International Journal of Contemporary Pediatrics
Xavier R et al. Int J Contemp Pediatr. 2016 May;3(2):304-310
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: http://dx.doi.org/10.18203/2349-3291.ijcp20160993

Research Article

Undergraduate paediatric teaching-the medical students' perspective: using the Dundee ready education environment measure questionnaire

Rose Xavier*, Bobby Abraham, Vinod J. Cherian

Department of Pediatrics, Jubilee Mission Medical College & Research Institute, Thrissur, Kerala, India

Received: 04 April 2016
Accepted: 11 April 2016

***Correspondence:**
Dr. Rose Xavier,
E-mail: rose_xav@hotmail.com

ABSTRACT

Background: Educational climate plays a major role in deciding the accomplishment and contentment of the students. Periodic assessment of the educational environment is necessary, after a change in the curriculum and formation of a new exclusive university health care. The objective of the study was to identify the perceptions of medical students undertaking the restructured paediatric curriculum under the newly formed health care university.
Methods: After taking required consents, the Undergraduate paediatric teaching-the medical students' perspective: using the Dundee ready education environment measure questionnaire (DREEM) questionnaire was administered to medical students in all the three medical colleges in Thrissur, in a face to face session and the data analysed.
Results: The overall average score was 122.21±21.18 on 200 with final year students giving a significantly higher score as compared to pre-finals (p=0.0001). Female students gave a more positive score as compared to male students (p=0.0083). The items that scored below 2 out of a maximum score of 4 are "Teaching over emphasizes factual learning (1.71±0.81), Teachers are authoritarian (1.62±0.87), I am able to memorize all I need (1.54±1.04), There is a good support system for students who get stressed (1.76±1.02) and I am rarely bored on this course (1.95±1.12)". Highest score was given by final year medical students for "teachers' are knowledgeable" (3.48±0.59).
Conclusions: Paediatric education should emphasise on problem based learning. Teachers should have regular faculty development programme. Small groups of students need to be assigned to counsellors and mentors, who can be faculty members. Regular feedback needs to be taken from students to make them partners in education rather than as only receivers.

Keywords: Curriculum, DREEM, KUHS, Paediatric education

INTRODUCTION

Medical council of India has made many changes in the system of medical education, in recent years. The educational climate affects the quality of learning by students. An overall impact of the above changes can be obtained only by assessing the medical educational climate. So far no analysis has been done regarding the benefit to the students, by the modifications made in the structure and system of medical education. DREEM inventory is an internationally validated and accepted questionnaire that is culturally neutral. It evaluates the medical students' perception of their medical education.[1,2] After any restructuring of the curriculum, a periodic assessment of the educational environment is required to assess its weak points and strengths. This study was done to assess the strengths and weaknesses in paediatric education, 3 years after restructuring of the curriculum and 5 years after formation of an exclusive university for professional education in health care. The study also locates areas of deficiencies identified by majority of the students that have been unintentionally left out by the course conducters[3]. No similar paediatric study has been done before in India to the author's knowledge.

METHODS

Aim

To evaluate and analyse the perceptions of medical students undertaking the restructured paediatric curriculum after formation of an exclusive medical university.

Objective

1. How students perceive the new educational environment mentored by Kerala University of Health Sciences (KUHS)?
2. What are the perceived strengths and weaknesses of the restructured paediatric curriculum?
3. Whether there is any difference between the perceptions of students according to the stages of medical education, i.e., the pre-final and final clinical stages?

Study design

This is a cross sectional analytic cluster study conducted in all the medical colleges in Thrissur (Two private and one government). Study was conducted on final and pre-final year medical students who have had paediatric posting. Data was collected in March 2016.

Inclusion criteria

Medical students who have had clinical posting in paediatrics from three medical colleges in Thrissur.

Exclusion criteria

Medical students who are not willing to take part in the study or were absent for the session.

Data collection

Institutional scientific and ethical board consent was obtained for the study. Permission was taken to use the DREEM inventory. Permission to administer the questionnaire to students was taken from the three institutes. Data was collected by a guided self-administered questionnaire during a face-to-face session. Informed consent was obtained from the respondents prior to the questionnaire administration. Completion of the DREEM inventory was voluntary. Students were informed that not returning the inventory would not affect their progress in the medical course. Likert type scale was used to respond. The inventory was immediately returned after completion.

Material

DREEM inventory consists of 50 questions grouped under five domains. The five domains are self-perception of learning, perception of course organisers and teachers, perception of academics, perception of academic atmosphere and perception of social life. Each individual question was scored from 0 to 4 based on the response. Any individual item with a score less than 2 is a problem area and needs further evaluation. Any individual score more than 3.5 is excellent.

Statistical analysis

The resulting scores were interpreted using the guide proposed by McAleer and Roff.[4,5] In each domain, if the total score is in the first quartile it is "very poor", second quartile suggestive of problems that need to be rectified, third quartile suggestive of more positive than negative with scope for improvement and fourth quartile as excellent (Table 1). The maximum possible overall score is 200. An overall score of less than 50 is very poor, 51 to 100 is suggestive of a lot of problems, 101 to 150 suggestive of more positive than negative and more than 150 is excellent. Data was analysed using the statistical package SPSS 20 (Statistical package for social sciences). For statistical analysis of the data for the whole 50 item inventory, scores for categorized domains and each item were expressed as Mean±Standard Deviation (SD). Independent samples t-test was used to identify the P value between subgroups. A P value <0.05 was considered to be statistically significant.

Table 1: Domains with interpretation of each quartile/score.

Domain/ Maximum score	1st quartile/ score	2nd quartile/ score	3rd quartile/ score	4th quartile/ score
Self-perception of learning/48	Very poor/0-12	Teaching viewed negatively/13-24	Positive perception/ 25-36	Teaching thought of highly/ 37-48
Perception of teachers & course organisers/44	Abysmal/0-11	Needs retraining/ 12-22	Moving in right path/23-33	Role models/34-44
Academic self-perception/32	Feeling of total failure/0-8	Many negative points/ 9-16	Feeling positive/17-24	Confident/25-32
Self-perception of atmosphere/48	Terrible environment/0-12	Many things need to be changed/13-24	More positive attitude/ 25-36	Overall good feeling/ 37-48
Social self-perception/ 28	Miserable/0-7	Not a nice place/8-14	Good/ 15-21	Very good/22-28
Total score/200	Very poor/0-50	Plenty of problems/51-100	More positive than negative/101-150	Excellent/151-200

RESULTS

Out of 615 students, 538 students (87.48%) students took part in the survey. Two hundred and sixty five students from 310 students (85.48%) of the pre-final batch and 273 students from 305 students (89.51%) of the final year batch answered the questionnaire. Of the 265 pre-final students, 91 were males and 174 females. For the final years, 92 were males and 181 females. (Male: female ratio≈1:2). Overall score for paediatrics was 122.21±21.18, with the pre-final batch giving a total score of 114.11±19.66 and final year students giving a score of 130.8±19.59 (p=0.0001). Average total male and female scores in each section with P value are given in Table 2. The average score in each of the 5 domains with P value of pre-final and final year students is mentioned in Table 3. Average individual question scores with P values for the two batches of students is mentioned in Tables 4-8.

Table 2: Average male and female scores overall and in each domain.

Characteristics	Male	Female	Total	P value*
Average total score	118.86±18.87	123.94±22.19	122.21±21.18	0.0083
Average pre-final score	111.53±18.49	115.46±20.17	114.11±19.66	0.1223
Average final score	126.12±15.87	132.09±20.99	130.8±19.59	0.0170
Self-perception of learning	29.14±5.55	30.35±5.78	29.94±5.73/48	0.0207
Self-perception of teachers & course organisers	26.44±4.34	27.87±5.00	27.39±4.83	0.0011
Academic self-perception	19.15±4.02	19.82±4.60	19.59±4.42/32	0.0957
Self-perception of atmosphere	27.88±5.55	29.14±6.68	28.71±6.34	0.0291
Social self-perception	16.70±3.45	17.20±3.75	17.03±3.65/28	0.1324

*P value between male and female students' scores

Table 3: Average overall and individual domain scores for pre-final and final year students.

Feature	Pre-final	Final	Overall	P value*
Average Total score	114.11±19.66	130.8±19.59	122.21±21.18	0.0001
Total male score	111.53±18.49	126.12±15.87	118.86±18.87	0.0001
Total female score	115.46±20.17	132.09±20.99	123.94±22.19	0.0001
Learning self-perception	27.52±5.05/48	32.28±5.36/48	29.94±5.73/48	0.0001
Perception of teachers	25.42±4.24/44	29.3±4.60	27.39±4.83	0.0001
Academic self-perception	18.46±4.46/32	20.70±4.09/32	19.59±4.42/32	0.0001
Self-perception of atmosphere	26.83±5.93/48	30.53±6.21	28.71±6.34	0.0001
Social self-perception	15.89±3.40/28	18.12±3.58/28	17.03±3.65/28	0.0001

*P value between pre-final and final year students' scores

Table 4: Average score for each question in domain 1.

Self-perception of learning	Pre-final year	Final year	Pre-final+Final	P value*
I am encouraged to participate in teaching sessions	2.63±0.70	3.07±0.70	2.85±0.74	0.0001
Teaching is often stimulating	2.49±0.70	3.06±0.84	2.78±0.82	0.0001
Teaching is student centred	2.28±0.87	2.67±0.98	2.48±0.95	0.0001
Teaching helps to develop my competence	2.52±0.76	2.91±0.88	2.72±0.85	0.0001
Teaching is well focused	2.47±0.71	3.02±0.79	2.75±0.80	0.0001
Teaching helps to develop my confidence	2.09±0.85	2.51±0.85	2.30±0.88	0.0001
Teaching time is put to good use	2.22±0.86	2.77±0.84	2.50±0.89	0.0001
Teaching over emphasizes factual learning	1.75±0.81	1.67±0.81	1.71±0.81	0.2517
I am clear about the learning objectives	2.47±0.79	2.75±0.85	2.62±0.83	0.0001
Teaching encourages me to be an active learner	2.26±0.85	2.82±0.85	2.54±0.90	0.0001
Long term learning is emphasized over short term learning	2.38±0.90	2.76±0.87	2.57±0.90	0.0001
Teaching is too teacher centred	1.98±0.82	2.27±0.94	2.13±0.89	0.0001

*P value between pre-final and final year students' scores

Table 5: Average score for each question in domain 2.

Self-perception of teachers and course organisers	Pre-final	Final	Pre-final+Final	P value*
Teachers are knowledgeable	3.20±0.67	3.48±0.59	3.34±0.65	0.0001
Teachers support a patient centred approach	2.62±0.68	2.99±0.80	2.81±0.76	0.0001
Teachers ridicule students	1.94±0.91	2.25±1.06	2.10±1.00	0.0003
Teachers are authoritarian	1.51±0.85	1.74±0.88	1.62±0.87	0.0017
Teachers appear to have effective communication skills with patients	2.73±0.81	3.27±0.70	3.01±0.80	0.0001
Teachers are good at providing feedback to students	1.92±0.89	2.56±1.03	2.25±1.02	0.0001
Teachers provide constructive criticism	2.33±0.73	2.57±0.84	2.45±0.79	0.0006
Teachers give clear examples	2.40±0.79	3.00±0.84	2.70±0.87	0.0001
Teachers get angry in teaching sessions	2.01±0.88	2.01±1.03	2.01±0.95	0.9610
Teachers are well prepared for their teaching sessions	2.80±0.74	3.00±0.78	2.90±0.77	0.0023
Students irritate teachers	1.96±0.92	2.42±1.09	2.20±1.04	0.0001

*P value between pre-final and final year students' scores

Table 6: Average score for individual questions in domains 3.

Academic self-perception	Pre-final year	Final year	Pre-final+Final	P value*
Learning strategies which worked for me before continue to work for me now	2.03±0.92	2.21±1.01	2.12±0.97	0.0327
I am confident about passing this year	2.672±0.94	2.76±0.80	2.72±0.88	0.2254
I am being well prepared for my profession	2.36±0.90	2.88±0.86	2.62±0.92	0.0005
Last year's work has been a good preparation for this year's work	2.30±0.93	2.44±0.93	2.37±0.93	0.0890
I am able to memorize all I need	1.31±0.93	1.75±1.12	1.54±1.04	0.0001
I have learned a lot about empathy in my profession	2.84±0.82	3.19±0.65	3.01±0.76	0.0001
My problem solving skills are being well developed here	2.23±0.85	2.73±0.89	2.49±0.91	0.0001
Much of what I have to learn seems relevant to a career in healthcare	2.70±0.81	2.75±0.91	2.73±0.86	0.5010

*P value between pre-final and final year students' scores

Table 7: Average score for individual questions in domain 4.

Self-perception of atmosphere	Pre-final	Final	Pre-final + Final	P value*
Atmosphere is relaxed during consultation teaching	1.84±1.04	2.50±1.04	2.17±1.09	0.0001
Course is well timetabled	2.42±1.04	2.48±1.21	2.45±1.12	0.5666
Cheating is a problem in this course	2.07±1.00	2.23±1.17	2.15±1.09	0.0773
Atmosphere is relaxed during lectures	2.57±0.89	2.83±0.86	2.70±0.88	0.0006
There are opportunities for me to develop interpersonal skills	2.54±0.90	2.85±0.90	2.70±0.91	0.0001
I feel comfortable in teaching sessions socially	2.37±0.86	2.92±0.81	2.64±0.88	0.0001
Atmosphere is relaxed during seminars/tutorials	2.25±0.87	2.55±0.97	2.40±0.94	0.0003
I find the experience disappointing	2.28±0.83	2.50±0.97	2.39±0.91	0.0061
I am able to concentrate well	2.05±0.94	2.44±0.88	2.25±0.93	0.0001
Enjoyment outweighs the stress of studying medicine	1.95±1.00	2.21±1.15	2.08±1.08	0.0072
Atmosphere motivates me as a learner	2.24±0.84	2.74±0.91	2.49±0.91	0.0001
I feel able to ask the questions I want	2.25±0.86	2.29±0.94	2.27±0.90	0.5393

*P value between pre-final and final year students' scores

In each domain, the least (L) and maximum (M) scored items are as follows:

In domain 1, (L): Teaching over emphasizes factual learning has scored 1.71±0.81 and (M): I am encouraged to participate in teaching sessions has scored 2.85±0.74.

Table 8: Average score for individual questions in domain 5.

Social self-perception	Pre-final	Final	Pre-final + Final	P value*
There is a good support system for students who get stressed	1.41±0.87	2.10±1.04	1.76±1.02	0.0001
I am too tired to enjoy this course	1.94±1.00	2.15±1.00	2.05±1.00	0.0189
I am rarely bored on this course	1.75±1.00	2.12±1.21	1.95±1.12	0.0001
I have good friends in this course	3.25±0.76	3.39±0.83	3.32±0.80	0.0387
My social life is good	2.82±0.83	3.06±0.87	2.94±0.85	0.0008
I seldom feel lonely	2.04±1.00	2.38±1.19	2.21±1.11	0.0003
My accommodation is pleasant	2.68±0.85	2.91±0.91	2.80±0.89	0.0031

*P value between pre-final and final year students' scores

In domain 2, (L): Teachers are authoritarian has scored 1.62±0.87 and (M): Teachers are knowledgeable has scored 3.34±0.65.

In domain 3, (L): I am able to memorize all I need has scored 1.54±1.04 and (M): I have learned a lot about empathy in my profession with a score of 3.01±0.76.

In domain 4, (L): Enjoyment outweighs the stress of studying medicine has scored 2.08±1.08 and (M): Atmosphere is relaxed during lectures with a score of 2.70±0.91.

In domain 5, (L): There is a good support system for students who get stressed with a score of 1.76±1.02 and (M): I have good friends in this course with a score of 3.32±0.80.

DISCUSSION

The DREEM questionnaire is a tool that is specifically designed for medical education. It gives feedback on areas for improvement in medical education. It is used for periodic qualitative assessment of medical education or medical institute. It is used to study the impact of any restructuring of curriculum or after formation of a new university. It is also used to compare the perception of students studying in various phases of medical education. The DREEM inventory has been validated in India by many studies.[6-8]

The current centralised university which is exclusively for medical and allied education in Kerala has come into effect for paediatrics since five years. Prior to this, the regional university would cater for the educational requirements of all medical and non-medical specialities. Earlier students were exposed to paediatrics from the second year of medical education. Currently, medical students are exposed to paediatrics only in their pre-final and final year of their studies, for the same total duration, that is 10 weeks paediatric clinical posting and 100 hours of paediatric theory classes. 100 hours of theory, now includes 34 hours of lectures and 66 hours of innovative teaching; which includes symposiums, seminars and integrated teaching, structured teaching and revisions. Also more stress is given to practical application than factual learning. Learning is mostly exam driven.[9] Also teachers' use periodic assessment as a tool for better student learning.[10] Question paper pattern has been changed from descriptive essays and short notes to specific questions and clinical application. More weightage has been given to marks obtained in the university exam than internal assessments and viva, since the last three years. The current pattern of examination works up to 99.9% of what the KUHS wanted to implement.[11]

In this study, final year students were more happy with the paediatric teaching environment as compared to pre-final students (P = 0.0001) in contrast to other studies done in India.[6,8] Similar results were found in all the five domains (Table 3). This may be because students have only 2 weeks posting in the pre-final year and 8 weeks posting in final year. Also final year students may be able to integrate what they learn with the other final year subjects' medicine, surgery and obstetrics. Moreover in the pre-final year they have exams for ophthalmology, ENT (ear, nose and throat) and community medicine, which have less correlation with paediatrics.

Among the final year students, female medical students gave a significantly higher score as compared to male medical students (p=0.0170) similar to that found in other studies.[3,6] The reason for less optimism among male medical students could not be identified. No statistically significant difference in perception was found among pre-final students (p=0.1223). Female medical students had a significantly more positive perception than male medical students, in all the domains, except for the academic and social self-perception domain (Table 2).

In domain 1 (self-perception of learning) (Table 4) an average score of 29.94±5.73 out of a maximum score of 48 was suggestive of a positive perception. But majority of the students (final and pre-final students) felt that the teachers were over emphasising on factual learning (score 1.71±0.81). This needs to be addressed as the paediatric

curriculum emphasises on clinical application of available data rather than factual learning.

In domain 2 (Perception of teachers & course organisers) (Table 5), an average score of 27.39±4.83 out of a maximum score of 44, suggests the course organisers and teachers are moving in the right path. Here majority of the students felt that course organisers are authoritarian (score 1.62±0.87). This is in contrast to 'I am encouraged to participate in teaching sessions' (2.85±0.74) and 'Atmosphere is relaxed during lectures' (2.70±0.88), which are the highest scores for domain 1 and 5. Students also feel their teachers are knowledgeable with final year students giving a score of 3.48±0.59. Attempts should be made to make the course student friendly, with regular feedbacks from them, in order to identify areas of improvement in the course. The teachers may benefit from regular faculty development programmes. The teachers who are practising clinicians may be overburdened with their clinical and teaching responsibilities. Steps may be taken to look at this angle for the anger during teaching sessions. Teachers may also keep certain curricular objectives in mind while taking clinical sessions rather than teaching whatever cases are available.[12]

In domain 3 (Academic self-perception) (Table 6) an average score of 19.59±4.42 out of 32 is suggestive of a positive feeling. Here majority of the students feel they are unable to memorise all that they need for the exam (score 1.75±1.12). Paediatrics is a vast subject and probably steps need to be taken to make the course more structured and specific. That is, there should be the must know category, nice to know category, may know category and need not know category.

In domain 4 (Self-perception of atmosphere) (Table 7) an average total score of 28.71±6.34 out of 48 is suggestive of a positive attitude. Here all the individual items scored above 2. The least score was found for enjoyment during studies (2.08±1.08) suggesting that the students are a stressed lot. Surprisingly cheating was not found as a major problem. This is in line with KUHS attempt to conduct a malpractice free examination and evaluation system.[11]

In domain 5 (Social self-perception) (Table 8), an average score of 17.03±3.65 out of 28 is suggestive of a good social atmosphere. Here majority of the students felt that there was no good support system for students who get stressed out (1.76±1.02). This needs to be addressed by utilising psychologists, forming small study groups and appointing mentors for small group of students. The mentors could be faculty members, so that such students can be identified and helped. None of the individual items scored above 3.5, the criteria for excellence. The highest score was for teachers' knowledge, which was 3.48±0.59.

In comparison to studies done in other medical colleges in India for entire medical education, our students are happier with the current paediatric educational system.[6-8,13-15] In Iran where paediatric educational environment was analysed the average score was 95.8 which is much lower than our score of 122.21.[3] But we must strive to make our pediatric education, a curriculum of excellence. This study enrolled students studying in medical colleges in Thrissur only. Further studies need to be done across Kerala and across the country to get a better feedback.

CONCLUSION

Paediatric education should be well structured and specific. Teachers should have regular faculty development programme. Faculty members should be allotted as counsellors and mentors for small groups of students to identify stressed out students. A better educational environment will lead to higher level of contentment and achievement by students and thereby better quality doctors. Better doctors would lead to better child health and health facilities for the country. Since this is the first such study being done, it can be used as a baseline for further evaluations after implementing the necessary modifications. This will ensure that students are partners in education than just being mere passive receivers of teaching and learning.

ACKNOWLEDGEMENT

We wish to thank the director, principal and Paediatric staff of Amala Institute of Medical Sciences, Government Medical College, Jubilee Mission Medical College & Research Institute, Thrissur for their support in the study. We wish to thank all the medical students for their cooperation in the study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Institutional review board clearance obtained

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Cite this article as: Xavier R, Abraham B, Cherian VJ. Undergraduate paediatric teaching-the medical students' perspective: using the Dundee ready education environment measure questionnaire. Int J Contemp Pediatr 2016;3:304-10.