Original Article

Teaching-learning of Embryology in Undergraduate Medical Education of Bangladesh

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Abstract:

Pregnancy and childbirth are relevant to women's health, and unfortunately, these processes often lead to negative outcomes. For instance, prematurity and birth defects contribute to infant mortality and disabilities. Fortunately, new strategies can improve pregnancy outcomes. A basic knowledge of Embryology is essential to the success of these strategies. The knowledge of Embryology and its clinical relevance can be gained through a unique approach of our teaching-learning. Appropriate diagrams, clinical images and evidence should be incorporated in text in this regard. Concept-based method can help to facilitate student learning in this area.

The aim of the present study is to observe the present situation of Embryology teaching-learning in Undergraduate Medical Education of Bangladesh.

The study was carried out in the Department of Anatomy of one private Medical College of Bangladesh.

This study is a cross-sectional study and done by a questionnaire-based survey among 100 numbers of Bangladeshi MBBS students. This study is about their feelings, knowledge and opinions regarding the present situation of Embryology teaching-learning in Undergraduate Medical Education of Bangladesh.

Among all participants, 75% participants experienced that concept-based teaching-learning is almost rare. 55% participants consider concept-based teaching-learning is beneficial for them. Moreover, 49% participants are optimistic about the possibility of overcoming the traditional approach by replacing it with generalization.

The baseline evidence of the present study in teaching-learning needs to be enriched with further research evidence in order to bring meaningful explicit changes in teaching-learning methods and materials.

Key words: *Embryology, Concept-based teaching-learning, Medical Education, Bangladesh.*

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Introduction:

Embryology can work as a powerful supplement when there is an in-depth understanding of gross anatomical patterns. The subject of Embryology is often considered by the undergraduate students of the country as a difficult one However, it is mentioned that most other basic medical science disciplines have had trouble in finding a comfortable niche for Embryology within the medical curriculum.[1] In addition to this, embryology has found itself jostling for precious space in the crowded, medical curriculum.[2] But on the other hand that most surgeons and some students now believe there is insufficient anatomy teaching in current medical programs. Thus, as noted, it is a central challenge for teachers of medical sciences to convey the essential picture of Embryology to their students, especially of the molecular control of development without overwhelming them with details.[1] As Ericson notes,[3] the student is considered simply as a container that must be filled in with knowledge, that just focus on facts and skills. Such type of learning based topics and facts do not transfer across time, place or situation. So, students will never enjoy long-term success.[4] If we use generalization transfer is possible.[5] New

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information can be integrated in such a manner that patterns, situations and connections between facts and concepts or ideas can be identified, as noted by Loh.[6] It is further noted that it is thought to become easier to tie learned things up to match and relate to real life situations.[7] In case of concept-based teaching-learning in the field of general education Zirbel (2006) pointed out that 'a healthy curriculum does cover some breath, however, some of the 'basic 'concept needs to be covered in substantial detail'.

Materials and Methods:

Study design

The present study is a cross-sectional study and done by a questionnaire-based survey.

Study plan

The plan of the study is shown as flow chart in figure 1.

Materials and Method for the study

This questionnaire- survey was designed to assess the feelings, knowledge and opinions of Bangladeshi MBBS students regarding present situation of Embryology teaching-learning in Undergraduate Education of Bangladesh.

Survey among MBBS students

Construction of a questionnaire for the survey regarding Present situation of the Embryology teaching- learning in Undergraduate Medical Education of Bangladesh.

⬇

Selection of MBBS students by convenience sampling and notification.

⬇

Distribution of the questionnaire among the MBBS students gathered in a class room, lecture room and conduction of the survey.

⬇

Analyses of the responses-qualitatively and relevant quantification.

Fig.1: *Study plan for the questionnaire-based survey.*

Participants of the study

MBBS students who had completed 1st year were selected from one private medical college situated in Bangladesh. Thus, the selection was made through convenience sampling. All the students who agreed to participate gathered in a classroom of the Department of Anatomy, of the institution. Total 100 students participated in the survey.

Method of preparing the questionnaire

The questionnaire (Table-1) had one section. This section seeks the responses of some close-ended questions, for enquiring about their feelings, knowledge and opinions regarding the present situation of Embryology teaching-learning in Undergraduate Medical Education of Bangladesh.

Types of question

This questionnaire contained ten (10) close-ended questions to be answered by ticking and all of them being likert scale-type questions.

Conduction of the survey

Before the survey, instructions to the participating students were provided through a PowerPoint presentation by the researcher.

Analyses of the feedback through questionnaire-based survey were done. In that case, absolute value and percentage frequency were calculated using the Microsoft Excel.

Results:

The present situation of Embryology teaching-learning is analyzed and surveyed by the questionnaire. The absolute and percentage values are likely to represent Table-2.

Discussion:

It was found that 91% participants believe molecular regulation is not used in developmental process in present teaching-learning situation. Regarding molecular regulation, it was very important to understand the developmental process. If we review the recent edition of the Embryology book,[9] the

Table-I

Please respond to the following and tick (") the appropriate boxes accordingly

01.	Embryology is an interesting subject for medical students:				
	Disagree	Tend to disagree	Tend to agree	Agree	(Undecided)
02.	Embryology is easy to learn:				
	Disagree	Tend to disagree	Tend to agree	Agree	(Undecided)
03.	We use molecular regulation in developmental process.(in our teaching-learning and assessment of Embryology)				
	Rarely	Infrequently	Frequently	Very frequently	(Undecided)
04.	One hour session of lecture class is sufficient for one topic of embryology;				
	Disagree	Tend to disagree	Tend to agree	Agree	(Undecided)
05.	Extra tutorial class is needed for teaching-learning of Embryology:				
	Disagree	Tend to disagree	Tend to agree	Agree	(Undecided)
06.	Interactive teaching-learning is good for students and teachers				
	Disagree	Tend to disagree	Tend to agree	Agree	(Undecided)
07.	Teacher can make the subject of Embryology interesting for learning: and After teaching-learning, students can give answers about explanatory questions by using how/why/when:				
	Rare	Not frequent	Frequent	Very frequent	(Undecided)
08.	Use of 'Principles' is a good teaching-learning tool for Embryology :				
	Rare	Not frequent	Frequent	Very frequent	(Undecided)
09.	In our country, grasping of Embryology in Principle-oriented approach as compared to Information-oriented approach is:				
	Very difficult	Difficult	Easy	Very easy	(Undecided)
10.	We can overcome our traditional teaching-learning approach by using generalization:				
	Disagree	Tend to disagree	Tend to agree	Agree	(Undecided)

Table-II

Feelings, knowledge and opinions of the participants regarding different aspects of Embryology teaching-learning in Undergraduate Medical Education of Bangladesh are summarized in the following table.

Sl. no.	Statement	Opinion (n=100)Absolute value and % Frequency of responses for each statements				
1	Embryology is an interesting subject for medical students:	Disagree 10 (10%)	Tend to disagree 1 6 (16%)	Tend to agree 61 (61%)*	Agree 1 3 (13%)	(Undecided) 0 (0%)
2	Embryology is easy to learn:	15 (15%)	78 (78%)*	6 (6%)	1 (1%)	0 (0%)
3	Can we overcome our traditional teaching-learning approach by using generalization? :	13 (13%)	10 (10%)	49(49%)*	26 (26%)	2 (2%)
4	One hour session of lecture class is sufficient for one topic of embryology is:	0(70%)* 7	12 (12%)	18 (18%)	0 (0%)	0 (0%)
5	Extra tutorial class is needed for teaching-learning of Embryology	0 (0%)	13 (13%)	9 (9%)	78(78%)*	0 (0%)

(table continued)

Sl. no.	Statement	Opinion (n=100)Absolute value and % Frequency of responses for each statements				
6	Interactive teaching-learning is good for students and teachers	3(3%)	5 (5%)	58(58%)*	2 5(25%)	9(9%)
		Rare	Not frequent	Frequent	Very frequent	(Undecided)
	Teacher can make the subject of Embryology interesting for learning:	75 (75%)*	5 (5%)	19 (19%)	1 (1%)	0 (0%)
7	After teaching-learning students can give answers about explanatory questions by using how/why/when:					
8	Use of 'Principle' is a good teaching-learning tool for Embryology :	10(10%)	10 (10%)*	13 (13%)	55 (55%)	12 (12%)
9	We use molecular regulation in developmental process.(in our teaching-learning of Embryology):	91(91%)*	1(1%)	0(0%)	0 (0%)	8 (8%)
		Very difficult	Difficult	Easy	Very easy	(Undecided)
10	In our country, grasping Embryology in 'Principle-oriented' approach as compared to' Information oriented' approach is:	13 (13%)	52 (52%)*	18 (18%)	17(17%)	0 (0%)

* The opinion with the highest frequency for each statement. n: No. of respondents for each statement.

molecular regulation is being emphasized there. Beside this majority of the students (78%) feel the necessity of extra tutorial classes for Embryology. According to 58% students' opinion, teacher can complete the whole curriculum by using interactive teaching-learning. 58% participants tend to agree that interactive teaching is good whereas 78% participants agree that extra tutorial class is needed for Embryology. These two findings favor the necessity of concept-based teaching-learning of Embryology. Three-fourth participants (75%) believe that Embryology is interesting. After teaching-learning, they can give explanatory answers by using 'how', 'why' and 'when'. Almost half of the participants (49%) think that we can overcome our traditional teaching-learning approach by using generalization.

Conclusion:

The present study has analyzed the status of the present situation of teaching-learning of Embryology in Anatomy in Bangladesh. It has also found out the feelings, knowledge and opinions of participants. All the participants of this study were in favor of emphasizing anatomical concept-based teaching. Other feelings, knowledge and opinions of these participants regarding concept-based teaching-learning in Embryology are all the more likely to achieve deeper learning and better understanding rather than rote memorization and lessen the burden of 'Information' on the learners. These findings would lead to designing course materials and assessment tools with explicit directives for using generalization.

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