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Anatomy

Perceptions and Views of the Medical Undergraduates of Bangladesh Regarding Problem-Based Questions (PBQs)

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Abstract **Original Research Article**

Background*:** Solving problem-based questions in assessment of medical undergraduates might be helpful for making a skillful physician in future. To avoid the discrepancy between their expectation and reality in terms of asked questions, it is important to know the perceptions of undergraduates. ***Objectives and Methods: To analyze the perceptions and views of medical undergraduates of Bangladesh regarding problem-based questions, a research questionnaire was given to 170 medical undergraduates. ***Results and Conclusion:*** The survey results showed, medical undergraduates agreed that problem-based questions are helpful in improving undergraduates' ideology and skills. So, incorporation of problem-based questions in regular discussions as well as in examinations would bring upon an initial development in undergraduates' professional excellence.

Keywords: Problem-based questions, physician, Anatomy, medical undergraduates.

INTRODUCTION

Human Anatomy, a part of basic medical science, is the first subject for the medical undergraduates in their MBBS life. Macro Anatomy, MicroAnatomy, and Developmental Anatomy, these are the three levels human Anatomy comprises of [1]. Learning Anatomy is not only necessary for gaining knowledge but also for the development of their specialized skills. Experts of the clinical sciences consider the knowledge of Anatomy as one of the requirements for safe and effective clinical practice in medical interventions [2].

Many studies have shown that involvement in notional and productive activities enhances the learning. Preston *et al*. (2019) mentioned that, 'research shows, what and how undergraduates learn depend largely on how they think they will be assessed [3]. In our country, for assessment of undergraduate medical undergraduates, written examination is an essential determinant. Ghosh *et al*. (2012, p. 275) stipulated that, 'the written examination is an efficient evaluation format that not only proves undergraduates' ability to recall facts, but also can evaluate higher-order of cognitive functions, such as data interpretation and problem solving skills [4].'

By far, the role of problem-based questions for achieving a higher level of cognitive domain is discussed. For undergraduates' however, often there is a vivid discrepancy between expectation and reality in terms of asked questions [5]. Hence, it is very much important to know the perception of undergraduates to establish an effective assessment process. In Bangladesh, there were no previous studies to know their perceptions regarding problem-based questions.

OBJECTIVE

To analyze the perceptions and views of medical undergraduates of Bangladesh regarding problem-based questions in general

METHODOLOGY

Type of study

This study was a cross sectional descriptive study

Study place

This study was performed in the Department of Anatomy, Bangabandhu Sheikh Mujib Medical University (BSMMU), and Dhaka, Bangladesh.

Study period

From July 2020 to June 2021

Study population

A government and a non-government medical college of Bangladesh were selected through convenience sampling for this part of the research.

Sample size

Total of 170 medical undergraduates

Inclusion criteria

1. Medical undergraduates who were First Professional MBBS Examinees of Anatomy
2. Willing to participate in this part of the research

Data processing and analysis

The data were analyzed using descriptive statistics. The responses from the medical undergraduates were calculated by the five-point Likert scale and deduction of percentage frequencies depicting their perceptions and views on problem-based questions were done.

RESULTS

Survey medical undergraduates' responses regarding 'influence of PBQs on their thought process'

Table 1 deal with the responses of medical undergraduates regarding the 'influence of PBQs on their thought process'. A large percentage of undergraduates thought that PBQs will 'Definitely' improve their critical (68.8%) and creative (73.5%) thinking. Solving more PBQs will make their thought more versatile was mark 'Definitely' by 71.2%. In case of augmentation of unambiguous thinking, 68.2% of the undergraduates marked the statement as 'Definitely' and 24.1% as 'Probably'. About 66% of them 'Definitely' thought that PBQs are helpful for a deeper comprehension of fact. Notably a number of them marked the statement as 'probably (19.4%) and 'Possibly' (12.4%) as well. The mean scores did not very much, ranged from 4.49 ± 0.84 to 4.63 ± 0.70.

Table-1: Survey-based feedback from medical undergraduates regarding the 'influence of PBQs on their thought process'(n=170)

Survey questionnaire regarding problem-based question (PBQ)	Frequency of responses of medical undergraduates					
	Definitely (5)	Probably (4)	Possibly (3)	Probably not (2)	Definitely not (1)	Mean score* ± SD
Do you think PBQs can improve your critical thinking?	117 (68.8%)	40 (23.5%)	12 (7.1%)	0 (0.0%)	1 (.6%)	4.60 ± 0.67
Do you think solving PBQs will evoke your creative thinking?	125 (73.5%)	29 (17.1%)	15 (8.8%)	0 (0.0%)	1 (.6%)	4.63 ± 0.70
Do you think solving more PBQs will make your thought more versatile?	121 (71.2%)	34 (20.0%)	13 (7.6%)	0 (0.0%)	2 (1.2%)	4.60 ± 0.73
Do you think PBQs will augment your capability to think more unambiguously?	116 (68.2%)	41 (24.1%)	11 (6.5%)	1 (.6%)	1 (.6%)	4.59 ± 0.69
Do you think PBQs will help for a deeper comprehension of a fact?	113 (66.5%)	33 (19.4%)	21 (12.4%)	0 (0.0%)	3 (1.8%)	4.49 ± 0.84

n (number of total participants) = 170

* Each mean score represents the mean of the scores (1, 2, 3, 4 or 5) calculated from the responses on an individual question.

Survey medical undergraduates' responses regarding 'role of PBQs on identifying their strengths and weaknesses'

Table 2 deals with the responses of medical undergraduates regarding the 'role of PBQs on identifying their strengths and weaknesses'. About 73% and 79% of the undergraduates thought that PBQs will be helpful to identify their strengths and weaknesses respectively.

Table-2: Survey-based feedback from medical undergraduates regarding the 'role of PBQS on identifying their strengths and weaknesses' (n=170)

Survey questionnaire regarding problem-based question (PBQ)	Frequency of responses of medical undergraduates					
	Definitely (5)	Probably (4)	Possibly (3)	Probably not (2)	Definitely not (1)	Mean score* ± SD
Do you think solving PBQs will help to identify your strength and boost your confidence?	124 (72.9%)	32 (18.8%)	8 (4.7%)	5 (2.9%)	1 (.6%)	4.61 ± 0.76
Do you think PBQs help to spot your weakness better than the traditional ones?	134 (78.8%)	25 (14.7%)	8 (4.7%)	1 (.6%)	2 (1.2%)	4.69 ± 0.70

n (number of total participants) = 170

* Each mean score represents the mean of the scores (1, 2, 3, 4 or 5) calculated from the responses on an individual question.

Survey medical undergraduates' responses regarding 'role of PBQs in improving undergraduate's skill and clinical reasoning ability'

Table 3 deals with the responses of medical undergraduates regarding the 'role of PBQs in improving undergraduate's skill and clinical reasoning ability'. A large number of undergraduates (80.6%) thought that PBQs will 'Definitely' improve their brain storming ability. About 77% of the undergraduates marked that PBQs can 'Definitely' help in better integration of basic and clinical sciences. About 70% of them thought that PBQs will 'Definitely' improve their decision making skills. Around 82% of them thought that PBQs will 'Definitely' sharpen their problem solving capabilities and 60.6% of them were convinced as 'Definitely' regarding improvement of communication skills. Around 83% of undergraduates marked that PBQs will 'Definitely' make their clinical reasoning better. Here, the mean scores ranged from 4.36 ± 0.93 to 4.75 ± 0.68.

Table-3: Survey-based feedback from medical undergraduates regarding the 'role of problem based questions in improving undergraduates skill and clinical reasoning ability' (n=170)

Survey questionnaire regarding problem-based question (PBQ)	Frequency of responses of medical undergraduates					
	Definitely (5)	Probably (4)	Possibly (3)	Probably not (2)	Definitely not (1)	Mean score* ± SD
Do you think PBQs will improve brain storming abilities?	137 (80.6%)	16 (9.4%)	15 (8.8%)	1 (.6%)	1 (.6%)	4.69 ± 0.71
Do you think PBQs can help in better integration between basic and clinical sciences?	130 (76.5%)	25 (14.7%)	14 (8.2%)	0 (0.0%)	1 (.6%)	4.66 ± 0.68
Do you think PBQs will help to improve your decision making skills?	119 (70.0%)	21 (12.4%)	28 (16.5%)	1 (.6%)	1 (.6%)	4.51 ± 0.83
Do you think PBQs will sharpen your problem solving capabilities?	138 (81.2%)	22 (12.9%)	6 (3.5%)	1 (.6%)	3 (1.8%)	4.71 ± 0.73
Do you think PBQs will improve communication skills?	103 (60.6%)	37 (21.8%)	21 (12.4%)	7 (4.1%)	2 (1.2%)	4.36 ± 0.93
Do you think PBQs will trigger your clinical reasoning ability?	142 (83.5%)	20 (11.8%)	5 (2.9%)	0 (0.0%)	3 (1.8%)	4.75 ± 0.68

n (number of total participants) = 170

*Each mean score represents the mean of the scores (1, 2, 3, 4 or 5) calculated from the responses on an individual question.

DISCUSSION

In this part of the research, the aim was to analyze the perceptions, views medical undergraduates regarding problem-based questions. Having this in mind, the undergraduates responded to a questionnaire constructed by the researcher depicting the characteristics of problem-based questions. Overall, the responses from the undergraduates were verged towards a unified opinion that problem-based questions can be a breakthrough in improving undergraduates' attitude towards a better learning process.

Again, incorporation of patient management based clinical scenarios in assessment impacts positively in undergraduates' thinking process [6]. In the present study a large number of medical undergraduates

(69.65%) mentioned that problem-based questions can 'Definitely' improve their thought process.

Farrokhi and Nejad (2017) mentioned that for its intrinsic properties, the Anatomy is one of the toughest subjects to be dealt with in terms of memorizing [7]. Therefore, Anatomy needs to be learnt in such a way which exploits more clinical implications. They continued claiming that if enthusiasm of undergraduates is lowered, it might end up with a compromised clinical skill later on.

A study about importance of Anatomy as a subject and career option was conducted by MK et al. (2004) showed that almost all the undergraduates considered Anatomy as 'base pillar of medical science'[8]. In addition, undergraduates also thought Anatomy is necessary for having a good clinical knowledge as well. In the present study, in terms of improving undergraduates' clinical reasoning ability, they agreed to the common consensus including brain storming ability, better integration of basic and clinical sciences etc. On the contrary, Cate and Durning (2018) questioned the appropriateness of assessing clinical reasoning ability for preclinical undergraduates[9]. They claimed that development of diagnostic intuition is often a subconscious phenomenon and it varies within inter-observer experience and is not actually 'measurable'.

Almost all of the undergraduates agreed that problem-based questions will help to identify undergraduates' strengths. But in case of identifying undergraduates' weaknesses, 78.8% undergraduates marked it as 'Definitely'. From the above discussion, it is obvious that undergraduates were concerned about the importance of problem-based questions in temporal improvement of undergraduates' ideology and skills.

CONCLUSION

In the present research it has been shown that the undergraduates agreed to the fact that problem-based questions are immensely important for collective development of their professional skills. Inclusion of problem-based questions in the assessment of medical undergraduates might be helpful in this context.

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