Perceptions of academic achievers and under-achievers regarding learning environment of Melaka Manipal Medical College (Manipal campus), Manipal, India, using the DREEM Inventory

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Learning environment in any medical school is found to be important in determining students' academic success. The present study was undertaken to study the perceptions of academic achievers and under-achievers (clinical phase) of Melaka Manipal Medical College (MMMC) (Manipal campus), India, using the Dundee Ready Education Environment Measure (DREEM) Inventory. The DREEM Inventory was administered to 108 medical students in the clinical phase of the curriculum. Data analysis revealed that the overall DREEM score of the academic under-achievers was high, compared to the academic achievers. While comparing the gender-wise perceptions, the mean score for female students was found to be more in both groups.

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Introduction

Learning environment in any medical school is found to be important for effective management of learning (Genn, 2001) and for modifying the curriculum (Genn & Harden, 1986). Curriculum's most significant manifestation and conceptualization is the learning environment, educational and organizational, which embraces everything that is happening in the medical school (Genn, 2001). A study of the learning environment is one of the first steps taken during curriculum change (Skilbeck, 1976). According to Boomer (1982), curriculum development in medical education would consist of changes in the learning environment of any medical school. The World Federation for Medical Education (WFME) singles out the learning environment as one of the targets for the evaluation of medical education programs (1998). Students' perception of the learning environment is also found to influence their behaviour (Till, 2004).At Melaka Manipal Medical College (MMMC) (Manipal campus), undergraduate medical program (MBBS - Bachelor of Medicine & Bachelor of Surgery) is offered as a twinning program with Malaysia. It is offered in two phases (Phase I & Phase 2) which runs for two and a half years. Phase 1 consists of Stage 1 & Stage 2 which runs in Manipal. During Stage 1 students learn Anatomy, Physiology & Biochemistry in an integrated manner. During Stage 2 (second year), students learn Pharmacology, Microbiology, Pathology & Forensic Medicine. After successful completion of Stage 2, students undergo six months of clinical training in Manipal. Phase 2 runs at MMMC (Melaka Campus), Malaysia. The clinical phase in Manipal consists of posting of students in different clinical departments. Didactic lecture is the predominant teaching strategy adopted. About 98% of the students are from

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Malaysia while the remaining is from different parts of the world. The admission system made sure that all the students getting admitted to MMMC has an average score of 3.5 in the grade point average scale in the qualifying examination. So as all the students are of similar capabilities, we are considering the students who have experienced failure in the university examinations at least once as academic under-achievers (students who have not performed up to their ability) and students who have never experienced failure as academic achievers.

Mayya & Roff. (2004) had found significant differences in the students' perceptions of learning environment between academic achievers and under-achievers. The present study was intended to find out the association between the academic achievement of the students and their perceptions of learning environment. In MMMC we have extensive support system for the academic under-achievers in the form of regular small group learning activities, mentorship programme and formative and summative assessments. Once students fail in the examination, they have to undergo intensive training for a period of six months before they can reappear. Our expectation is that this study will reveal the effectiveness of these support systems, which is intended to facilitate their (under-achievers) learning.

Inventories measuring learning environment in medical schools are widely being used in medical education research. In the present study, the Dundee Ready Education Environment Measure (DREEM) Inventory was used. DREEM was originally developed at Dundee and has been validated as a universal diagnostic inventory for assessing the whole or parts of the educational environment and to permit education of their responses to the challenges of changing mandates and missions (Roff, 1997).

DREEM is a 50 item inventory and the items are grouped under 5 subscales.

1. Students perceptions of learning (SPL) – 12 items, maximum score is 48
2. Students perceptions of teachers (SPT) – 11 items, maximum score 44
3. Students Academic self perception (SASP) – 8 items, maximum score is 32
4. Students Perceptions of atmosphere (SPA) – 12 items maximum score is 48
5. Students Social Self Perceptions (SSSP) – 7 items, maximum score is 28

The present study was undertaken with the following objectives:

1. To compare the perceptions of academic achievers and under achievers, regarding the learning environment at MMMC

2. To evaluate the effectiveness of the support system for academic under-achievers by measuring the their perceptions regarding the learning environment

3. To compare the gender-wise perception of academic achievers and under achievers

Method

The Dundee Ready Education Environment Measure (DREEM) was administered to 108 undergraduate medical students of the same batch in the clinical phase of their curriculum after a lecture class. Prior to administration, the class was addressed regarding the purpose and process of data collection. In order to divide the sample as academic achievers and under-achievers, the students were asked to mention whether they have experienced failure or not, in their past two years of study in MMMC, in the response sheet. The students were told regarding the anonymity of the responses.

Eight students did not mention their gender in the response sheet. Therefore in effect, the completed inventory was collected from 100 students (58 males & 42 female students), out of which, 72 of them were

academic achievers and 28 were academic under achievers. Each DREEM item was scored 0 to 4 with scores of 4, 3, 2, 1 and 0 assigned for strongly agree, agree, uncertain, disagree and strongly disagree respectively. Negative items were scored in the reverse manner. To pinpoint more specific strengths and weaknesses within the learning environment at MMMC, items with a mean score of 3 and above were taken as positive points and items with a mean score of 2 and below were taken as problem areas. Items with a mean score between 2 and 3 were considered as aspects of the learning environment that could be enhanced. By means of the statistical package SPSS, student's t - test was calculated and used for all the comparisons.

Results

Table 1 shows the mean DREEM domain scores for the present sample of students. It was observed that academic under-achiever group of students scored relatively higher for all domains, compared to academic achievers. Among these statistically significant differences were observed only for SPL and SPT domains.

Table 2 shows the mean DREEM item scores of the two groups. Academic achievers scored a mean below 2 for 4 items (27, 42, 3, and 14). Out of the 4 items 1 item was from SASP (27), 1 item was from SPA (42) and 2 items were from SSSP (3, 14). None of the items had a score above 3. The academic under achievers scored a mean below 2 for 6 items and above 3 for only one item (10). Out of the 6 items (5, 27, 23, 42, 14, 28), 2 items were from (SASP) (5, 27), 2 items from SPA (23, 42) and 2 items from SSSP (14, 28).

Table 3 shows the items for which significant difference was observed between the two groups of students. Out of the two items one (9) belonged to SPL and the other one (48) to SPT.

Table 4 shows the items for which significant difference was observed between male and female academic under-achievers. Out of the 5 items, 3 items were from SPL (21, 38, 47) 1 item was from SPT (8) and 1 item was from SSSP (14). There were no items from SASP and SPA which showed significant differences between the two groups.

Table 5 depicts the items showing significant differences between male and female academic achievers. Out of the 5 items, 1 item was from SPL (38) 2 items were from SPT (18, 37) and 2 items from SSSP (15, 46). There were no items from SASP and SPA which showed significant differences between the two groups.

Table 1: Mean (SD) DREEM domain scores for academic achievers and under achievers

Domains	Academic achievers	Academic under-achievers	P value
SPL	2.24	2.40	0.015
SPT	2.20	2.41	0.006
SASP	2.39	2.59	0.144
SPA	2.22	2.30	0.151
SSSP	2.11	2.13	0.963

Table 2: Mean (SD) DREEM item scores for academic achievers and non achievers in clinical batch

Domain	Item	Academic achievers	Academic under-achievers
SPL	1.I am encouraged to participate in teaching sessions	2.35(0.72)	2.42 (0.87)
	7. The teaching is often stimulating	2.09 (0.85)	2.42 (0.87)
	13. The teaching is registrar centred	2.15 (1.03)	2.10 (0.99)
	16. The teaching helps to develop my confidence	2.60 (0.95)	2.57 (0.86)
	20. The teaching is well focused	2.57 (0.74)	2.67 (0.77)
	21. The teaching helps to develop my confidence	2.17 (0.91)	2.50 (1.00)
	24. The teaching time is put to good use	2.21 (1.07)	2.39 (1.06)
	25. The teaching overemphasizes factual learning	1.58 (0.96)	1.64 (1.12)
	38. I am clear about the learning objectives of the course	2.57 (0.97)	2.60 (1.03)
	44. The teaching encourages me to be an active learner	2.28 (0.90)	2.39 (0.95)
	47. Long term learning is emphasized over short term learning	2.47 (0.98)	2.71 (0.85)
	48. The teaching is too teacher centred	1.73 (0.97)	2.42 (0.92)
SPT	2. The course organizers are knowledgable	3.01 (0.53)	2.85 (0.80)
	6. The course organizers espouse a patient centred approach to consulting	2.10 (1.00)	2.32 (1.02)
	8. The course organizers ridicule their registrars	1.78 (1.00)	2.17 (0.77)
	9. The course organizers are authoritarian	1.45 (1.01)	1.92 (0.85)
	18. The course organizers appear to have effective communication skills with patients	2.53 (0.98)	2.64 (0.86)
	29. The course organizers are good at providing feedback to registrars	2.02 (0.91)	2.42 (0.99)
	32. The course organizers provide constructive criticism here	2.21 (1.01)	2.42 (0.95)
	37. The course organizers give clear examples	2.69 (0.86)	2.71 (0.85)
	39.The course organizers get angry in teaching sessions	1.42 (1.14)	1.78 (1.03)
	40. The course organizers are well prepared for their teaching sessions	2.84 (0.84)	2.92 (0.94)
	49. The registrars irritate the course organizers	2.15 (0.98)	2.25 (1.14)
SASP	5. Learning strategies which worked for me before continue to work for me now	2.26 (0.91)	1.96 (0.79)
	10. I am confident about passing this year	2.90 (0.97)	3.71 (6.02)
	22. I feel I am being well prepared for my profession	2.42 (0.94)	2.46 (1.10)
	26. Last years work has been a good preparation for this years work	2.45 (1.06)	2.78 (0.91)
	27. I am able to memorize all I need	1.69 (1.07)	1.57 (0.99)
	31. I have learned a lot about empathy in my profession	2.52 (0.86)	2.71 (1.01)
	41. My problem solving skills are being well developed here	2.27 (0.88)	2.53 (0.79)
	45. Much of what I have to learn seems relevant to a career in healthcare	2.64 (0.94)	3.00 (0.81)
SPA	11. The atmosphere is relaxed during consultation teaching	2.19 (1.00)	2.35 (0.78)
	12. The course is well time tabled	2.31 (0.99)	2.67 (1.05)
	17. Cheating is a problem in this course	2.39 (1.27)	2.57 (1.06)
	23. The atmosphere is relaxed during lectures	2.24 (0.93)	1.96 (1.03)
	30. There are opportunities for me to develop interpersonal skills	2.50 (0.83)	2.50 (0.96)
	33. I feel comfortable in teaching sessions socially	2.28 (0.87)	2.39 (0.95)
	34. The atmosphere is relaxed during seminars/tutorials	2.19 (1.00)	2.39 (0.91)
	35. I find the experience disappointing	2.43 (0.99)	2.53 (0.88)
	36. I am able to concentrate well	2.34 (0.94)	2.21 (0.95)
	42. The enjoyment outweighs the stress of studying medicine	1.58 (0.98)	1.71 (1.08)
	43. The atmosphere motivated me as a learner	2.39 (0.95)	2.28 (1.15)
	50. I feel able to ask the questions I want	1.90 (1.20)	2.14 (1.17)
SSSP	3. There is a good support system for registrars who get stressed	1.84 (0.81)	2.14 (0.75)
	4. I am too tired to enjoy this course	1.42 (1.15)	1.85 (1.14)
	14. I am rarely bored on this course	1.64 (1.07)	1.64 (1.06)
	15. I have good friends in this course	2.82 (1.17)	2.82 (1.02)
	19. My social life is good	2.56 (0.97)	2.21 (1.10)
	28. I seldom feel lonely	2.06 (1.27)	1.64 (1.02)
	46. My accommodation is pleasant	2.46 (1.32)	2.64 (0.95)

Table 3: Mean (SD) DREEM items showing significant differences between academic achievers and academic under-achievers

Domains	Items	Mean (SD)		p-value
		Academic under achievers	Academic achievers	
SPT	9. The course organizers are authoritarian	1.92 (0.85)	1.45 (1.01)	0.03
SPL	48. The teaching is too teacher centred	1.73 (0.97)	2.42 (0.92)	0.002

Table4: Mean (SD) DREEM items showing significant differences between male and female academic under-achievers in the clinical batch

Items	Males	Females
8. The course organizers ridicule their registrars	2.31(0.67)	1.64 (1.08)
14. I am rarely bored on this course	1.57 (1.12)	2.00 (0.87)
21. The teaching helps to develop my confidence	2.31 (1.10)	2.78 (0.69)
38. I am clear about the learning objectives of the course	2.57 (1.12)	2.85 (0.66)
47. Long term learning is emphasized over short term learning	2.47 (1.12)	2.64 (0.92)

Table 5: Mean (SD) DREEM items showing significant differences between male and female academic achievers in the clinical batch

Items	Males	Females
15. I have good friends in this course	2.63 (1.38)	3.03 (0.82)
18. The course organizers appear to have effective communication skills with patients	2.36 (1.07)	2.75 (0.78)
37. The course organizers give clear examples	2.57 (0.91)	2.93 (0.70)
38. I am clear about the learning objectives of the course	2.44 (1.08)	2.82 (0.80)
46. My accommodation is pleasant	2.23 (1.42)	2.82 (1.13)

Discussion

The overall DREEM score for our medical school was found to be 114 /200 as perceived by the above sample of students. The overall score given by the academic achievers and under-achievers were found to be 112/200 and 119/200 respectively. Taking the above score into consideration, students' perceptions regarding the medical school was found to be more positive. The overall DREEM score for another Indian medical school was reported as 107.44/200 (Mayya, 2004). For the same medical school, the score given by academic achievers and under-achievers were found to be 108.95/200 and 101.65/200 respectively (Mayya, 2004). The DREEM global scores for medical schools in Sri Lanka (Jiffry *et al.*, 2005), Nepal and Nigeria (Roff *et al.*, 2001) were reported as 108/200, 130/200 and 118/200 respectively. While considering the DREEM domain scores for the present sample of students, academic under-achievers were found to have scored higher for all the domains. Out of the 6 items for which the academic under-achievers scored a mean of less than 2, 3 items were scored less than 2 by the academic achievers also (27, 42 and 14). The academic under-achievers perceived more positively about the support system than the academic achievers.

It was observed that academic under-achievers had significantly higher scores than academic achievers in the domains SPL and SPT. This indicates that our academic support systems were perceived in the right manner by the academic under-achievers.

Females in the academic under-achiever group, when compared to their male counterparts, felt that the teaching helps to develop their confidence, the learning objectives were clear, and that long-term learning is emphasized over short-term learning. They also felt that they are rarely bored in the course. The male students felt to a greater extent that the teachers ridicule them. In the academic achiever group, female students felt to a greater extent that they had good friends and their accommodation is pleasant. They also felt that the teachers had effective communication skills with the patients and that they give clear examples while teaching.

The present study reports different perceptions of two groups of students in the same academic environment. Findings from the study are quite contradictory to those reported by other researchers (Mayya & Roff, 2004) wherein, the overall score was found to be more for academic achievers. The academic under-achievers scoring higher than academic achievers could be due of the extensive support system for the failed candidates. Compared to other medical schools in India, MMMC is unique in that our students are foreign nationals. Their perceptions could be influenced by their educational background and the living standards in their native country.

Conclusion

The perceptions of academic under-achievers were found to be significantly different from those of academic achievers. The present study revealed problematic areas in the medical school environment wherein remedial measures are to be taken.

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