

ORIGINAL ARTICLE

Undergraduate Medical Students' perception towards
assessment environment at CMH, Lahore Medical College,
Pakistan

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ABSTRACT

To measure the perception of medical students on the assessment environment in CMH Lahore Medical College, Pakistan and to find the difference in their perceptions with respect to their academic year. This cross-sectional study was conducted at CMH Lahore Medical College from December 2019 to March 2020, and comprised second, third and fourth year medical students. Data was collected using a questionnaire "Assessment Environment Questionnaire" (AEQ) on 4 point Likert scale. Survey was anonymous. SPSS package 20 was used for statistical analysis. Questionnaire was filled by 238 students, with 79% response rate. The overall "AEQ" inventory mean score was 54.1 out of total 80 points of questionnaire yielding a percentage of 67.5. The best score 2.83 was given for the item "I received feedback on my performance for continuous assessment". The lowest score (2.59) item was "Feedback is given promptly after an assessment". Both highest and lowest scored items were from feedback subscale. The subscales regarding "Perception of Information on Assessment" (68.3%) and "Perception of Assessment System/Procedure" (68.2%) scored highest while Students' ratings were low for the subscales "Perception of Learning and Performance" (67.9%) and Perception of Feedback Mechanism (66.9%). Significant differences of perceptions were found in all subscales with respect to students' academic years ($p > 0.05$). Second and third year medical students scored more than fourth year medical students in all subscales: feedback mechanism ($p = 0.0001$), learning and performance ($p = 0.0001$), information on assessment ($p = 0.031$), assessment system (0.012) and total mean score of second year (55.7 ± 7.99) and third year (55.83 ± 8.75) than fourth year (48.53 ± 11.18) ($p = 0.0001$). Undergraduate medical students had a positive perception towards assessment environment in CMH Lahore Medical College, Pakistan. However, results of the study implied that the process of providing and receiving feedback required multiple measures on the assessment environment for better educational outcomes and development of clinical skills among medical students.

Key words: Assessment, environment, medical students, feedback

Received 28.10.2020

Revised 29.11.2020

Accepted 05.01.2021

How to cite this article:

R Kamran, H Rashid, A Bari, S Mushtaq, S Tufail, S Zaffar, B Amin, F Ijaz, R K Aftab. Undergraduate Medical Students' perception towards assessment environment at CMH, Lahore Medical College, Pakistan. Adv. Biores. Vol 12 [1] January 2021. 30-35

INTRODUCTION

Educational environment (EE) is a vital factor in producing competent health care providers. The term EE can be defined as any factor that can influence the learning explicitly or implicitly. It plays a crucial role in identifying learners' educational achievements and problems as well as directly linked with the success and satisfaction of educational program [1].

The students' perceptions regarding EE assist medical teachers and instructional designers to modify and take actions for optimization of the educational environment in the educational setting [2, 3]. Literature

reported that, EE of hospital or medical school play an integral role for student centered meaningful learning which lead to produce competent doctors [4].

All medical educators, instructional designers and curriculum developers give importance to various dimensions of assessments as it reflects success of learning outcomes as well as students' learning.⁵The process of evaluating, calculating, gathering, exploring facts and eventually giving a feedback is called assessment.⁶ In medical college, the assessment is multidimensional to assess competency of future health professionals for the delivery of safe health care and patient safety. Students should be provided from the beginning of learning session with the learning outcomes, marking and examinations setting of their assessment as well as the importance of feedback from educators for the improvement of their learning [6]. Our institution, CMH Lahore Medical College (CMHLMC), Lahore Pakistan implemented the curriculum change from a discipline-based to an integrated curriculum. Hence, in view of the change from a teacher- centered to a student –centered curriculum in our institution, it would-be appropriate to measure the students' perceptions of the EE regarding assessment in the integrated curriculum. As assessment is the important component of the curriculum, measuring undergraduate medical students (UGMS) perception towards assessment environment can indicate both positive and negative perceptions that the students may hold towards their assessment environment and consequently help us to “determine ”the strengths and weaknesses of our assessment environment. By knowing the weaknesses or flaws as revealed by negative perceptions, suitable corrective actions can be recommended to the relevant authorities for the improvement of assessment environment. Moreover, the findings of present study would assist us in planning and developing faculty development programs in CMHLMC. The objectives of this study were to measure the UGMS' perception of their assessment environment at CMHLMC, and to investigate any differences in their perceptions based on their academic year.

MATERIAL AND METHODS

This Cross-sectional descriptive study was conducted in CMHLMC from December 2019 to March 2020. After taking permission from the original authors [7] and Institutional Review Board of CMHLMC a Questionnaire “Assessment Environment Questionnaire” was used. It is a self-administered, reliable (0.89 cronbach alpha), pre-tested and pre-validated tool. Students' individual perception scores were calculated and the means of both individual subscale and global score were compared in terms of different academic years. SPSS 20 will be used for statistical analysis. All 2nd, 3rd&4th year medical students who were exposed to the modular assessment system throughout the whole academic year at CMHLMC were included. 1st year medical students were excluded because they were not exposed to the modular assessment and had to start their classes in January 2020. Final year students were not available due to their midterm assessments. Census sampling was used for our current study. Questionnaires were distributed after taking verbal consent to the participants, and were collected after they completed it. The names of the participants were kept confidential. They were asked to complete the questionnaire without indicating their names as the survey was anonymous. The “Assessment Environment Questionnaire” inventory comprised of four subscales:

Perception of Feedback Mechanism

Perception of Learning and Performance

Perception of Information on Assessment

Perception of Assessment System/Procedure

Four-point Likert scale was used for the responses on items. With 4 being “Strongly Agree”, 3 “Agree”, 2 being “Disagree” and 1 being “Strongly Disagree”. The greater the score, the greater the indication of positivity of perception towards assessment environment. This suggests that the total maximum marks of “AEQ” were 80 and least possible score was 20. Demographic information regarding gender and educational level (year in medical college) were included in questionnaire.

The information collected was analyzed by using statistical software SPSS -20. Qualitative variables were presented by calculating frequency and percentages. Mean and SD were calculated for the scores of questionnaires. T-test was used to compare the mean AEQ scores of 2nd year, 3rd year and fourth year medical students. $P < 0.05$ was considered statistically significant.

RESULTS

A total of 238 students out of 300 in 2nd, 3rd and 4th year MBBS at CMHLMC, participated in the study with the response rate of 79%. Distribution of the students by gender and academic year is given in Table-I. The reliability of questionnaire calculated for the complete questionnaire was 0.86. It was an excellent value. The scores for the 20 items are shown in Table-4. The highest percentage score was given to the Perception of Information on Assessment (68.3%) and Perception of Assessment System/Procedure

subscales 68.2% respectively, followed by the “Perception of Learning and Performance” subscale which gained 67.9%. The subscale regarding “Perception of Feedback Mechanism” obtained minimum percentage of 66.9%. The total mean of the inventory was 54(67.5%) out of 80 for the 20 items of AEQ. Students of third year showed highest mean score of 55.8(69.7%) followed by second year students 55.7(69.6%), whereas fourth year students scored lowest mean score of 48.5(60.6%) (Table-2). The best score by students were given for the item regarding “receiving feedback on student’s performance for continuous assessment” (2.83). The lowest rated score was also from feedback subscale (question number. 1.4: “Feedback is given promptly after an assessment 2.59 by students (Table-4). All four subscales of AEQ inventory showed significant difference seen in perception of students regarding assessment environment at CMHLMC with respect to their academic years ($P > 0.05$) (Table 2).

Table-I: Demographic characteristics of participants in the study n= 238

Academic years	Male	Female	Total	Percentage of Students
2 nd year	31	46	77	32.3
3 rd year	42	66	108	45.3
4 th year	25	28	53	22.2
Total	98	140	238	100

Table-2: perception of UGMS towards assessment on the basis of their academic years (n=238).

Academic year	Mean	Median Mode	Standard Deviation
Second year	55.74	56(60)	7.99
Third year	55.83	56(60)	8.75
Fourth year	48.53	51(57)	11.18
Total marks of all years	54.1(67.5%)	55(60)	9.58

Table-3: Difference of perception among participants of various academic years regarding Assessment Environment of CMHLMC & IOD (Mean \pm SD)(n=238).

Subscales	Maximum Score	2nd Year UGMS (n=77)	3rd year UGMS(n=)	4th year UGMS(n=)	p-value
Feedback Mechanism	28	19.29 \pm 3.07	19.62 \pm 3.40	16.17 \pm 5.51	0.0001
Learning and Performance	20	14.00 \pm 2.60	14.00 \pm 2.99	12.15 \pm 3.29	0.0001
Information on Assessment	20	14.06 \pm 2.76	13.82 \pm 0.30	12.72 \pm 3.26	0.031
Assessment System/Procedure	12	8.39 \pm 1.86	8.39 \pm 2.06	7.49 \pm 1.69	0.012
Total Score	80	55.74 \pm 7.99	55.83 \pm 8.75	48.53 \pm 11.18	0.0001

Table 4: Mean scores of 20 items of Assessment Environment Questionnaire (AEQ), mean scores & %ages of subscales

S. No	AEQ Inventory	Mean Score
	Perception of Feedback Mechanism	
	18.75 (66.9%)	
1.1	I received feedback on my performance for continuous assessment.	2.83 \pm 0.80
1.2	I received feedback on my performance for final exams.	2.61 \pm 0.83
1.3	Feedback from assessors about my performance is adequate.	2.67 \pm 0.75
1.4	Feedback is given promptly after an assessment. ?	2.59 \pm 0.83
1.5	The form of feedback I received matches the purposes of the assessments.	2.72 \pm 0.59
1.6	Feedback from assessors about my performance is appropriate.	2.70 \pm 0.74
1.7	I receive on-going feedback on my progress. ?	2.63 \pm 0.76
	Perception of Learning and Performance	
	13.59 (67.9%)	
2.1	The assessment system encourages me to reflect on my own performance.	2.73 \pm 0.75
2.2	I receive feedback on my work from a range of sources (e.g., teachers, peers)	2.65 \pm 0.78
2.3	The feedback I received helped me to improve my learning. ?	2.72 \pm 0.82
2.4	The assessment system supports my learning. ?	2.76 \pm 0.83
2.5	The feedback I received helped me to improve my grades.	2.73 \pm 0.81
	Perception of Information on Assessment	

	13.66 (68.3%)	
3.1	A description of how individual assessments and exams contribute to the total score is made known to students.	2.76±0.82
3.2	I received information about what is expected of me in any exam/assessment.	2.66±0.83
3.3	Students receive clear information about assessment. ?	2.78±0.76
3.4	I understand the assessment criteria for all the tests/exams I took. ?	2.74±0.0.76
3.5	Assessment criteria are clearly defined.	2.72±0.80
	Perception of Assessment System/Procedure	
	8.19 (68.2%)	
4.1	Assessment in the programme is conducted fairly. ?	2.71±0.81
4.2	Students are adequately assessed. ?	2.73±0.72
4.3	Learning outcomes are appropriately assessed?	2.75±0.75

DISCUSSION

Assessment plays a vital role in medical education and gives awareness and data to medical colleges, faculty and students for the betterment of educational outcomes and delivery of safe care to patients.⁷The present study indicated positive perception of medical students towards assessment environment in CMHLMC, by gaining 67.5% score in the questionnaire. This is in accordance with a study done by the constructor of AEQ, which also showed similar findings [7]. Perceptions of medical students identify strengths and weaknesses of the assessment environment in CMHLMC and highlight the key variables that could help in making an improved assessment environment for them. Although all 20 questions of AEQ scored more than 2 on the 4 point likert scale but not a single question scored 3 or 4, which highlighting the weaknesses of assessment environment. A study conducted in Pakistan among dentistry students discloses a finding consistent with present study by scoring more than 2 and less than 3 points in all 20 questions [8].

The high percentages of subscales regarding Information on Assessment (68.3%) and Assessment System (68.2%) showed that students were satisfied with these subscales. All the items of assessment system and assessment information scored more than 2.7 except one item "I received information about what is expected of me in any exam/assessment". This highlighted the communication problem within assessment environment and it needs to be corrected in the future by designing a proper and timely system of communication. Specification of the expected learning outcomes is critical for the planning and implementation of student assessment [9]. Many weaknesses reported in present study are in line with the previous study done in Pakistan by Kinza *et al.* among dental students.⁸Contrary to this study, our results were better as the subscale of "Learning and Performance" in current study scored 67.9% which was the second lowest score whereas in study conducted by Kinza *et al.* this subscale scored 67.5% which was the highest scored subscale. The findings of this subscale showed moderate satisfaction of students. The lowest scored item of learning and performance (I receive feedback on my work from a range of sources) also emphasized the importance of feedback in medical education.

The lowest percentage (66.9%) of subscale regarding feedback mechanism could draw the attention of medical teachers and trainers to take measures for further improvements in the feedback system. Similar results were shown in studies from Malaysia and Pakistan in which the subscale of 'feedback mechanism' scored the lowest minimum score [7, 8].

Feedback is an instrument which provides information regarding previous performance and is utilized for ideal academic development of students [10]. A study conducted in USM, Malaysia by Jothi *et al* also highlighted the concerns of medical students regarding timing of feedback and the mode of feedback [11]. In current study second and third year medical students scored more than fourth year students, which in line with the findings of published study in KSA among medical students of King Saud bin Abdul Aziz University for Health Sciences. The study showed that feedback on students' clinical performance was also deficient and fails to concentrate [12].

The need of giving feedback in clinical years during patients' interaction has been found very beneficial for development of clinical skills among medical students. This indicates that clinical trainers require to acknowledge and consider the role of feedback for effective teaching and learning.¹³ Another research by D Murdoch-Eaton & J Sargeant reported that junior students considered feedback as passive activity. On the other hand the same study revealed, senior students who had exposure with patients, considered instant informal feedback after clinical encounter as a source of information for their specific learning style and believed to be crucial for their progress [14].

These differences of perceptions regarding receptivity of feedback may be due to different developmental stage of students [15].

Various techniques should be applied in settings whether the time for feedback is short or long duration. Relevant, real time, and reliable feedback are crucial for medical education.¹⁶ Regularization of feedback, identifying performance goals, and confirming goal alignment may assist medical teachers overcome difficulties to effective feedback [17].

Faculty development programs can play a vital role to train faculty for effective and prompt feedback. Workshops should be conducted for faculty which would be beneficial for both students and faculty [18]. Establishment of positive educational environment, Reflection by the teaching faculty on his/her feedback skills, Make feedback as a part of learning process are few strategies that will provide clinical teachers with a framework of strategies to give feedback to students [16]. In order to improve the assessment environment, CMHLMC should highlight the significance of feedback to their faculty and develop effective process for monitoring of feedback.

STRENGTHS AND LIMITATIONS

A reliable (0.89 reliability), pretested and a validated questionnaire (AEQ) was utilized. In terms of limitations, the current study was conducted in only one private medical college of Pakistan and the results, as such, are not generalizable. There is a need to conduct more studies in other medical colleges of Pakistan for the generalization of results. More studies would draw a clear picture of the of medical students' perception on assessment environment.

CONCLUSION

Under graduate medical students showed positive perception towards assessment environment at CMHLMC analyzed through this questionnaire. Although the medical students were satisfied with the overall assessment environment but there is a dissatisfaction found among students about the feedback mechanism. The results indicated that many factors can be improved in the light of current study.

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