The Expected vs Actual perception of students entering clinical environment: A pilot study

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ABSTRAK

Students' perceptions regarding the learning environment can be used in improving the quality of the learning environment. This study aims to evaluate the differences between expected and actual learning environment perceptions of students after going through a clinical rotation. This pilot study is an observational descriptive study that was conducted in the Medical Faculty of Atma Jaya Catholic University of Indonesia on students that have completed pre-clinical education and have entered clinical rotation in January – March 2020. This study used the Dundee Ready Education Environment Measure (DREEM) questionnaire. The data was collected from 59 students and was analyzed using SPSS 23.0. The total actual DREEM score was better than the total expected DREEM score. In the Students' Academic Self-Perceptions (SASP) domain, there was a decrease in the actual DREEM score. Meanwhile, there was an increase in the Students' Percepstions of Teachers (SPT) domain which was statistically significant. The actual DREEM score in the Students' Perceptions of Learning (SPL) domain also showed better results in males than females (P < 0.05). Quality improvement and continuous innovation are very important in medical education.

Kata kunci: DREEM, perception, educational environment, medical student

INTRODUCTION

Students' perceptions of the learning environment can be used to improve the quality of the learning environment.[1] Several studies have shown that learning orientation is positively correlated with students' perceptions of the learning environment.[2] Based on a guideline from the World Federation for Medical Education (WFME), improving the quality of the learning environment has been recognized as one of the objectives of the assessment of medical education programs.[3,4] The learning environment in an institution is an environment that is experienced or felt by students and teachers. The learning environment plays an important role in the effectiveness of students' learning.[5] The learning environment influences students' motivation, happiness, achievements, success, and satisfaction positively. The quality of the learning environment shows the efficiency of the education program.[6] Medical educators believe that the pre-clinical (theoretical) and clinical environments have significant impacts on the attitude, knowledge, skills, and behavior of medical students.[4,7] Teaching and learning in a clinical environment are interesting things in medical school and

have strong influences in shaping the competence of future doctors. A qualitative study has shown differences between students' perceptions of the clinical environment and pre-clinical environment.[8]

To improve the monitoring of quality assessments and ensure health professional education for student-centered teaching and learning purposes, a lot of research has been carried out.[6,9] Researchers from the education field have tried to explain and measure the learning environment[10] with the most widely-used tool, the Dundee Ready Education Environment Measure (DREEM). DREEM is an instrument that has been validated and translated into several languages, including Indonesian (Bahasa Indonesia).[11,12] Students' perceptions of their medical education at various stages have also been examined by DREEM.[13] Till et al. use DREEM to compare the actual learning environment experienced by students with the ideal learning environment of students.[14] Research by Miles on expected and actual DREEM scores in pre-clinical students shows great expectations in the learning environment they will experience.[15]

In this study, an assessment will be conducted using DREEM to evaluate the learning environment of medical students before entering clinical rotation and after passing one clinical rotation. This study aims to evaluate the differences in students' perception of the expected learning environment from the actual learning environment that has been encountered after undergoing a clinical rotation. It is hoped that this pilot study would be a starting point to evaluate students' perception of each clinical rotation so that improvement steps can be taken to improve the learning environment.

METHODS

This study is an observational cross-sectional study with a quantitative approach. This study was conducted in the Medical Faculty of Atma Jaya Catholic University of Indonesia in January – March 2020 with approval from Atma Jaya Catholic University of Indonesia's Ethics Committee. The sample of this study came from 59 students that have just completed pre-clinical education and will soon enter the clinical rotation.

The students will be given explanations regarding the study and will also be informed that all the collected data will be kept confidential. Next, the respondents will sign the informed consent form. The collected data include demographic characteristics (age, sex) and the DREEM questionnaire which have been translated

into Indonesian by Leman.[12] The DREEM data will be collected twice, namely before the respondents enter the clinical education (for expected DREEM data) and after passing through one clinical rotation (for actual DREEM data). The DREEM questionnaire for students before undergoing clinical rotation will be added with the word "will".

The DREEM scale consists of 50 items, each scale is based on a five-point Likert scale (4 = strongly agree, 3 = agree, 2 = not sure, 1 = disagree, and 0 = strongly disagree) with a maximum DREEM score of 200. There are 5 domains in DREEM, namely:

1. Students' Perceptions of Learning (SPL) consists of 12 questions with a maximum score of 48;

2. Students' Perceptions of Teachers (SPT) consists of 11 questions with a maximum score of 44;

3. Students' Academic Self-Perceptions (SASP) consist of 8 questions with a maximum score of 32;

4. Students' Perceptions of Atmosphere (SPA) consists of 12 questions with a maximum score of 48;

5. Students' Social Self-Perceptions (SSSP) consists of 7 questions with a maximum score of 28.

However, 9 out of 50 items (question number 4, 8, 9, 17, 25, 35, 39, 48, and 50)

consist of negative questions and must be assessed in reverse.

Data analysis was performed by using SPSS software version 23.0. Continuous variables were summarized as mean and standard deviation (SD), with independent T-tests and Mann Whitney test to compare expected and actual DREEM scores, and Wilcoxon test to see the relationship between DREEM scores and gender. In this study, the level of significance was set at $P < 0.05$.

RESULTS

A total of 81 respondents received the pre-test and post-test questionnaires. However, only 59 respondents completed the expected and actual DREEM questionnaire. The study involved 59 medical student respondents consisting of 20 males (33.9 %) and 39 (66.1 %) females. Respondents are between 20 – 22 years old with an average age of 21.17 years old (Table 1). Cronbach's alpha coefficient in the study questionnaire was 0.878.

There is a difference between expected and actual DREEM scores after entering a clinical rotation. There was an increase in the average of total DREEM score, SPT, and SPA domains. A decrease in the mean DREEM score occurred in the SPL, SASP, and SSSP domains. In the DREEM

SPT and SASP domains, a *P*-value of < 0.05 was obtained (Table 2).

Table 1. Respondets' demographic characteristic (N=59)

Characteristics	n (%)	Mean (SD)
Age		21.17 (0.416)
Sex		
Male	20 (33.90)	
Female	39 (66.10)	
Clinical rotation		
Anesthesiology	3 (5.08)	
Surgery	4 (6.77)	
Odontology	3 (5.08)	
Internal Medicine	10 (16.94)	
Psychiatry	7 (11.86)	
Dermatology	3 (5.08)	
Opthalmology	6 (10.16)	
Obstetrics & Gynecology	15 (25.42)	
Neurology	5 (8.47)	
Ear, nose and throat (ENT)	3 (5.08)	

Table 2. Mean results of the DREEM scores in each domain

Domain	Mean		P-Value
	Expected (SD)	Actual (SD)	
SPL	35.61 (14.956)	35.05 (19.796)	0.344
SPT	**26.24 (4.610)**	**30.63 (5.505)**	**0.000***
SASP	**23.88 (2.871)**	**21.47 (3.436)**	**0.000***
SPA	30.63 (4.073)	31.64 (5.094)	0.143
SSSP	18.24 (3.385)	17.25 (4.037)	0.148
Total	134.59 (4.909)	136.05 (5.564)	0.503

*P-value <0.05

There are 6 out of 8 SASP domain questions that showed better results in expected DREEM and were statistically significant. Besides, 6 out of 11 SPT domain questions showed better results on actual DREEM and were also statistically significant (Table 3).

Table 3. Significant mean results of Expected and Actual DREEM Scores

No	DREEM Questions	Domain	Mean of Expected DREEM	Mean of Actual DREEM	P-Value
5	Learning strategies that worked for me before continue to work for me now	SASP	**2.07**	1.53	0.001
21	I feel I am being well prepared for my profession	SASP	**3.54**	3.07	0.000
26	Last year's work has been good preparation for this year's work	SASP	**3.12**	2.83	0.038
31	I have learnt a lot about empathy in my profession	SASP	**3.56**	3.37	0.033
41	My problem solving skills are being developed here	SASP	**3.46**	3.05	0.000
45	Much of what I have to learn seems relevant to a career in healthcare	SASP	**3.64**	3.31	0.000
11	The atmosphere is relaxed during ward teaching	SPA	1.68	**2.20**	0.003
34	The atmosphere is relaxed during class/seminars/tutorials	SPA	2.08	**2.66**	0.000
36	I am able to concentrate well	SPA	**3.00**	2.49	0.000
7	The teaching is often stimulating	SPL	**3.34**	3.14	0.034
13	The teaching is student centred	SPL	2.76	**3.10**	0.002
24	The teaching time is put to good use	SPL	**2.93**	2.68	0.042
44	The teaching encourages me to be an active learner	SPL	**3.34**	2.98	0.000
48	The teaching is too teacher centred*	SPL	2.19	**2.71**	0.000
6	The teachers espouse a patient-centred approach to consulting	SPT	2.14	**2.69**	0.002
8	The teachers ridicule the students*	SPT	2.20	**2.66**	0.002
9	The teachers are authoritarian*	SPT	1.95	**2.59**	0.000
29	The teachers are good at providing feedback	SPT	2.59	**2.86**	0.022
39	The teachers get angry in teaching sessions*	SPT	0.46	**1.56**	0.000
50	The students irritate the teachers*	SPT	1.46	**2.47**	0.000
3	There is a good support system for students who get stressed	SSSP	**2.83**	2.03	0.000

*: Negative items whose scores were reversed for analysis

Based on gender, this study shows that the overall results of expected DREEM scores (SPL, SASP, SPA, SSSP, and total DREEM) are higher in males than females. The overall actual DREEM scores (SPL, SASP, SPA, and total DREEM) were also higher in males than females. In the difference column, there is a decrease in SPL and SASP scores in females. In males, a decrease was found in the SASP and SSSP domains. In the SPL domain, a P-value of < 0.05 was obtained, but not in other domains and totals (Table 4).

Table 4. Mean of Expected and Actual DREEM scores results based on gender

Domain	Expected		Actual		P-Value
	Male (SD)	Female (SD)	Male (SD)	Female (SD)	
SPL	35.85 (4.428)	35.49 (3.933)	36.90 (4.576)	34.10 (5.139)	**0.048***
SPT	25.10 (6.257)	26.82 (3.440)	30.40 (5.165)	30.74 (5.734)	0.396
SASP	24.60 (3.102)	23.51 (2.713)	22.50 (3.678)	20.95 (3.228)	0.629
SPA	31.30 (6.433)	30.28 (3.967)	32.10 (6.206)	31.41 (5.275)	0.823
SSSP	18.65 (4.283)	18.03 (2.861)	16.35 (5.432)	17.72 (3.077)	0.187
Total	135.50 (19.179)	134.13 (12.524)	138.25 (20.953)	134.92 (19.359)	0.672

DISCUSSION

This research stems from the desire to study how students understand the learning environment in our institution. In addition, the learning environment assessment is an important part of the program evaluation. In this study, the DREEM scale was used to compare students' perceptions of expectations before entering the clinical environment (expected) and after passing their first clinical rotation (actual). The average expected DREEM total score was 134.59 / 200. This score is higher compared to a research conducted in India in pre-clinical final students which DREEM total score was 119,[16] a research by UK Medical School in pre-clinical students which DREEM total score was 120,[17] and research in Indonesia by Soemantri et al.

at the University of Indonesia which DREEM total score was 123.45.[18]

The average actual DREEM score after students entered the clinical environment also obtained a pretty good score, namely 136.05 / 200, which shows that students have positive perceptions of the learning environment. This value is also higher than the DREEM score obtained in UK Medical School clinical students, which is 120[17], and King Saud University which is 84.9.[19] This might happen because the pre-clinical learning environment is located adjacent to the clinical learning environment, so even before entering the clinical rotation, students have already felt the clinical education atmosphere.

There was an increase in the mean of expected and actual DREEM total score of the clinical environment, although not

statistically significant. The mean score of the five DREEM domains in this study revealed a satisfactory level of perception. However, there are three out of five domains in the clinical environment that have lower scores compared to when students have not felt the clinical environment, which states that the learning environment in clinical is felt to be more unpleasant than expected (Table 2). This study contrasts with the results obtained by Dunne et al. in which students have better perceptions of the clinical environment in several domains.[17] Changes to the hospital environment might contribute to the perception of student learning environments.

In the SPT domain, there was a significant increase in the actual score. Students' perceptions of lecturers after entering the clinical environment were better. Students think that their lecturers teach patiently, have extensive knowledge, give good feedback, while 'authoritarian lecturers' and lecturers who tend to look down on students are considered as problems. These results are similar to a study conducted by Soemantri et al., which shows better perceptions for lecturers in the clinical setting.[18] The teaching style in clinical education is more practical, while in pre-clinical education, it is more theoretical. These different teaching styles are findings that

can be interpreted as effective teaching supports.

However, there was a decrease in the average actual SASP score compared to the expected average score. Statistical test results appeared to be significant in six of the eight items in the SASP domain (Table 3). In these six items, the actual value was decreased. This situation might occur due to a mismatch of learning strategies, lack of learning capability, lack of problem-solving skills, and relevant things that support students in being a doctor are felt differently and not in accordance with perceptions before entering the clinical environment. Jiffry et al. reported an increasing trend in the SASP domain from pre-clinical to clinical.[20] This can occur because SASP may be influenced by the process of adaptation and students' experiences in the learning environment, so the students feel more prepared and more confident. In this study, the students have undergone one clinical rotation.

This study found that the mean DREEM total score in males was better than in females, both expected and actual (Table 4). Gender differences in the learning environment have been reported in various other studies. The results obtained from research in Middle East countries showed that perceptions of the learning environment in males are more positive

than females. However, our study did not show a statistically significant difference between males and females for the average DREEM total score. This shows the same result as reported by Till from Canada and Al-Ayed from Saudi Arabia, but contrary to what was reported in research conducted in Argentina where statistically significant differences by gender were found, with females, in general, being more critical about the quality of teaching and the learning environment, especially in the area of students' participation in the classroom and the authoritarian attitude of teachers.[14,19] In the DREEM statistical test based on gender (Table 4), significant results were obtained in the SPL domain, in line with the study by Till.[14]

The strength of this research lies in the usage of DREEM questionnaires that are already valid and commonly used in other studies with similar topics. Also, the study respondents were spread across 10 different clinical rotations, which ensures that the results of this study should be able to provide a general picture of what happens when medical students enter the clinical rotations. Unfortunately, scattered study respondents can also be a point of weakness because different clinical rotations have different learning methods, student-teacher interactions, and demands for learning outcomes. This

can affect students' perceptions and provide different evaluation results. Therefore, this pilot study will be the basis for conducting later research on evaluation per clinical rotation so that an improvement in the learning environment can be carried out more precisely for each rotation.

CONCLUSION

The total actual DREEM score was better than the total expected DREEM score. In the Students' Academic Self-Perceptions (SASP) domain, there was a decrease in the actual DREEM score. Meanwhile, there was an increase in the Students' Percepstions of Teachers (SPT) domain which was statistically significant. The actual DREEM score in the Students' Perceptions of Learning (SPL) domain also showed better results in males than females ($P < 0.05$).

Quality improvement and continuous innovation are very important in medical education. A periodic evaluation must be carried out to maintain the quality of the learning environment in medical school. DREEM is a reliable and validated measurement tool that identifies specific problem areas in an institution. Students' perceptions can be used for learning evaluation with the aim of improving the learning environment to be a conducive

place, so as to improve the quality of the students and to reduce the risk of low academic achievements.

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