, student engagement in teaching and learning activities is enhanced when the educational environment respects students' autonomy and voices while prioritizing the learning needs of all individuals [8], [4].

In the process of developing toolkits to assess the nursing educational environment, many scales have been created and are worth mentioning such as those of Hutchins (1961); Marshall (1978);... However, these toolkits are too old to be used to assess nursing students' perceptions of the current educational environment. In the present context, Dundee Ready Educational Environment Measure (DREEM), developed and standardized by De Roff in 1997, is the most widely used tool for evaluating nursing students' perceptions of their educational environment [8]. In 2020, the DREEM scale was translated into Vietnamese and standardized by Hoang Lan Van [1]. Despite the necessity in evaluating the educational environment, there are still limited studies in Vietnam about this topic. Hanoi Medical University is a prestigious and long-standing institution in Vietnam, with over 600 nursing

students in 2024. Therefore, to contribute to providing evidence of the quality of education at Hanoi Medical University, we conducted this study to describe nursing students' assessment of the educational environment of Hanoi Medical University in 2023 and identify some factors associated with nursing students' perspectives of the educational environment.

II. METHODS

2.1. Study design: A cross-sectional study.

Study subjects: First- to fourth-year nursing students at Hanoi Medical University.

Inclusion criteria: Nursing students studied at Hanoi Medical University, had full cognitive ability to answer questions, and agreed to participate in the study.

Exclusion criteria: Students who were unable to participate in research (e.g. due to health conditions) / not present at the university during data collection.

2.2. Study site and time: This is conducted at Hanoi Medical University in Hanoi and Thanh Hoa Campus from January to February 2024.

2.3. Sample size and sampling

A survey study on nursing students, from first-year to fourth-year, with the sample size calculated based on the outcome variable of the study was the total DREEM score.

$$n = Z_{1-\frac{\alpha}{2}}^2 \frac{s^2}{(\overline{X}.\varepsilon)^2}$$

In which:

n: is the sample size of the study

$\overline{X}$: is the sample mean

s: is the population standard deviation

α: Statistical significance level. Choosing α = 0.05 corresponding to a 95% confidence level, $Z_{1-\frac{\alpha}{2}} = 1.96$

ε: The relative margin of error between the sample parameter and the population parameter, choosing = 0.02

A study by Le Thi Luu and colleagues at the University of Medicine and Pharmacy - Thai Nguyen University showed that the total DREEM score was 121.1 ± 15.9 [3]. Applying this to the formula above, the minimum sample included:

$$n = 1,96^2 . \frac{15,9^2}{(121,1.0,02)^2} = 166$$

The study applied a convenience sampling method. This study was involved with 409 participants, accounting for nearly 70% of all nursing students.

2.4. Variables

- Demographic characteristics of students: gender, year of study

- Nursing students' assessment of the educational environment: Students' perception of learning (SPL), Students' perception of teaching (SPT), Students' academic self- perception (SAP), Students' perception of atmosphere (SPA), Students' social self-perception (SSP)

- Factors related to nursing students' assessment of the educational environment: Previous semesters' GPA, study location, clinical experience, study materials

2.5. Data Collection

Data were collected using an online self-administered, anonymous questionnaire. The online questionnaire was published on social media (Facebook, Zalo, Instagram) and emailed to students of both campuses (Hanoi and Thanh Hoa) of the university for two weeks. With nursing students joining this study, they have been asked to agree to join this research or not. The first part of the questionnaire asked for demographic details of the participants, such as gender, grade.

Educational Environment Measure: used the Dundee Ready Educational Environment Measure (DREEM) was developed and standardized by De Roff in 1997, which is the most popular tool currently used to assess nursing students' perceptions of their educational environment. There are 50 items

measuring five aspects of the educational environment based on students' perception, which include students' perception of learning (SPL), students' perception of teaching (SPT), students' academic self-perception (SAP), students' perception of atmosphere (SPA) and students' social self-perception (SSP). There are 9 negative items that must be scored in a reverse manner prior to analysis and interpretation; item 4, 8, 9, 17, 25, 35, 39, 48 and 50 [8]. It has been translated into Vietnamese languages and validated by Hoang Lan Van in 2020 [1].

Evaluation based on DREEM score: Each item of the DREEM questionnaire is rated based on five Likert-scales range between 0 and 4 (0 = strongly disagree, 1 = disagree, 2 = unsure, 3 = agree and 4 = strongly agree). The total DREEM score is calculated by adding up the scores of all items. Each subscale score and the total score are divided into cut-off points as follows:

- *Total score:*
  o Very poor: 0-50 points
  o Plenty of problems: 51-100 points
  o More positive than negative: 101-150 points
  o Excellent: 151-200 points
- *Students' perception of learning (SPL):*
  o Very poor: 0-12 points
  o Teaching is viewed negatively: 13-24 points
  o A more positive approach: 25-36 points
  o Teaching highly thought of: 37-48 points
- *Students' perception of teaching (SPT):*
  o Abysmal: 0-11 points
  o In need of some retraining: 12-22 points
  o Moving in the right direction: 23-33 points
  o Model teachers: 34-44 points
- *Students' academic self- perception (SAP)*
  o Feeling of total failure: 0-8 points

  o Many negative aspects: 9-16 points
  o Feeling more on the positive side: 17-24 points
  o Confident: 25-32 points
- *Students' perception of atmosphere (SPA)*
  o A terrible environment: 0-12 points
  o There are many issues that need to be changed: 13-24 points
  o A more positive atmosphere: 25-36 points
  o A good feeling overall: 37-48 points
- *Students' social self-perception (SSP)*
  o Miserable: 0-7 points
  o Not a nice place: 8-14 points
  o Not very bad: 15-21 points
  o Very good socially: 22-28 points

2.6. Data Analysis: Results were input into an Excel spreadsheet and then transferred into Stata 14.0 for analysis. Descriptive statistics are reported as mean ± standard deviation (SD) for categorical variables and frequencies and percentages for continuous variables. Linear regression was applied to investigate the relationship between the DREEM score and independent variables, including gender, grade level, previous semester academic achievement, study location, participation in clinical practice at hospitals, and study materials. Results with p-value < 0.05 were considered statistically significant.

2.7. Ethics:

Data was collected anonymously. No sensitive questions were included in the questionnaire. All study participants got detailed information about the goals and content of the research upon their participation. Participation was completely voluntary and did not present any harm or negative effect to the respondents. The data gathered from the subjects are kept confidential and are solely used for research purposes. The study was approved by the Scientific Committee for students of Hanoi Medical University.

III. RESULTS

3.1. Demographic characteristics of students

Table 1. *Demographic characteristics of students (n = 409)*

	n	%
Gender (n = 409)		
Male	44	10.76
Female	365	89.24
Years of study (n = 409)		
Year 1	125	30.56
Year 2	98	23.96
Year 3	134	32.76
Year 4	52	12.71
Previous semesters' GPA (n = 279)		
Excellent or above	5	1.79
Good	12	4.30
Average	121	43.37
Below average	141	50.54
Study location (n = 409)		
In Hanoi	225	62.35
In Thanh Hoa	154	37.65
Clinical experience (n = 409)		
Studied	221	54.03
Not started yet	188	45.97

There were 409 students participated in this study, including 365 female students (accounting for 89.24%). Academic performance of students mainly fell below average (50.54%) (below 5.0 points), with only 1.79% achieving excellent grades or above (above 8.0 points). According to the research results, over half of the students engaged in clinical learning at hospitals (54.03%). (Table 1)

3.2. Educational environment from the perspective of nursing students

Table 2. *Means of the total and subscales of the Vietnamese versions of DREEM (n = 409)*

Subscale	n	%
Students' perception of learning (SPL)	**29.7 ± 13.7 (3 - 48)***	
Very poor	51	12.5
Teaching is viewed negatively	102	24.9
A more positive approach	113	27.6
Teaching highly thought of	143	35.0
Students' perception of teaching (SPT)	**27.4 ± 11.0 (7 - 43)**	
Abysmal	36	8.8
In need of some retraining	88	21.5
Moving in the right direction	136	33.3
Model teachers	149	36.4
Students' academic self- perception (SAP)	**18.8 ± 9.7 (3 - 32)**	
Feeling of total failure	76	18.6
Many negative aspects	86	21.0
Feeling more on the positive side	129	31.5
Confident	118	28.9
Students' perception of atmosphere (SPA)	**27.2 ± 15.3 (3 - 48)**	
A terrible environment	86	21.0
There are many issues that need to be changed	100	24.4
A more positive atmosphere	83	20.3

Subscale	n	%
A good feeling overall	140	34.2
Students' social self-perception (SSP)	**14.4 ± 8.6 (1 - 28)**	
Miserable	104	25.4
Not a nice place	97	23.7
Not very bad	108	26.4
Very good socially	100	24.5
Total score	**117.6 ± 48.6 (46 - 199)**	
Very poor	44	10.8
Plenty of problems	101	24.7
More positive than negative	151	36.9
Excellent	113	27.6
Mean ± SD (Min – Max)		

The results indicate that the total mean score for the learning environment is 117.6 ± 48.6 points. Among these, the highest mean score belongs to "Students' perception of teaching" with 27.4 ± 11.0 points (63.7% of the total score). Conversely, the lowest mean score is "Students' social self-perception" with a score of 14.4 ± 8.6 (51.4% of the total score). (Table 2)

Besides, the majority of students perceive the educational environment more positive than negative (36.92%) and excellent (27.63%). Table 2 shows that most of the evaluation results of the subscales are more positive than negative. Regarding student perception of teaching and learning, the excellent subgroup accounts for the highest percentage (35.0% and 36.4%), showing that teaching and teachers are highly appreciated.

3.3. DREEM items with low scores

Table 3. *DREEM items with scores < 2 (Max = 4)*

Items	Mean	SD
Students' perceptions of learning		
7. The teaching is often stimulating	1.93	1.86
25. The teaching over-emphasizes factual learning	1.86	1.74
Students' perception of teaching		
49. The students irritate the teachers	1.97	1.45
Students' academic self- perception		
27. I am able to memorize all I need	1.49	1.74
5. Learning strategies which worked for me before continue to work for me now	1.98	1.86
Students' perception of atmosphere		
36. I am able to concentrate well	1.82	1.86
Students' social self-perception		
4. I am too tired to enjoy this course	1.82	1.61
14. I am rarely bored on this course	1.48	1.79

Table 3 shows DREEM items with mean scores below 2, indicating specific areas where students reported low satisfaction. Almost all items of the DREEM questionnaire are higher than the average. On top of that, low-rated DREEM items are related to teaching stimulation, theoretical curriculum, memorization, concentration, and student fatigue. Item 7, addressing the stimulation of teaching, has a mean score of 1.93 ± 1.86 points. Items 27 and 36, concerning students' ability to memorize and concentrate, have low mean scores of 1.49 and 1.82, respectively. Fatigue-related issues are also notable, with item 4, showing the tiredness of students, scoring 1.82 ± 1.61 points.

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3.4. Factors associated with DREEM and subscales' scores

Table 4. Factors related to the subscales and total DREEM scores

	SPL Coef.	SPT Coef.	SAP Coef.	SPA Coef.	SSP Coef.	Total Coef.
Gender						
Male (Ref.)	1	1	1	1	1	1
Female	3.71	**6.36****	-0.76	0.65	-0.08	9.89
Years of study						
Year 1 (Ref.)	1	1	1	1	1	1
Year 2	-9.21	-6.24	-3.36	-8.74	-2.85	-30.40
Year 3	-7.75	-4.91	-5.01	-8.43	-5.55	-31.66
Year 4	-13.60**	-7.21	-7.57	-12.82	-6.44	-47.65**
Previous semesters' GPA						
Excellent or above (Ref.)	1	1	1	1	1	1
Good	-2.21	5.08	2.08	0.06	6.85	11.86
Average	-3.81	2.90	-0.12	-1.24	6.97	4.70
Below average	-2.54	4.81	0.13	0.66	5.43	8.50
Study location						
Hanoi (Ref.)	1	1	1	1	1	1
Thanh Hoa	-0.95	-0.31	-0.93	-1.76	-1.64	-5.59
Clinical experience						
Not started yet (Ref.)	1	1	1	1	1	1
Studied	-2.45	-0.53	-2.93	-0.84	-0.94	-7.68
**p < 0.05 (Multivariable linear regression)						

The study results indicate that years of study significantly affect students' perception of learning and the overall learning environment ($p < 0.05$), with fourth-year students rating both 13.6 and 47.65 points lower than first-year students, respectively. Gender also significantly influences students' perception of teaching ($p < 0.05$), with females scoring 6.36 points higher than males. However, factors such as course year, academic performance, study location and clinical learning status do not significantly affect the DREEM scores.

IV. DISCUSSION

4.1. Educational environment from the perspective of nursing students

The results showed that the learning environment was more advantages than limitations, with a total score of 117.6/200 being above average, aligning with both local and international studies. In Vietnam, studies by Le Thi Luu and Ramsbotham reported scores of 121.1/200 and 127.8/188, respectively [3], [6]. Global studies, such as in Ethiopia, indicated similar results, with a score of 124.76 [5]. A systematic review of 106 studies across 30 countries further confirmed this, with total scores ranging from 101 to 150/200 [4]. Overall, these findings suggest a high quality educational environment in medical universities, particularly in nursing education.

Among the five subscales, teaching was rated highest with a score of 27.4/43. Comparative analysis with studies by Le Thi Luu and Do Thi Thanh showed similarly high ratings, with scores of 28.1/44 and 32.03/44, respectively [3], [2]. The high

score reflects the commendable qualities, extensive knowledge, clinical expertise, and valuable teaching experience exhibited by Hanoi Medical University lecturers. The learning subscale achieved a score of 29.7/48, reflecting a favorable evaluation by students, but it is slightly lower than in studies from Ethiopia, suggesting a desire for improvements among nursing students at Hanoi Medical University [5]. Students' academic self-perception was well assessed with 18.8/32, similar to findings by Le Thi Luu on nursing students at Thai Nguyen University [3]. The total scores of this component in studies conducted in Vietnam are all above average but not very high, suggesting the need for some changes in current learning methods. The results for the atmosphere subscale are 27.2/48, compared to a score of 29.3 in a study at Thai Nguyen University, but lower than the Fego study on undergraduate medical students, which scored 29.17 [3], [5]. This indicates that our learning environment is still not as comfortable as those in other medical universities domestically and globally. Regarding students' social self-perception, they scored 14.1/28 points, indicating a generally supportive atmosphere. However, scores were lower compared to studies in Ethiopia, suggesting potential for enhancing social engagement among students at Hanoi Medical University [5]. Further studies are needed to explore this issue more deeply to confirm this observation.

4.2. DREEM items with low scores

Our results show eight items with mean scores below 2 related to teaching stimulation, curriculum, memorization, concentration, and student fatigue. Item 49 (The students irritate the teachers) and item 4 (I am too tired to enjoy this course) align with findings from previous studies, suggesting that this could be attributed to the current traditional curriculum [7]. Low ratings in concentration (item 36) and memorization (item 27) highlight potential issues in maintaining student focus and motivation. Traditional teaching methods, often heavily theoretical, may contribute to lower student engagement and increased fatigue. A lack of interactive and student-centered learning approaches can make it difficult for students to stay motivated, leading to a loss of concentration and reduced enjoyment. These findings suggest a need for improvements in teaching methods and student support strategies to enhance the overall learning environment.

4.3. Factors associated with DREEM scores

The research findings indicate that course year is related to nursing education environment evaluation from the students' perspective. Specifically, as students progress to higher years of study, they tend to rate the quality of the educational environment lower. This is consistent with trends observed in other studies regarding declining DREEM scores over academic years [6], [5]. Additionally, the study results reveal that years of study significantly affects students' perception of learning. Fourth-year students tend to rate the quality of the learning environment lower compared to other students. This could be attributed to personal experiences and challenges such as increasing academic workload in the final years of study. However, course year affects students' perception of learning and the overall DREEM score, but it doesn't seem to change their views on teachers, atmosphere, academic, or social. These findings highlight the specific areas where students'

perceptions change over time and suggest that interventions should focus on addressing academic challenges and support mechanisms, particularly for senior students. According to the study results, gender differences do not obviously impact the overall DREEM score, but they do significantly influence students' perception of teaching. This difference suggests that male and female students might be approaching the learning process differently. This is similar to results in the study by Fego et al. [5]. However, there are not many studies showing this finding. It appears that the influence of gender might depend on context or other underlying factors. Therefore, further research is needed to gain a deeper understanding of this difference. Additionally, the study did not identify significant differences in factors associated with the learning environment such as academic performance, clinical experience and study location.

This study had some limitations. It was conducted only on nursing students, so the results may not fully represent the entire university environment. The assessment of the learning environment was based solely on self-assessment, which may not accurately reflect its quality.

V. CONCLUSIONS

The overall learning environment from the perspective of nursing students tends to be more positive, with the mean scores of all subscales are 117.6/199. Years of study is associated with students' perception of learning and the total DREEM score. Gender significantly influences students' perception of teaching with females scoring 6.36 points higher than males. Other factors do not reach

statistical significance regarding students' perception of educational environment and its subscales.

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