Damte Shimelis, Tina Martimianakis. *Ethiop Med J, 2019, Vol. 57, No. 4*

ORIGINAL ARTICLE

EVALUATION OF THE CLINICAL LEARNING ENVIRONMENT OF TIKUR ANBESSA SPECIALIZED HOSPITAL

Damte Shimelis, M.D[*1], Tina Martimianakis, MA, Med, PhD[2]

ABSTRACT

Introduction*: Public universities in Ethiopia are the only available training institutions for post graduate medical education. These Universities have inadequate resources to satisfy patients and post-graduate students which negatively impact educational outcomes. To improve the environment evidence based reform that recognizes existing weaknesses, strengths and opportunities of the clinical learning environment is critical.*

Objectives: *To assess the post graduate clinical education environment of Internal medicine, Pediatrics, Surgery, Obstetrics and Gynecology in Tikur Anbessa Specialized Hospital.*

Methods: *This cross sectional study was conducted from April 1-30, 2016. The English version of the Post Graduate Hospital Education Environment Survey (PGHEES) tool was used to collect necessary data. This tool has a 40-item questionnaire with three domains (perceptions of: role autonomy; teaching and perception of social support). This tool was validated in many countries. (1-4).*

Post graduate students from the departments of Surgery, Gynecology and Obstetrics, Pediatrics and Child Health and Internal Medicine were the study participants. Data were collected by resident coordinators from each department after their respective morning class activities.

Results: *Out of 363 residents consented to participate in the study 218 (60.06%) completed the questionnaire. Among these residents, 152(71.7%) were males. Participants rated the overall educational environment as unpleasant (76.4/160); indicating significant perceived problems with the clinical learning environment. They rated the role of autonomy as a more negative perception of their teaching environment (28.53/56). Participants perception of teaching was positive (31.57/60) but teachers need some training. On the outcome measuring scale out of 40 items 22 items were rated as poor with a score of less than 2.*

Conclusion: *The outcome of this study showed that improving the quality of duty rooms, more supervision during working hours, reducing the work load, providing better orientation of junior doctors among other reforms may improve residency.*

Key words: *environment, tool, Hospital, resident,*

INTRODUCTION

There are 8 public colleges in Ethiopia located in diverse geographical locations that conduct post-graduate medical education. Involvement of private sectors in higher education training is not strong and primarily skewed to the advantaged geographical places within the country in terms of socio-economic status and infrastructure.

The public universities are the only training institutions for post graduate medical education, and they have full authority for residents' training. In their training years which varies from three to four years, residents are expected to fulfill dual responsibilities, i.e., as students and physicians. Residents often experience tension prioritizing learning over clinical work.

Previous research documents perceived conflict between these two roles, with residents reporting dissatisfaction in their relationship with their instructors, frequent duties, lack of guideline for the management of patients, etc. (1). In two focus group discussions conducted with 31 pediatric residents in the Department of Pediatrics and Child Health, Tikur Anbessa Specialized Hospital and 17 residents in the Department of Ophthalmology, Menelik II Hospital in Addis Ababa responded that the post graduate education environment is not conducive to learning (2)

. The clinical learning environment is multidimensional and complex. Measuring the environmental factors that affect clinical learning reveals strengths, weaknesses and indicates priority areas for improvement (1-4).

[1]Department of Pediatrics and Child Health, Addis Ababa University, college of Health Sciences.

[2] University of Toronto, Director of Scholarship, Department of Pediatrics.

*Corresponding author E-mail: damte_shimelis@yahoo.com

The current physician population ratio in Ethiopia is 0.03 physicians/1000 population (3). A recent study exploring the profile of medical doctors in Ethiopia, documented a fast population growth, an expansion of governmental and non-governmental health institutions and an increased postgraduate enrollment but increased physician attrition from the public sectors because of attractive remuneration from the overseas countries and local non-governmental organizations (NGOs) and private sectors (4). A scan of the literature reveals that non-conducive environment for trainees, with heavy work load, low salary, obstructive administration and lack of residential areas, makes the postgraduate training unattractive and affects knowledge, skill and attitude of graduates, leading to more drop outs or lack of interest to join post graduate education.(5-8). Thus, assessing the clinical learning environment is crucial for the quality improvement of medical education in Ethiopia and has become an important approach for evaluating the quality of the medical curriculum and training programs (9-12).

Various instruments have been developed to study the clinical learning environment that operationalizes the psychosocial educational framework. This framework illuminates the physical, social and psychological aspects of complex phenomena (12-15). One such tool is the Postgraduate Hospital Educational Environment Measure (PHEEM) (15); this instrument has a 40 item questionnaire that was designed to evaluate the various aspects of the learning environment focusing on the perceptions of autonomy, perceptions of teaching and perceptions of social support.

According to this tool the maximum total score is 160 and total score less than 80/160 indicates plenty of problems of the learning environment requiring immediate measures to improve the learning climate. Validity evidence for the tool has been collected in various educational contexts and cultures around the world and the instrument has been found to be consistent in the identification of areas requiring improvement (1-4).

The clinical learning environment is a complex phenomenon that interplays to affect the learning outcome. This environment includes instructors, administration, the hospital, the learners and patients. Intervention in any of the identified problems in these components was found to impact learning positively. This study has to be repeated every one to two years after appropriate interventions have been made. Thus, we applied the PHEEM tool to investigate the association of the teaching environment with gender, year of residency (R1-R4) and department (Pediatrics, Obstetrics and Gynecology, Internal Medicine and Surgery), to increase the potential that the results to be relevant to the Ethiopian context.

PATIENTS AND METHODS

Setting: A cross-sectional study was conducted in the school of medicine, Tikur Anbessa Specialized Hospital (TASH) of Addis Ababa University. The School of Medicine was established in 1964 with the goal of producing medical doctors to shoulder responsibilities of solving the country's health problems. Starting from 1979, the School launched graduate programs for the first time with few post graduate students. Currently there are over one thousand graduate students. TASH is the largest specialized hospital in Ethiopia, with over 700 beds, and is a training center for undergraduate and postgraduate medical students, dentists, nurses, midwives, pharmacists, medical laboratory technologists, radiology technologists, and others. Currently there are 17 clinical departments that run specialty programs.

The study was conducted in 4 major clinical departments which shoulder the highest number of patients with complex health problems in a complex training environment. Among the other clinical departments, there are more post graduate students in these four specialty areas. A pilot study was conducted with 18 medical education students to check the clarity of the items of the questionnaire before the questionnaire was distributed to study participants. This study showed the items were clear and no modification was required.

Study participants: Resident representatives were approached by the main author and questionnaires were given to be distributed to all residents who were willing to participate in the study. The questionnaires were distributed after or before their class activity by resident representatives. The questionnaire was then collected immediately to avoid information contamination. There was no conflict of interest that could bias the findings.

Data management and data analysis: Each of the items in the PHEEM questionnaire were scored on a 5-point Likert Scale that ranges from 0-4 (0 = strongly disagree (SD), 1= disagree (D), 2 = Uncertain (U), 3 = agree (A), and 4 = strongly agree (SA). Four of the 40 items (item 7, 8, 11 and 13) are negatively worded and they were reverse scored for the purpose of analysis as: 0 = SA, 1 =A, 2 =U, 3 = D, and 4 = SD.

Means were calculated. The effects of training stage R1-R4 and gender (male versus female) on the PHEEM scores were estimated.

Data were checked for integrity and analyzed using SPSS version 21 software. Descriptive statistics were reported as mean, median and standard deviation. The questionnaire didn't include names.

Ethical considerations

Informed consent was obtained from participants and confidentiality was maintained. Ethical clearance was obtained from the Institutional Review Board of the College of Health Sciences of Addis Ababa University.

RESULTS

Two hundred eighteen residents (60.1%) who attended their morning class activities responded out of 363 residents registered in the four major clinical departments. Those who were on leave and were absent from their morning activities were not included. Those who responded were composed of 152 males (71.7%). Six questionnaires were incompletely filled and excluded from the analysis. Table 1 shows the response rate in each department (Internal Medicine, Surgery, Obstetrics and Gynecology and Pediatrics).

Table 1: response rate in each department (Internal Medicine, Surgery, Obstetrics and Gynecology and Pediatrics)

Department	Participant responded	Total number of residents	Response rate (%)
Pediatrics	42	60	70.0
Obstetrics and Gynecology	49	85	57.6
Surgery	70	120	58.3
Internal medicine	57	95	60.0
Total	218	363	60.1

Age of study participants ranged between 20-38 years with a mean age of 26.1 years. In terms of the year that they were in residence, 89(42.0%), 64 (30.2%), 38(17.9%), 20(20.0%) were R1, R2, R3 and R4 respectively. One resident did not mention his year of residency.

Overall mean and subscales score of the PHEEM for the three sub-domains are summarized in Table 2.

Cumulative score for each domain was 28.53/56, 31.57/60, 16.73/44 for role autonomy, perception of teaching and perception of social support, respectively". The total cumulative score for the 3 domains was 76.83/160.

For three items, "This hospital has good quality duty rooms for junior doctors, when on duty", "There is ethnic discrimination in my assignment area, "There is gender discrimination in my assignment area"; participants scored less than one (Table 3).

Table 4 shows the cumulative scoring of the four major clinical departments and interpretation of the results. Surgery scored 72.68, Obstetrics and Gynecology scored 81.47, Pediatrics scored 81.48 and Internal Medicine scored 69.74 out of 160.

Table 2: Summary of the Post Graduate Hospital Educational Environment Measure questionnaire score for the four major clinical departments.

	Perception of role autonomy	**Mean**	**SD**
1	My workload is more than I can handle	2.58	1.246
4	I do not receive appropriate compensation from my job	3.35	.920
5	I have the appropriate level of responsibility in my assignment	2.54	1.208
8	I am afraid of being taken to court	2.50	1.146
9	I am provided with a junior doctor's handbook for reference	1.00	1.140
11	When patients or their family know that I am a new physician, they do not trust the medical treatment I provide	1.70	1.128
14	There are clear clinical protocols which guide me in my practice	1.22	1.201
17	Nursing staff members help me with my clinical work	2.01	1.251
18	During my clinical learning hours, I have good supervision and protection	1.62	1.118
29	I feel part of a team working here:	2.63	1.109
30	I have opportunities to acquire the appropriate practical procedures at my level	2.11	1.243
32	The workload in my practice is acceptable	1.83	1.208
34	I regularly receive feedback from senior medical staff that helps me review and improve my clinical practices	1.77	1.276
40	My clinical teachers promote an atmosphere of mutual respect	1.67	1.278
	Cumulative score of the above items out of 56 (mean)	28.53	
	Perception of Teaching	**Mean**	**SD**
2	My job takes a lot of my energy and physical strength	3.17	.954
3	When I am on call I am unable to get enough sleep	2.76	1.156
6	I have good clinical supervision at all time	1.75	1.146
10	My clinical teachers have good communication skills	2.27	1.248
12	I am able to participates actively in educational events	2.55	1.050
15	All of my clinical teachers have good teaching skills	2.26	1.153
21	My clinical teachers effectively utilize clinical cases when teaching me	2.16	1.097
22	I get regular constructive feedback from seniors	1.58	1.122
23	I like the current work environment and atmosphere	1.59	1.171
27	I am stressed when dealing with patients who present with problems outside my specialty when I am on duty	2.10	1.106
28	My clinical teachers set up clear learning objectives for me	1.52	1.158
31	My clinical teachers are accessible	1.91	1.144
33	Senior residents take the initiative to care about my clinical work	2.54	1.050
37	I feel that my clinical teachers are approachable	1.82	1.183
39	The clinical teacher provides me with good feedback on my strengths and weaknesses	1.59	1.134
	Cumulative score of the above items out of 60 (mean)	31.57	
	Perception of social support	Mean	SD
7	There is ethnic discrimination in my assignment area	.79	.935
13	There is gender discrimination in my assignment area	.95	1.077
16	I have a heavy workload when I am on duty	2.79	1.127
19	My clinical teachers are enthusiastic about teaching	1.88	1.097
20	This hospital has good quality duty rooms for junior doctors, when on duty	.60	1.048
24	I feel physically safe in the hospital environment	1.37	1.283
25	I have no problem with non-physician medical staff members	2.31	1.264
26	Other non-physician medical staff members do not trust my clinical decisions because I am a new physician	1.40	1.020
35	I have enough opportunity to learn the knowledge and skills I need to practice medicine	2.07	1.216
36	I get a lot of enjoyment out of my present job	1.51	1.292
38	There are good counseling opportunities for junior doctors who fail to complete their training satisfactorily	1.05	1.61
	Cumulative score of the above items out of 44 (mean)	16.73	
	Overall score out of 160 (mean)	76.83	

Table 3: Summary of the items with mean score below 2 from the four major clinical departments in ascending order

	Item	Mean	SD
20	This hospital has good quality duty rooms for junior doctors, when on duty	0.60	1.048
7	There is ethnic discrimination in my assignment area	0.79	0.935
13	There is gender discrimination in my assignment area	0.95	1.077
9	I am provided with a junior doctor's handbook for reference	1.00	1.140
38	There are good counseling opportunities for junior doctors who fail to complete their training satisfactorily	1.05	1.61
14	There are clear clinical protocols which guide me in my practice	1.22	1.201
24	I feel physically safe in the hospital environment	1.37	1.283
26	Other non-physician medical staff members do not trust my clinical decisions because I am a new physician	1.40	1.020
36	I get a lot of enjoyment out of my present job	1.51	1.292
28	My clinical teachers set up clear learning objectives for me	1.52	1.158
22	I get regular constructive feedback from seniors	1.58	1.122
23	I like the current work environment and atmosphere	1.59	1.171
39	The clinical teacher provides me with good feedback on my strengths and weaknesses	1.59	1.134
18	During my clinical learning hours, I have good supervision and protection	1.62	1.118
40	My clinical teachers promote an atmosphere of mutual respect	1.67	1.278
11	When patients or their family know that I am a new physician, they do not trust the medical treatment I provide	1.70	1.128
6	I have good clinical supervision at all time	1.75	1.146
34	I regularly receive feedback from senior medical staff that helps me review and improve my clinical practices	1.77	1.276
37	I feel that my clinical teachers are approachable	1.82	1.183
32	The workload in my practice is acceptable	1.83	1.208
19	My clinical teachers are enthusiastic about teaching	1.88	1.097
31	My clinical teachers are accessible	1.91	1.144

Table 4: Summary of the cumulative means of the three domains of PHEEM for the four major clinical departments

Grading, interpretation, mean and overall score for each department for the 3 domains		Surgery	Obs/Gy	Pediatrics	Internal medicine
Perception of role autonomy					
0-14	Very poor	27.14			26.77
15-28	A negative view of one's role		30.55	30.88	
29-42	A more positive perception of one's job				
43-56	Excellent perception of one's job				
Perception of teaching					
0-15	Very poor quality				
16-30	In need of some retraining				
31-45	Moving in the right direction	29.46			27.33
46-60	Model teachers		34.2	33.5	
Perception of social support					
0-11	Non existent				
12-22	Not a pleasant place	16.08	18.58	17.1	15.64
23-33	More pros than cons				
34-44	A good supportive environment				
Overall score					
0-40	Very poor				
41-80	Plenty of problems	72.68			69.74
81-120	More positive than negative but room for improvement		81.47		81.48
121-160	Excellent				

DISCUSSION

The major findings in our study were: an overall score of 76.83/160, the score for 22 items was less than 1; residents rated the clinical environment favorably in the order of Pediatrics and Child Health, Ob/Gy, Surgery and Internal Medicine. Residents in the first year and male residents rated the environment favorably than their senior residents and female residents, respectively.

The finding of an overall score of 76.8/160 suggests our clinical learning environment needs revision. Lack of quality duty rooms, presence of gender discrimination, lack of junior doctor's handbook for reference, lack of clinical protocols which guide the practice area, lack of supervision during practice, no constructive feedback from seniors, exhaustive working hours, lack of social support in general made the clinical learning environment an unpleasant place for training. This calls for faculty development. Faculty development "is not just about ''teaching the teachers to teach''. It should be an institution-wide pursuit with the intent of professionalizing the educational activities of clinical teachers, enhancing educational infrastructure, and building educational capacity for the future—in other words, establishing education and training at the centre of what clinician trainers, and trainees, do."(21)

Items with a mean score of 2-3 identify elements of the clinical environment that could be enhanced. It is interesting and disappointing also that the score for 22 items is less than 2. These items should be examined very closely because these indicate core problem areas.

Our finding is similar to a study done at Dammam University, Kingdom of Saudi Arabia (14) where the score for 19 items was less than 2. Junior residents in our study perceived the clinical learning environment better than the senior trainees, which is similar to the study done in the UK (16). This could be a result of enculturation. However, the study done in Saudi Arabia did not show significant differences between training years, suggesting that context specific educational and work processes and issues may be contributing factors (14).

Though this study was done in 4 major clinical departments in the same hospital, there was a difference in the perception of the clinical learning environment when scores across departments were compared. There was a perception of plenty of problems in the overall score in all the three domains in Internal Medicine followed by Surgery but more positive than negative with room for improvement in Pediatrics followed by Obstetrics and Gynecology. Trainers in the departments of surgery and internal medicine need some training.

Junior residents and male residents rated the environment positively than senior residents and female residents. This is similar to a study done in the UK (16) but contrary to a study done in Saudi Arabia (14).

Residents in all departments viewed social support as an unpleasant place. The presence of ethnic and gender discrimination and lack of quality duty rooms, when on duty are scored less than 1 which requires immediate measures.

Limitations of the study

This is a single hospital study and thus to generalize our conclusions for the learning environments in Ethiopia we need wider cohorts from medical schools conducting postgraduate training.

Conclusion and recommendation

For our training program to succeed, the training should be designed according to the best standards to ensure satisfaction of residents as well as clients. After remedial measures are taken we recommend a regular assessment of the clinical learning environment to determine whether the measures taken are effective. We would also like to recommend a larger nationwide study to be conducted.

ACKNOWLEDGEMENTS

I would like to thank Dr. Brian Hodges my mentor and educator for his invaluable investment of his time, energy, resources for the accomplishment of the medical education program and my thanks goes also to the whole medical education team. We would like to thank our residents for their willingness to share their impressions of the clinical learning environment.

REFERENCES

1. Biedma-Velazqeuez L, Serrano-Del-Rosal R, .Garcia-De-Diego JM, Cerrillo-Vidal JA (2012). Dissatisfaction with residency: A discrepancy between preferences and expectations? Medical teacher; e1-e7.
2. T.Giorgis A, Shimelis D, Gedlu E, Tefera M (2014). Why post graduate students are not participatory in discussion forums as expected? Thesis for higher diploma program, College of Health Sciences, Addis Ababa University.
3. WWW. Indexmundi.com .Ethiopian Demographics Profile 2014 (accessed on September 2019).
4. Berhan Y. Medical doctors' profile in Ethiopia: production, attrition, and retention: in memory of 100-years Ethiopian Modern Medicine and the new Ethiopian Millennium. Ethiop Med J 2008;46 (suppl):1-77.
5. Eraut M. Learning from other people in the workplace. Oxford Review of Education 2007'33(4):403-22.
6. Myers KK, Sadaghiani K. Millennials in the Workplace: A Communication Perspective on Millennia's Organizational Relationships and Performance. J Bus Psychol 2010;25(2):225-38.
7. Sinai J, Tiberius R, de Groot J, Brunet A, Voore P. Developing a training program to improve supervisor-resident relationships, step 1: defining the types of issues. Teaching and Learning in Medicine 2001;13(2):80-5.
8. Kilminster S, Cottrell D, Grant J, Jolly B. AMEE Guide No. 27: Effective educational and clinical supervision. Med Teach 2007;29(1):2-19.
9. Soemantri D, Herrera C, Rquelme A. Measuring the educational environment in health professions studies; Systematic review. Med Teach 2010;321(2):947-52.
10. Isba R, Boor K (2011): Creating a learning environment. Medical education: theory and practice. Edited by Tim D, Karen M, Alber S. Great Britain: Churchill Livingstone.
11. Tsai J-C, Chen C-S, Sun I-F, Liu K-M, Lai C-S. Clinical learning environment measurement for medical trainees at transitions: relations with socio-cultural factors and mental distress. BMC Medical Education (2014);14:226.
12. C.Dominic (2002). Journal of Nursing Education 41(2):69-75.
13. Al-Sheikh M.H., Ismail M. H., Al-Khater S.A (2014). Validation of the postgraduate hospital educational environment measure at a Saudi university medical school. Saudi Med J 35 (7):734-38.
14. Al-Marshad S., Alotaibi G (2011). Evaluation of clinical educational environment at King Fahad Hospital of Dammam University using the postgraduate Hospital Education Environment Measure (PHEEM) inventory. Education in Medicine Journal 3(2):e6-e14.
15. Roff S, McAleer S, Skinner A (2005). Development and validation of an instrument to measure the postgraduate clinical learning and teaching educational environment for hospital-based junior doctors in the UK. Medical Teacher 27 (4):326-31.
16. Clapham M, Wall D, Batchelor A. Educational environment in intensive care medicine—use of Postrgaduate Hospital Educational Environment Measure (PHEEM). Med Teach 3007;29:e184-e191.
17. Aspegren K, Bastholt L, Bested KM, et al.. Validation of the PHEEM instrument in a Danish hospital setting. Med Teach 200;29:498-500.
18. Biggs JSG. Postgraduate medical training in Pakistan: observations and recommendations. J Coll Physicians Surg Pak 2008;18(1):58-63.
19. Al-Sheikh M H., Ismail M H., Al-Khater S A. Validation of the postgraduate hospital educational environment measure at a Saudi university medical school. Saudi Med 2014;35 (7):734-38.
20. Msaouel P, Keramaris NC, Tasoulis A, Kolokythas D, Syrmos N, Pararas N, Thireos E, Lionis C. Burnout and training satisfaction of medical residents in Greece: will the European Work Time Directive make a difference? Human Resources for Health 2010;8(16);1-11.
21. T Swanwick. See one, do one, then what? Faculty development in postgraduate medical education.http://journals.bmj.com/cgi/reprintform. Accessed on September 2019.