

Workshop on Construction of Case Cluster MCQs what, why and how: Reaction of faculty

TAHIRA SADIQ¹, RAHEELA YASMIN², NIGHAT ARIF³, QAMAR ZIA⁴

¹Associate Professor Community Medicine, Islamic International Medical College, Rawalpindi

²Director Medical Education, Islamic International Medical College, Rawalpindi

³Assistant Professor ENT, Avicenna Medical & Dental College, Lahore

⁴Assistant Professor of Urology, CMH, Lahore

Correspondence to Dr. Nighat Arif, Email: drnighatqamar@gmail.com, Cell: 0337-9224767

ABSTRACT

Background: Integrated curriculum is applied to most of the medical colleges, but the assessment is still disintegrated. There is a great need to develop faculty on construction of complex assessment items like Case Cluster MCQs, which are considered best for assessing PBLs. To align assessment strategies with teaching strategies, a workshop was arranged to develop faculty on a new skill, how to construct case cluster

Aim: To assess the reaction of faculty in terms of satisfaction at the end of the workshop.

Methods: A quantitative program evaluation study was carried out on 75 faculty members of basic and preclinical sciences of a medical college, including demonstrators, post graduate trainees, assistant professor, associate professor and professor. 4-hour workshop was conducted three times, counting 25 participants each time. After the workshop, participant's "reaction" was measured through self-reported "post workshop satisfaction questionnaire" on 5-point Likert scale. Along with descriptive statistics and percentages, Pearson Correlation Coefficient was used to analyze the data.

Results: Satisfaction of participants after the workshop (n=75) was 93.3 % on a 5-point Likert scale (p=0.00). Range of responses of all the 10 variables fell between 3.93 and 4.61. 55.8 % (p= 0.00) of participants strongly agree and 38.1% (p=0.00) agree on parameters of workshop. Among all the participants 35.7 % agree and 64.3 % strongly agree that workshop enhanced their learning about case cluster MCQs. Not a single participant disagrees. This shows a positive attitude of participants towards the workshop.

Conclusion: It is remarkable that a positive change in the attitude of faculty members in terms of the importance of 'CC MCQs for assessing PBLs' took place as a result of a single day workshop. Aiming case cluster MCQs as part of assessment can help students to learn better and improve their clinical reasoning.

Keywords: Faculty development program, Case Cluster MCQs, Problem Based Learning, integrated assessment.

INTRODUCTION

Integrated learning is the need of today's medical era. Integrated curriculum is applied to most of the Asian undergraduate medical colleges, but the assessment is still disintegrated¹. In traditional assessment system, acquisition of knowledge or demonstration of few competencies were satisfying for assessing the students, whereas in integrated system emphasis is shifted to the quality of care provided to the patient².

PBL is considered as an important teaching strategy for every medical curriculum³. As Pointed by Shafi and colleagues that PBL is more likely to promote a deeper approach than conventional teaching⁴. Assessments in programs like PBL, 'open discovery approach' often emphasizes on course variables such as self-directedness, enthusiasm, exertion, problem resolving and attitude. Limited information in literature is found to provide guidelines to assessors, how to construct new styles of MCQs for testing higher order thinking skills⁵. These concerns are addressed by Vuma and colleagues that EMQ and case cluster MCQs reported to test analytical and problem-solving skills along with the integration of knowledge⁶. This concept was further strengthened that case cluster MCQs are preferable for PBLs as they can assess comprehension, application, and problem-solving

skills of students⁷, hence considered best for assessing PBLs as compared to MEQs^{6,8}.

According to the 3rd revised version of NBME on creating written test questions for basic and clinical sciences, it is significantly proved that traditional MCQs are observed unsuitable because they cause students to 'study to the test' and dispirit students from self-determination of the content educated and course of learning. In contrast, tests using case cluster MCQs are linked with the same patient appearance are predominantly suitable for PBLs⁹. According to literature case cluster MCQs are easy to construct and grade and less time consuming. More courses can be examined in a short period and also take fewer problems associated with sampling. They also increase question clearness and increase significance of the curriculum⁸.

Assessment strategies should be in line with teaching strategies. Gap in literature was found that there was less use of Case Cluster MCQs because of complexity in construction and involvement of multiple disciplines. Quality control trainings are imperative for guaranteeing high-quality assessment items. At this juncture, importance of Faculty development program on construction of case cluster MCQs to assess PBLs was perceived. There is no empirical evidence that faculty has trained on the construction of CC MCQs in Pakistan and assessed for its affectivity. This study will illustrate the reaction of faculty members on construction of Case Cluster MCQs as a result of workshop.

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MATERIAL AND METHOD

A quantitative program evaluation study carried out on 75 faculty members of basic and preclinical sciences of IIMC who were involved in PBL teachings, including demonstrators, post graduate trainees, assistant professor, associate professor and professor. Sample size was calculated through Rao soft and sampling technique was Census sampling. 4-hour workshop was conducted three times, counting 25 participants each time. Workshop was based on adult learning principles and objectives were achieved through different teaching strategies like interactive discussion, small group exercise, hands on activity and presentation of case cluster MCQs. Workshop was divided into three sections. 1st session was on introduction of case cluster MCQs and its importance, 2nd session was about guidelines to develop quality MCQs and the 3rd session was hands-on activity to develop case cluster MCQ by participants in group. Immediately after the workshop, participants “reaction” was measured through “post workshop satisfaction questionnaire”. Responses were self-reported by participants on 5 points Likert scale from strongly disagree to strongly agree, with 2 open-ended questions at the end. 10 questions were designed on the bases of satisfaction, relevance¹⁰ and engagement of participants during workshop. Many studies used these satisfaction surveys immediately after faculty development workshops^{3,11-24}. Data was analyzed through SPSS, version 16. Descriptive analysis was done on demographic characteristics and correlation coefficient was calculated through Pearson correlation.

RESULTS

Among 75 workshop participants, 67% were females and 27% were males. According to designation, 41% were postgraduate trainees. Major participation was from pathology (20%), physiology (18%) and Anatomy (12%). Demographics are further elaborated in following pie charts. Range of Likert score of all the 10 variables fell between 3.93 and 4.61. 55.8% (p=0.00) of participants strongly agree and 38.1% (p=0.00) agree on parameters of workshop. All variables showed positive correlation except time distribution for different segments of workshop and time for activity. 75.7% of participants agree on the fact that

time allocation was proper but 24.3% disagree. 22.9% faculty members disagree with time allocation as they were unable to complete their task in given time. On the other hand, 87.1% were agreed on time allotted for the activity portion. Among all the participants 35.7% agree and 64.3% strongly agree that workshop enhanced their learning about case luster MCQs. Not a single participant disagrees. This shows a positive attitude of participants towards the workshop.

Satisfaction of participants after the workshop (n=75) was 93.3% on a 5 point Likert scale (p=0.00). For the problem of multicollinearity, we calculate a correlation between the faculty responses. The correlation values lie between $-1 < r < +1$. An r value of more than 0.7 between any possible pairs of independent variables indicates multicollinearity. Our results show an r value of less than 0.7 between almost all possible pairs of independent variables, showing positive correlation between all the independent variables. All these variables show significant correlation except time allocation. Significance in terms of p-values of almost all the parameters is less than 0.05. Open ended responses for strengths and weaknesses were manually analyzed (Table 4).

Fig. 1: Gender distribution of faculty participants

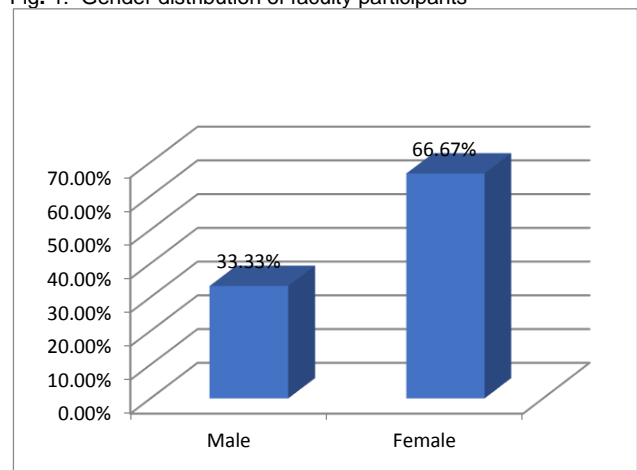


Fig. 2: Designation of participants

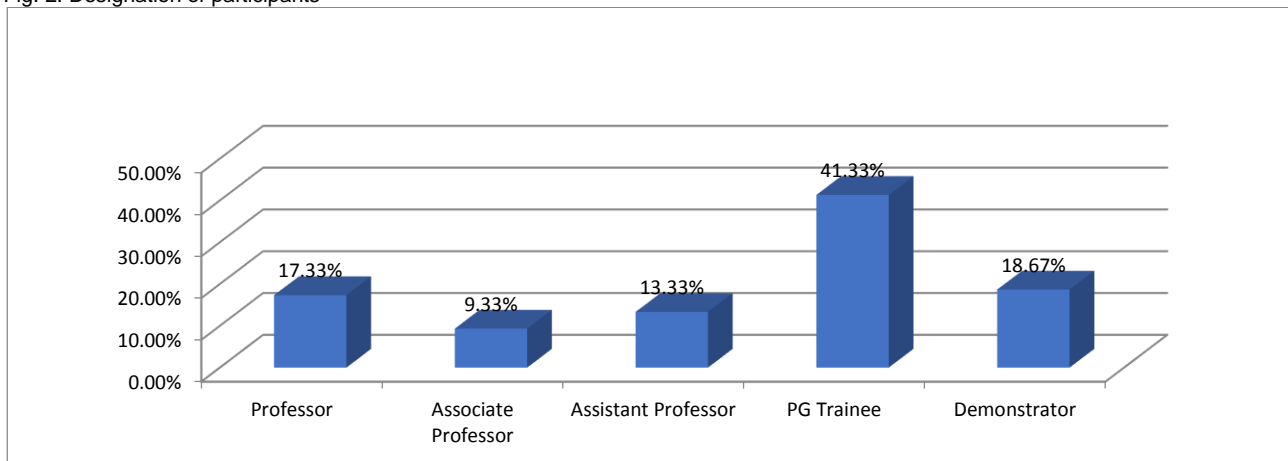


Fig. 3: Participation of faculty from different disciplines.

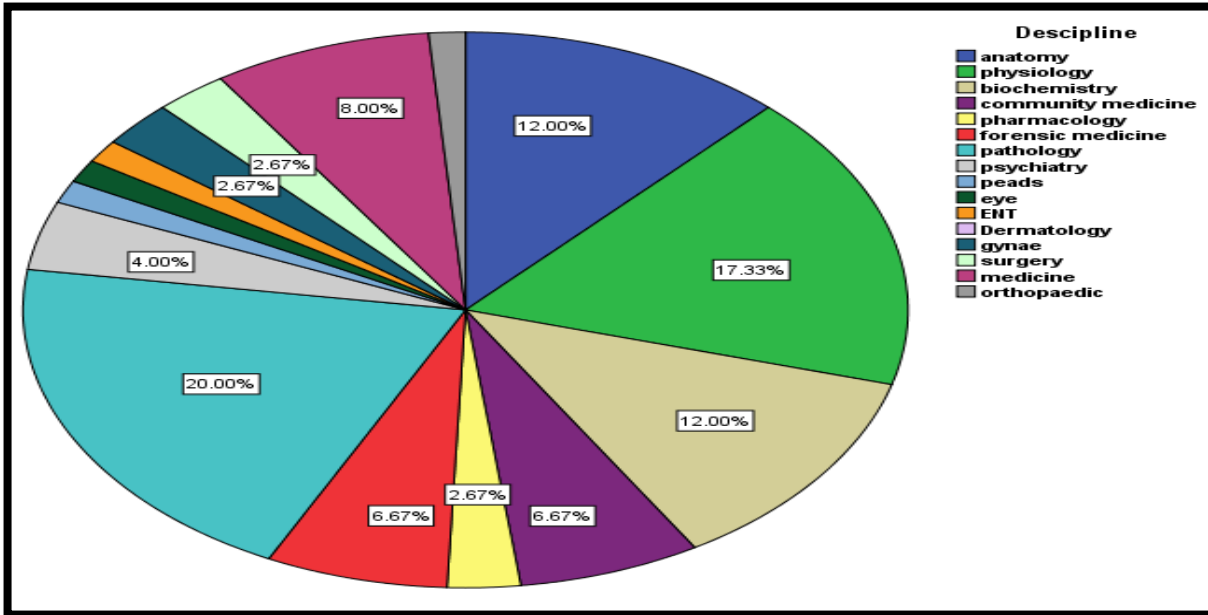


Table 1: mean and standard deviation of the satisfaction survey for the faculty members

Faculty Responses							
Questions	Strongly disagree	Disagree	Don't know	Agree	Strongly agree	Mean	Standard deviation
Workshop was well Organized	0.0%	0.0%	2.9%	38.6%	58.6%	4.56	0.56
Workshops environment was Conductive for learning	0.0%	0.0%	0.0%	40.0%	60.0%	4.60	0.49
Learning objectives of workshop were according to the need of participants	0.0%	0.0%	0.0%	41.4%	58.6%	4.56	0.50
Content delivered was according to learning objective	0.0%	1.0%	0.0%	35.7%	62.9%	4.60	0.57
Workshop went in a Logical order	0.0%	0.0%	1.4%	35.7%	62.9%	4.61	0.52
Time allocation for each segment was appropriate	1.4%	12.9%	10.0%	34.3%	41.4%	4.01	1.08
Workshop material was according to the need of participants	0.0%	0.0%	7.1%	38.6%	54.3%	4.47	0.63
Audio visual aids were working properly	0.0%	1.4%	0.0%	34.3%	64.3%	4.61	0.57
Workshop enhanced knowledge of participants	0.0%	0.0%	0.0%	35.7%	64.3%	4.47	0.63
Time for activity was appropriate	0.0%	14.3%	8.6%	47.1%	30.0%	3.93	0.98

Table 2: Average response rate of participants

Likert scale	Faculty response	Percentage	T-statistics	Significance	
Strongly agree	55.8 %	93.9 %	15.565%	.000	Positive responses indicating level of Satisfaction and are significant(p=0.00)
Agree	38.1%		30.349%	.000	
Don't know	3 %	3.1 %	2.366%	.042	Negative responses indicating level of dissatisfaction but not significant (p>0.05)
Disagree	2.9 %		1.660%	.131	
Strongly Disagree	0.2 %		1.000%	.343	

Table 3: correlation coefficient of the satisfaction survey for the faculty members

Questions	Pearson Correlation	Sig.(2-tailed)
Workshop was well Organized	1.000	.000
Environment was conducive for learning	.617	.000
Learning objective were according to need	.330	.004
Content was according to the learning objective	1.000	.031
Workshop went in a logical order	.395	.000
Time allocation for each segment was appropriate	.921	.001
Workshop material was according to the need of participants	.187	.012
Audio visual aids were appropriate	.821	.034
Workshop enhanced knowledge of participants	.510	.000
Time for activity was appropriate	.212	.068

Table 4: Strengths and weaknesses of workshop

<p>STRENGTHS OF THE WORKSHOP</p> <p>Presenter was confident, cooperative, had good mood, well prepared and good communication skills</p> <p>Frequent activities during workshop</p> <p>Presentation visuals and slides were reflecting good communication.</p> <p>Prizes for winners, Tea break, chocolates-</p> <p>Audience interaction, friendly environment, Questions were answered in detail</p> <p>Extremely well-organized workshop, Time utility was marvellous</p> <p>Group activity, presentation with feedback</p> <p>Team work in group activities</p>
<p>WEAKNESSES OF THE WORKSHOP</p> <p>Time was short for construction of MCQ</p> <p>Participants were not punctual</p> <p>Activities were not same for all the groups (same scenario)</p> <p>More practice session (workshops) needed</p>

DISCUSSION

Faculty development activities have been considered necessary and integral element by many Medical educationists all over the world^{16,19}. However, there is little evidence to suggest whether or not activities like construction of CC MCQs are considered satisfactory and relevant by faculty members. While measuring the Reaction of faculty members, showed high satisfaction level after attending the workshop. The mean score of all the 10 variables was in a narrow range from 3.9 to 4.6 on 5 points Likert scale. It means that overall 55.8% ($p=0.00$) of participants 'strongly agree' and 38.1% ($p=0.00$) 'agree' on workshop satisfaction survey. A workshop was conducted on writing for publication in medical education where participants rated workshop on average of 4.4 on 5 points Likert scale²⁵. In another study, High satisfaction of participants was found after a workshop on how to teach emergency medicine where they rated the workshop on five-point Likert scale as relevant (4.6), need-based (4.4) and useful (4.5) for the future²⁶. There is a positive correlation between all the independent variables (r value is more than 0.7 and p -values greater than 0.05). According to 22.9% ($p=0.06$) faculty, member's rating time allocation for activity was short and more time should be given to the active portion. All the parameters measured on Likert scale were significant ($p=0.00$)

Participants consistently found the workshop useful for both personal and professional benefits. Strength of workshop was its good organization, frequent activities, presentation of hands-on activity followed by feedback. Short time for activity was considered by most of the participants as a limitation. Another study conducted on impact evaluation of one day workshop on writing multiple choice questions, satisfaction was measured on feedback on content, instructional design, facilitation, and outcome of the workshop²⁷.

CONCLUSION

In the light of new results of this project and the above discussion, it is recommended that workshop can promote the faculty's adaptation of new knowledge and skill that later on along with follow up sessions can change the behavior. Positive attitude of faculty members that Case Cluster MCQs can be used for assessing PBL content, aim to help students to learn better and improve their clinical reasoning. Specific features mentioned in this study to be

associated with satisfaction survey were the use of a well-organized workshop based on an adult learning principle, experiential learning with feedback and teamwork with peers. It is remarkable that a positive change in the attitude of faculty members in terms of the importance of 'CC MCQs for assessing PBLs' took place as a result of a single day workshop.

Recommendations: The study needs to be carried out on a larger scale involving training of all the faculty members who are gone through an integrated curriculum in order to enhance validity and generalizability. Furthermore, a comparison between Item analyses of CC MCQs with standalone MCQ can also broaden the horizon of the study. A holistic approach can only be achieved if multiple training sessions (longitudinal program) on CC MCQs along with hands-on activity and feedback is scheduled. This will ultimately lead faculty to achieve a level of perfection and case cluster MCQs would be finally part of formative, block and end of year assessments.

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