

WOULD PRIOR EXPOSURE TO MCQs MAKE A DIFFERENCE IN SCORING AMONG MEDICAL STUDENTS?

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ABSTRACT:

Objective: To look at the effect of prior exposure of multiple-choice questions on scoring among medical students.

Methods: The study comprised of two groups of students rotating through nursery as a part of Paediatric clerkship. These groups are compared for their performance with and without prior exposure to multiple-choice questions (MCQs). MCQs consist of fifteen items on topic from neonatal care. A total of sixteen male students participated in the study, with eight in each group. Group 1 was given the MCQs on day one and the same questions were given to them on the last day of rotation (two weeks gap period). Group 2 had the same MCQs only on the last day of rotation (no prior exposure).

Results: The mean score in percentage for group 1 was found to be 83 while for group 2 was 79. No statistical difference was observed between the two ($p=0.45$). Questions 2,3,4,10 had 100% correct response from both the groups while questions 7 and 14 had poor response.

Conclusions: We conclude that prior exposure of MCQ does not increment the scoring. Based on our findings we further reiterate that the method of using 'MCQ pool' or 'Question bank' is an effective method and will not bias the results.

KEYWORDS: Multiple choice questions, students' recall, pretest, posttest.

Pak J Med Sci October-December 2003 Vol. 19 No. 4 300-302 www.pjms.com.pk

INTRODUCTION

Scoring in multiple-choice questions (MCQs) is both reflective of knowledge and technique¹. The previous studies on the recall capacity of

medical students have yielded equivocal results. The study period used for assessing the recall in those studies, were months to years^{2,3}. Further, the effect of short-term memory was not looked at in those studies. We conducted the present study to look at the recall capacity of students and the effect of prior exposure of MCQs on their performance. The time period used was two weeks.

METHODS

The pediatric rotation at the King Faisal University, Saudi Arabia, consists of a total of ten weeks, one week for introductory lectures and clinical demonstrations, five weeks in the ward, two weeks in the nursery, and one week each in the emergency room and out patient department⁴. During the two weeks rotation in the nursery, the students are exposed to routine

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* Received for publication: April 28, 2003

Accepted: August 6, 2003

neonatal care with daily case presentation and discussion. For our study subjects, we utilized the groups of students assigned for the two weeks nursery rotation. Two groups were compared for their performance with and without prior exposure to multiple-choice questions (MCQs). A total of sixteen male students participated in the study, with eight in each group. Group 1 was given the MCQs (see appendix) on day one and the same questions were given to them on the last day of rotation (two weeks

gap period). Group 2 had the same MCQs only on the last day of rotation. By the virtue of recall capacity we expected better scores from the group 1 students, the previously exposed group.

RESULTS

There were fifteen questions answered by eight students in both the groups. The score for each question is represented by percentages (number of students answered correctly versus total number of students). The mean score in percentage for group-1 was found to be 83 while for group-2 was 79. No statistical difference was observed between the two ($p= 0.45$). Questions 2,3,4,10 had 100% correct response from both the groups while questions 7 and 14 had poor response (Table-I).

Table-I: Scores obtained by groups of students

Question No.	Group 1 Score (%)	Group 2 Score (%)
1	8/8 (100)*	7/8 (88)
2	8/8 (100)	8/8 (100)
3	8/8 (100)	8/8 (100)
4	8/8 (100)	8/8 (100)
5	7/8 (88)	3/8 (38)
6	8/8 (100)	5/8 (63)
7	4/8 (50)	5/8 (63)
8	7/8 (88)	7/8 (88)
9	7/8 (88)	6/8 (75)
10	8/8 (100)	8/8 (100)
11	7/8 (88)	6/8 (75)
12	5/8 (63)	8/8 (100)
13	6/8 (75)	7/8 (88)
14	2/8 (25)	3/8 (38)
15	7/8 (88)	6/8 (75)
Mean score ± SD (%)	83±21	79±21 P = 0.45

* Number of students answered correctly / Total number of students (Percentage)

Group-: Group of students (eight in number) with prior exposure to same MCQ as a pretest on day 1 of the rotation.

Group-2: Group of students (eight in number) with no exposure to pre-test MCQs.

Appendix:

- Neonatal period is defined as
 - 0-28 days
 - one month
 - one week
- Lanugo is
 - cheesy material
 - fine hair
 - abnormal posture
- Jaundice could be physiological in neonates
 - True
 - False
- Nasal flaring is normal in neonates
 - True
 - False
- Ventilator care is mandatory in neonates with respiratory distress
 - True
 - False
- Surfactant is given intravenously
 - True
 - False
- Low Apgar score could be secondary to all except
 - pethadine used during labor
 - cord prolapse
 - maternal fever
 - maternal exposure to radiation
 - maternal hypertension
- Hydrocephalus is associated with meningomyelocele
 - True
 - False
- Diaphragmatic hernia is common on right side
 - True
 - False
- Neonates lose weight in first week of life
 - True
 - False
- Which one gives the highest calories per gram
 - fat
 - protein
 - carbohydrate
- Hip click is normal in premature infants
 - True
 - False
- Incubator care is needed for all except
 - premature infant weighing 1600 gram
 - term neonates with respiratory distress
 - term neonate with umbilical hernia
 - premature infant receiving TPN
- Which is the normal course of weaning
 - overhead warmer, open crib, incubator
 - headbox oxygen, ventilator, nasal cannula oxygen
 - overhead warmer, incubator, open crib
 - ventilator, nasal cannula, headbox oxygen
- Infants of diabetic mother are at risk of developing
 - hyperglycemia
 - anemia
 - hypocalcemia
 - cataract

DISCUSSION

The overall scores of students previously exposed to MCQs were not very much different from the not exposed ones, suggesting a poor recall or no benefits of prior exposure. This finding is in agreement with the previous reports^{2,3,5}. The interesting feature of the study was that even a small time period of two weeks between the tests was not able to elicit a better recall reflected by statistically insignificant increment in the scores.

The comparability of both the groups was evident from their scoring patterns. By looking at the questions individually not much difference was observed in the responses between the two groups. The difficulty index, the question answered wrong by most of the students, was also noted to be the same for both the groups. For example question 2,3,4,10 were answered 100% while questions 14 was poorly answered by both the groups.

The study did not have power calculations and was done on a relatively smaller group with only sixteen students. But with continued influx of students during rotation to our nursery, it will be worth planning a bigger study and with further interest to look at the gender differences in the response.

Another important aspect that was highlighted in our study is the use of 'question pool'

or bank. As academician we regularly submit questions for this pool and update it periodically. However, during final selection some questions are repeated. The finding of insignificant recall clearly suggests that this repeating of question does not bias the final scores of medical students.

CONCLUSION

The prior exposure to MCQs has no significant effect on students further scoring capacity. The 'question pool' or bank system does not bias the final scores of medical students.

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