

ORIGINAL ARTICLE

EVALUATION OF THE LEARNING ENVIRONMENT FOR RESIDENCY TRAINING IN ST. PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE

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ABSTRACT

Introduction: Educational environment in a teaching hospital determine the engagement and motivation of residents and lead to greater achievement of educational outcomes. The objective of this study is to evaluate the educational environment as perceived by residents in the three domains of Postgraduate Hospital Educational Environment Measure and factors influencing their perception of this environment.

Methods: Institution based cross sectional study was conducted among all residents of St. Paul's Hospital Millennium Medical College (N=87). This study used English version of the Postgraduate Hospital Educational Environment Measure to assess the educational environment for all residents of internal medicine, gynaecology, paediatrics, surgery and radiology speciality programs. Nonparametric methods of Mann-Whitney U for two independent samples and Kruskal-Wallis for multiple independent samples were used to measure the statistical significance.

Results: Eighty (92%) residents completed the questionnaire. The residents' re-sponse scored 102.6 out of 160 maximum score in rating of Postgraduate Hospital Education Evaluation Measure that showed overall learning environment more positive than negative but with room for improvement. Out of 40 items, those that depicted mean values less than 2 were availability of an in-formative junior doctors handbook, clinical protocol, workload, quality of accommodation, and adequate catering facilities during on call hours. Gender and specialty programs had statistically significant association with perceptions of the educational environment, ($P < 0.001$).

Conclusion: Educational environment among residents remain positive with potential aspects for improvement. Specialty programs and gender were important factors influencing perceptions of the educational environment. The college should be aware of the importance of equal participation of all specialty program and female residents in the improvement of educational environment plan.

Keywords: Educational environment ,educational outcomes, SPHMMC

INTRODUCTION

Ethiopia is one of the sub-Saharan countries most affected by high disease burden, aggravated by a shortage and imbalance of human resources (1). The government of Ethiopia has put great emphasis on the expansion of health service training institutions to meet the huge demand for health workers in view of the ever-growing population of the country. To this effect, the number of universities and health science colleges has grown (2).

Ethiopian Ministry of Education took the initiative to increase the postgraduate entry 2-3 times the previous admission numbers. Taking into account the current extreme health manpower shortage at the national level, the progress by itself is a tremendous effort and achievement. However, the concern is the effectiveness of the programs, which need further investigation (3). In line with this, St Paul's Hospital Millennium Medical College (SPHMMC) has recently commenced specialty-training programs in Obstetrics /Gynecology, Pediatrics, Internal Medicine and Radiology and is preparing to launch similar specialty programs in additional disciplines.

The educational environment has been linked for many years to students' achievement, satisfaction and success (3). Meanwhile the educational environment in a teaching hospital is likely to determine the engagement and motivation of residents and lead to greater achievement of educational outcomes (5). A measurement instrument of good quality to assess that learning environment is a prerequisite to allow accurate assessment of the learning environment and to identify areas requiring attention (4).

The Postgraduate Hospital Education Evaluation Measure (PHEEM) is a self-administered 40-item inventory that assesses metrics of the level of autonomy, quality of teaching, and social support during the hospital-based training period for postgraduate students. PHEEM is a reliable and validated instrument to evaluate the quality assurance process as well as strengths and weaknesses within a certain educational environment (6).

The objective of the present study is to evaluate the learning environment of residents and factors influencing their perception of this environment. To our knowledge, this is the first study to evaluate the residency programs in Ethiopia.

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MATERIALS AND METHODS

This institutional based cross-sectional study took place during December 2014 and February 2015 in St Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia. Currently the college has internal medicine, gynaecology, paediatrics, surgery and radiology specialty programs. The PHEEM questionnaire was distributed to all residents in St Paul's Hospital Millennium Medical College (N=87). Eighty residents responded to the questionnaire.

The English version of PHEEM instrument was used to assess the educational environment of the residency program. Anonymous, administered structured PHEEM questionnaire was distributed. PHEEM is a self-administered 40 statements inventory with which the respondents were asked to indicate their agreement using a 5-point Likert scale. These range from strongly agree (4), agree (3), unsure (2), disagree (1) to strongly disagree (0). Agreement with the items indicates a 'good' environment giving high scores. The four negative statements (questions 7, 8, 11, and 13) were scored in reverse so that the higher the score the more negative the environment. Information on gender, residency stage and different residency programs were also included as part of the questionnaire.

The data were analyzed using SPSS statistical package version 20. Descriptive statistics were reported as median and interquartile range or mean and standard deviation. The comparative statistics used the nonparametric methods of Mann-Whitney U for two independent samples between females and males and Kruskal-Wallis for multiple independent samples to measure the statistical significant between different residency programs and residency.

The study proposal was approved by the Institutional Review Board of St Paul's Hospital Millennium Medical College. All participants were provided with written information about the study and consent for participation before the study started. They were informed that this study is voluntary, and they can withdraw from the study or stop participating at any time.

RESULTS

Eighty out of eighty seven trainees (92%) completed the questionnaire. Number of residents in each program varied from 10 to 35. There were 43(55.1%), 29(37.2%) and 6(7.7%) participates from residency year 1, 2 and 3, respectively and there were 2 non responses. Of the participants, 20(25.3%) were female and 59(74.7%) were male, with an overall mean age of 28 (SD±1.87) years. The overall score for students' perceptions of the educational environment was 102.6 out of a total of 160, which suggests that, on average, students perceived the quality of their learning environment in a positive light, but with room for improvement. Mean while perceptions of role autonomy showed 34.5, perceptions of role teaching showed 40.5, and perceptions of role social support showed 27.6.

Mean scores for each item of the overall score was calculated and there were 6 statements which were highly rated (mean value >3), and 5 statements were poorly rated (mean value 2 or less). For the Perceptions of Role Autonomy subscale items, only 1 item i.e. item 29 (I feel part of a team working here) scored 3.1 (SD±0.84) meaning that students agreed with the statement. Item 9 (There is an informative Junior Doctors handbook), item 14 (There are clear clinical protocols in this post) and item 32 (my workload in this job is fine) scored below 2.00 (Table 1).

Table 1: Perceptions of role autonomy of PHEEM questionnaire (# – questions with reverse scoring) by mean (n=80), St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2015

	Perceptions of role autonomy	Mean	SD
1	I have a contract of employment that provides information about hours of work	2.1	1.22
4	I had an informative induction program	2.7	0.99
5	I have the appropriate level of responsibility in this post	2.9	1.03
8	I have to perform some inappropriate tasks, which do not correspond to my job description #	2.6	1.20
9	There is an informative Junior Doctors Handbook	1.6	1.04
11	I am bleeped inappropriately#	2.6	1.02
14	There are clear clinical protocols in this post	1.8	1.11
17	my working hours are in accordance with the limits specified by the curriculum	2.2	0.91
18	I have the opportunity to provide continuity of care	2.8	0.80
29	I feel part of a team working here	3.1	0.84
30	I have opportunities to acquire the appropriate practical procedures for my grade	3.0	0.89
32	My workload in this job is fine	1.9	1.41
34	The training in this post makes me feel ready to be an SpR/Consultant	2.7	1.07
40	My clinical teachers promote an atmosphere of mutual respect	2.8	0.98

*PHEEM=Postgraduate Hospital Educational Environment Measure

In the analysis of individual item of perceptions of teaching subscale, item 28 (my clinical teachers have good teaching skills) and item 31 (my clinical teachers are accessible) scored above 3.0. The other items scored between 2.0 and 3.0, indicating areas in this domain that could be improved (Table 2). For the Perceptions of social support subscale item, Item 7 (there is a certain degree of racial prejudice) and item 13 (there is sex discrimination in this post), negative items, scored above 3.0.

The negative item-scoring scheme indicated that students disagreed with this item. Item 16 (I have good collaboration with other doctors in my Grade) also scored, 3.4 (SD±0.6). Item 20 (this hospital has good quality accommodation for junior doctors, especially when on call) and 26 (there is easy access to food and drinks in on call days) scored below 2.0, indicating aspects of this domain that should be addressed (Table 3).

Table 2: Perceptions of teaching of PHEEM questionnaire by mean (n=80), St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2015

	Perceptions of teaching	Mean	SD
2	My clinical teachers set clear expectations	2.8	0.88
3	I have protected educational time in this post	2.1	1.21
6	I have good clinical supervision at all times	2.6	1.03
10	My clinical teachers have good communication skills	3.0	0.98
12	I am able to participate actively in educational events	2.8	1.04
15	My clinical teachers are enthusiastic	3.0	1.04
21	There is access to an educational programme relevant to my needs	2.4	1.17
22	I get regular feedback from seniors	2.7	0.77
23	My clinical teachers are well organized	2.7	1.12
27	I have enough clinical learning opportunities for my needs	2.5	1.25
28	My clinical teachers have good teaching skills	3.1	0.85
31	My clinical teachers are accessible	3.1	0.79
33	Senior staff utilize learning opportunities effectively	2.5	1.11
37	My clinical teachers encourage me to be an independent learner	2.7	1.00
39	The clinical teachers provide me with good feedback on my strengths and weaknesses	2.7	0.73

*PHEEM=Postgraduate Hospital Educational Environment Measure

Table 3: Perceptions of social support of PHEEM questionnaire (# – questions with reverse scoring) by mean (n=80), St. Paul's Hospital Millennium Medical College, Addis Ababa Ethiopia, 2015

	Perceptions of social support:	Mean	SD
7	There is a certain degree of racial prejudice (ethnic and cultural)	3.1	1.01
13	There is sex discrimination in this post#	3.2	0.82
16	I have good collaboration with other doctors in my grade	3.4	0.60
19	I have suitable access to careers advice	2.4	1.01
20	This hospital has good quality accommodation for junior doctors, especially when on call	2.0	1.29
24	I feel physically safe within the hospital environment	2.6	1.13
25	There is a no-blame culture in this post	2.0	1.23
26	There is easy access to food and drinks in on call days	1.8	1.13
35	My clinical teachers have good mentoring skills	2.7	1.07
36	I get a lot of enjoyment out of my present job	2.2	1.20
38	There are good counseling opportunities for junior doctors who fail to complete their training satisfactorily	2.2	1.00

*PHEEM=Postgraduate Hospital Educational Environment Measure

For the three domains, male trainees ranked the environment significantly higher than the female trainees (Table 4). There were statistical significant differences between male and female ($p < 0.05$) (Table 5). Significant differences were also identified between residents from different specialty programs regarding the total score, autonomy subscale, support subscale as well as the teaching subscale ($p < 0.05$) (Table 6).

Department of surgery and radiology trainees also ranked the environment higher, residents had “Model Teachers” with regard to the teaching quality; and there were “A good supportive environments” in terms of the provision of social support. There was no statistically significant difference in perception scores of education environment between stages of the residency program as perceived by the trainees.

Table 4: Mean values (SD) of the different dimensions (n=80), PHEEM St. Paul’s Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2015

Category		Overall impression	Perceptions of Role Autonomy	Perceptions of teaching	Perceptions of social support
Gender	Female	85.4 (23.3)	27.8(7.8)	33.8(10.8)	23.8(6.6)
	Male	107.9(21.3)	36.5(7.2)	42.6(9.1)	28.8(6.2)
R1		108.3(23.3)	36.8(8.4)	42.4(9.7)	29.1(6.4)
R2		97.1(22.0)	32.4(7.3)	38.4(8.9)	26.3(7.1)
R3		99.8(22.4)	31.2(7.2)	43.5(11.7)	25.0(4.8)
R4		102.7(22.1)	33.7(6.8)	42.2(11.2)	26.7(5.1)
Pediatrics		103.7(19.1)	35.8(6.8)	41.6(7.5)	26.3(6.1)
Gynecology		96.2(20.1)	32.4(6.2)	38.4(9.5)	25.5(5.9)
Internal Medicine		87.0(29.8)	29.4(11.0)	33.1(12.9)	24.4(6.9)
Surgery		121.4(17.0)	40.1(8.1)	47.8(5.6)	33.5(4.6)
Radiology		122.0(9.7)	40.4(4.5)	48.1(5.8)	33.5(2.0)

Table 5: Summary of comparisons of different dimensions among males and females (n=80), St. Paul’s Hospital Millennium Medical College, Ethiopia 2015

Domains	P-value*	Median Difference (Male -Female)	CI 95%
Overall Impression	0.000	22	(10,34)
Perceptions of Role Autonomy	0.000	8.5	(4,13)
Perceptions of teaching	0.001	8	(3,13)
Perceptions of social support	0.004	5	(2,9)

*Mann-Whitney test, $p < 0.05$ considered as significant different

Table 6: Summary of comparisons of different dimensions among the different stages (R1 to R4) and specialty programs (n=80), St. Paul’s Hospital Millennium Medical College, Ethiopia, 2015

Domains (among the different stages (R1 to R4))	P-value*
Overall Impression	0.142
Perceptions of Role Autonomy	0.107
Perceptions of teaching	0.271
Perceptions of social support	0.177
Domains (among specialty programs)	P-value*
Overall Impression	0.000
Perceptions of Role Autonomy	0.002
Perceptions of teaching	0.000
Perceptions of social support	0.000

DISCUSSION

In this study, residents perceived the overall educational environment as more positive than negative but with room for improvement. Gender and residency programs had significant association with perceptions of the educational environment.

The overall maximum scores showed that there was no major issue present in the environment. Similarly, the residents of the King Fahad Hospital of Dammam University considered their educational environment as more positive than negative with potential aspects for improvement, which is similar to our finding (7). Another study done in eastern region of Saudi Arabia showed that the residents rated overall learning environment favorable for training, (8). Performance of the medical knowledge base of resident physicians was significantly associated with the educational environment of their hospitals (9). Teaching hospitals with a better educational environment may lead to greater satisfaction among residents.

There was statistically significant difference in perception scores of education environment and gender. One PHEEM study done in Saudi Arabia showed that differences between male and female residents in perceiving educational environment due to societal culture disparity at workplace between male and female (7), which is similar to our study findings.

Although we could not find research that study significance between specialty programs and perceptions of educational environment, in this study specialty programs had significant association with perceptions of the educational environment. Surgery and radiology residents also ranked the environment higher, with regard to the teaching quality and provision of social support. A study conducted in Pakistan also showed variability in perception within different disciplines and departments within the hospitals (10). The documented differences among specialty programs in perceiving educational environment might be attributed to many factors such as number of faculties, number of residents and workload due to patient flow in the specialty program departments.

The stage of the program did not seem to have an effect on how residents perceive their educational environment. We speculate that type of participants used in this study (postgraduate students) may explain the findings that their perceptions of learning environment did not differ significantly, as they progress in their residency program. Similar studies showed that stage of the program did not seem to have an effect on how trainees assess their educational environment (8, 11).

The items that depict mean value less than 2 in this study were availability of an informative junior doctors handbook, clinical protocol, workload, quality of accommodation, and easy access to food and drinks in on call days. It means the participants in this study felt these issues are important and making problem for a good learning environment. While other similar study in Saudi Arabia showed that unavailability of informative junior doctor's handbook, workload, blame culture, and easy access to food and drinks in on call days. Whereas another comparable study conducted among pediatric residents in Saudi Arabia showed items that scored less than 2 mean scores such as: long working hours, unavailability of clinical protocols, inefficient use of training time, lack of constructive feedback, and presence of blaming culture (7,8,10,11). The comparison of the results show not much difference in our and above studies. Some of the low item points showed in our and other studies are not hard to fix for example to give handout, giving good food and drink service because it is totally management issue.

In this study, social support domains demonstrated only a few areas with high mean values. Therefore, it seems that residents faced more obstacles in social domains. Apparently the residency training is often correlated with stress, depression and burnout mainly due to excessive working hours; sleep deprivation, challenging patients and an aggressive and challenging work environment (7,11-13). Fatigue, mental distress, and burnout, which emerged during the residency training period, impaired quality of life and satisfaction after enrollment (14). However, PHEEM did not ask questions that directly addressed these aspects, but item scores suggested that their social life during residency could be uninspiring. Therefore, it is important to highlight weaker items related to social support for improvement in learning environment.

Majority items of PHEEM in our study counted as an average and scored around 2. Conversely, a few of the responses have crossed the mean value more than three, which means that the residents were more satisfied with some of areas of the learning environment in all specialty programs of study. We note positive responses in terms of the statements that confirmed minimal discrimination (items 7 and 13). Similarly, study also indicated that racism and gender discrimination were not problematic during their training programs (7). Relevant items also crossed the mean value more than three; these areas include collaboration with colleagues, teamwork, accessible teachers and skilled teachers. Similar studies in Saudi Arabia showed that residents have good collaboration (7,11).

This study has some limitations. Difficulty in communication with residents due to their busy schedule may have reduced number of participants in this study. How-

ever, the response rate was good (92%) and sufficient to generalize our conclusions. We believe that this study, being the first of its nature in SPHMMC, represents a good chance to evaluate the current specialty training programs and could help in improving them.

In conclusion, the residents considered their educational environment as more positive than negative with potential aspects for improvement. Perceptions of the educational environment had significant association with gender and specialty programs but did not change significantly among different stages of the program. The college should be aware of the importance of equal participation of all specialty programs and female residents in the improvement of educational environment plan.

Based on our result, we recommend residents' educational environment needs close attention on the availability of clear clinical protocol and informative junior doctors' handbook for possible changes towards better quality of teaching. Accommodation and inadequate food and drink service in the residency programs are another potential area for improvement. We recommend to use PHEEM on a regular basis to assess and follow the learning environment.

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