

Assessment of Abilities of Bangladeshi Medical Undergraduates in Understanding the English Used in Anatomy Textbooks

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Abstract

Background: Bangladeshi medical undergraduates, mostly coming from the Bangla medium of their earlier study, face reasonably visible difficulties in understanding the English used in Anatomy textbooks.

Objective: The study aimed at assessing the ability of Bangladeshi medical undergraduates to understand English-in-Anatomy addressing their 'academic reading skills'.

Methods: A cross sectional study was done where 'Academic reading skills' were assessed by conducting an English language test among 278 first year medical undergraduates using 13 questions on textbook passages of General Anatomy, General Histology, and General Embryology following the TOEFL reading section.

Results: The language test yielded 65% correct answers from the medical undergraduates. The English-in-Anatomy proficiencies for the skills seemed to be of 'high', 'intermediate', and 'low' levels in about 27%, 60%, and 13%, of the undergraduates respectively.

Conclusion: The study provides insight into the reading comprehension skills of medical undergraduates concerning medical text.

Keywords: Anatomy, academic reading skills.

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Introduction

English is the predominant language of teaching in medical curricula around the world. Understanding of the subject, therefore, depends much on the understanding of the medium of communication in addition to what information is communicated. The language barrier has always been recognized as one of the obstacles to learning.

It is often revealed in the informal expression of the medical teachers as well as students of Bangladesh that the medical undergraduates of the country face problems in dealing with English used in Anatomy. Hossain et al¹ stated that 'undergraduate medical students of Bangladesh are facing varying but

noticeable amounts of difficulty with most of the areas of English used in Anatomy.

Although these difficulties span the realms of reading, writing, listening, and communicating (speaking), the first barrier is that with the textbooks and other written materials, including textual visuals used in classroom and seminar/conference presentations and written exam questions, journals, and online materials.

According to Sengupta², academic reading is a purposeful and critical reading of complex and a range of lengthy academic texts of specific major subject areas. Reading comprehension is the process of constructing the meaning of words while reading and is an essential skill for undergraduates.³ For medical students, the ability to read and understand English effectively is very important because they have to go through many medical texts written in English, and understanding the meaning of the texts is challenging for L2 users of English.⁴

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A good reader uses comprehension strategies, including understanding vocabulary in the present context, skimming, scanning, predicting, summarizing, evaluating, self-questioning, making connections, visualizing, and monitoring.⁵ Understanding the text is easier where information is stated explicitly. On the other hand, as Madhumathi and Ghosh⁶ noted, understanding the implied meaning of a text requires a higher level of understanding. Another important skill of reading comprehension is summarizing. Students are to sort through a text, identify and differentiate important ideas from unimportant ones and synthesize a whole.⁵ However, Madhumathi and Ghosh⁶ reported that sometimes students need more confidence in comparing and contrasting information stated in the text. Therefore, recognizing the relationships between sentences is immensely necessary to understand a text.

The study was aimed at assessing the ability of Bangladeshi medical undergraduates to understand English-in-Anatomy (other than anatomical terms), addressing their 'academic reading skills'.

Methods

A cross sectional study was done to assess medical undergraduates' academic reading skills through an English language test. A total of 278 first year Bangladeshi medical undergraduates of two government medical colleges were taken as participants. Both convenience and simple random sampling techniques were used to select medical undergraduates as participants. For convenience, government medical colleges of only Dhaka city were selected. From the list of government medical colleges within Dhaka, two government medical colleges were selected by lottery.

The research was conducted after getting approval of the protocol from Institutional Review Board of Bangabandhu Sheikh Mujib Medical University. An informed written consent was obtained from the medical undergraduates.

Relevant sections of widely accepted language testing documents (TOEFL, IELTS, GRE, CAE, SAT, TOEIC) were reviewed to get ideas on the format of the test paper (exam paper) and types of questions for assessing the 'academic reading skills'.

The number of passages given, types of questions used in those documents, number of questions, and duration of the tests were noted. Considering the above factors, the TOEFL model was selected.

At first, three subdivisions of Anatomy, namely 'General Anatomy', 'General Embryology', and 'General Histology', were selected for using passages from them in the exam paper. This selection was made on the premise that these three subdivisions build the basis of anatomical understanding of the human body in medical undergraduates. In anatomical textbooks, different aspects of any anatomy topic are covered. These include overview, classification, general feature, structural description, neurovascular supply, functional correlation, process, clinical correlation, figure legend, and others. Considering that dealing with different aspects may require the use of different types of English, the passages covering different aspects have been chosen for the exam paper in the present research. One passage was selected from each of the three selected aspects of anatomy from each textbook (Table I). During this selection, it was ensured that the topics were important for the course and commonly asked about in the written examinations. Texts of the passages were kept unchanged.

Table I
Selection of passages for the exam paper of the English language test for assessing the 'academic reading skills'

Subdivision of Anatomy	Textbook	Passage	
		Aspects of anatomy	Topic
General Anatomy	Gray's Anatomy for Students ⁷	General feature	Characteristic features of cartilage
General Histology	Histology: A Text and Atlas with Correlated Cell and Molecular Biology ⁸	Overview	Overview of tissues
General Embryology	Langman's Medical Embryology ⁹	Process	Fertilization

An understanding of the ten types of questions in the academic reading section of TOEFL was developed by reviewing the Official Guide to the TOEFL test. Thirteen (13) questions of 9 different types were constructed according to the instructions given in the guide. The skills assessed with each question are shown in Table II.

Instructions to the test takers (medical undergraduates) to the questions were kept the same as in TOEFL. However, Bangla translations were added so that inability to understand the instruction could not interfere with answering. Marks distributions to the questions were also kept as in TOEFL. The text passages were taken directly from the textbooks making no modifications.

Data collection for research was done in a single sitting by conducting an English language test among the first year medical undergraduates (who had appeared in the First Term final exam) of two

selected medical colleges. A PowerPoint presentation regarding the format of the exam paper for the English language test was given before the test.

In scoring the answer scripts, the scoring system of TOEFL was followed. Scores of the medical undergraduates regarding 'academic reading skills' were categorized into different levels of proficiency, accommodating the TOEFL feedback system in the way summarized in Table III.

278 Answer scripts for the language test were checked, and correct, incorrect, and unattempted responses were marked. Scores were determined for each participant. These data were fed into SPSS version 22, and descriptive statistics were used to analyze the data. Frequencies and percentage frequencies of the correct, incorrect, and unattempted responses to questions regarding 'academic reading skills' were calculated.

Table II
Question types and skills to be tested for assessing the 'academic reading skills'

Type of question* ¹⁰	Skill assessed	
Basic information and inferencing questions	1. Factual information questions	Scanning text for facts and information
	2. Negative factual information question	Scanning text for facts and information
	3. Inference question	Making inference
	4. Rhetorical purpose question	Recognizing organization and purpose
	5. Vocabulary question	Understanding the meaning of words and phrases in context [†]
	6. Reference question	Identifying referential relationship between words
	7. Sentence simplification question	Paraphrasing
Reading to learn question	8. Insert text question	Understanding relations between ideas
	9. Prose summary question	Summarizing

Table III
Determination of the proficiency of the medical undergraduates in 'academic reading skills' and 'grammar skills'

Test	No. of question	Total marks	Conversion of obtained marks	Proficiency level		
				High	Intermediate	Low
TOEFL	12-14 for each on 3-4 sets = 36-56 (approx)	39-60 (approx.)	Out of 30	22-30	15-21	0-14
Language test for the present research (academic reading skills)	13	14	Out of 10	7.3-10	5-7.2	0-5

Results

The performance of the medical undergraduates was assessed regarding each type of question as percentage frequencies of correct, incorrect, and unattempted responses. A visual comparison of performances in different types of questions in terms of the frequency of correct responses is shown in Figure 1, pointing at the weaknesses and strengths of medical undergraduates. It was noted that the percentage frequencies of correct responses were 'high' ($73 \leq$) in two types of question ('Factual information question'). In other types of question, percentage frequencies of correct responses were 'intermediate' (50-72).

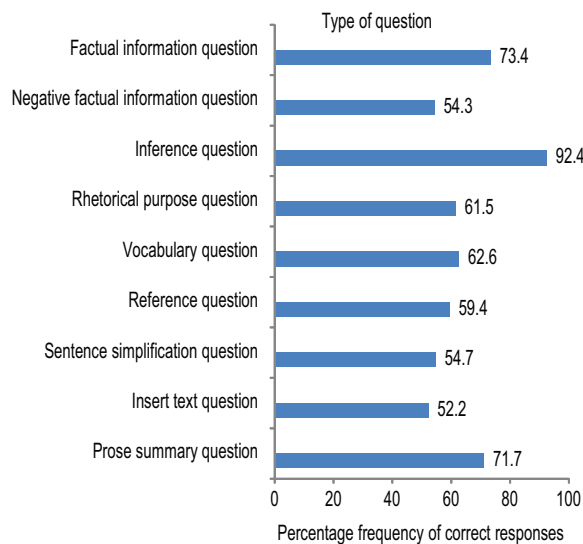


Fig.-1: Percentage frequencies of correct responses to different types of questions

The overall proportions of correct and incorrect responses regarding 'academic reading skills' were 66.5% and 29.8% respectively (Figure 2). The frequency distribution of the scores obtained by the medical undergraduates shows slight skewness to the left, indicating comparatively greater frequencies of the higher values (Figure 3). The normality of the distribution was tested, and the Shapiro-Wilk test was found to be significant ($p = 0.00$). Therefore, the data were not normally distributed. The presence of outliers was found on the left of the distribution.

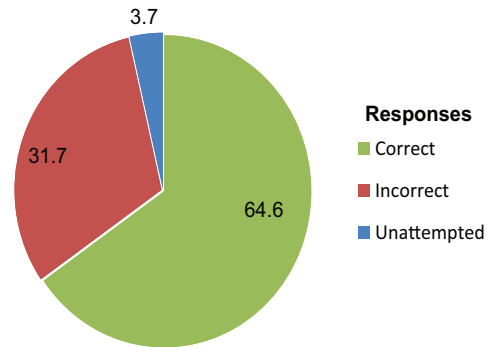


Fig.-2: Overall proportions of correct, incorrect, and unattempted responses to questions

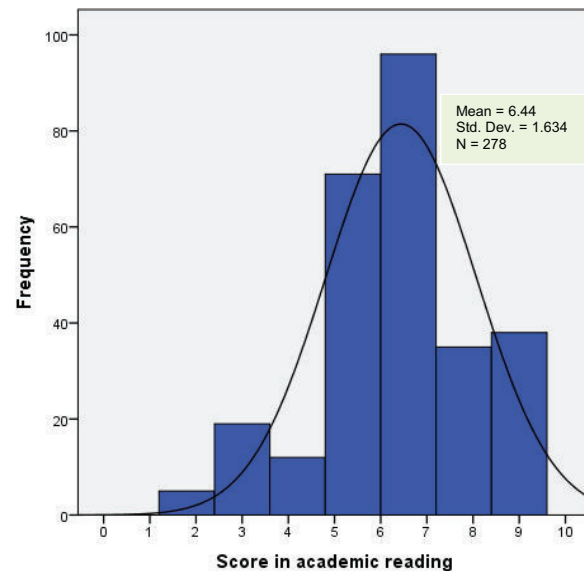


Fig.-3: Frequency distribution of scores obtained by the medical undergraduates.

N=number of medical undergraduates participating in the test.

The score obtained by each medical undergraduate in terms of number of correct response (and the marks allotted to each question) was converted to the score out of 10. On the basis of these scores, the undergraduates were categorized into three 'proficiency levels' in the 'academic reading skills' concerning English-in-Anatomy. These were: 'High', 'Intermediate' and 'Low'. The percentage frequencies of medical undergraduates found to have at different proficiency level are shown in Figure 4.

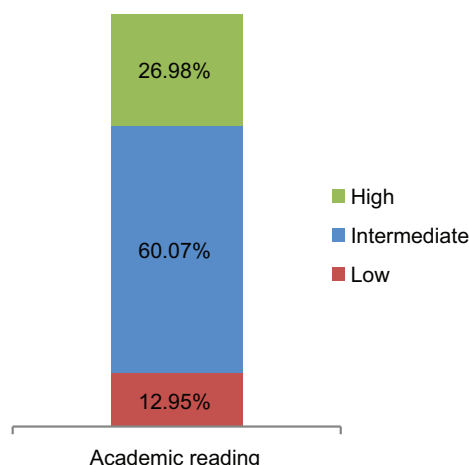


Fig.-4: Percentage frequencies of the medical undergraduates found to have different proficiency levels of 'academic reading'

Discussion

The study was designed to assess the 'academic reading skills' of 278 medical undergraduates of two medical colleges through an English language test using passages directly from Anatomy textbooks to assess their present ability in dealing with English-in-Anatomy. Nine types of questions were used to assess the 'academic reading skills' following the TOEFL system. This was done by asserting that the English used to present anatomical information would have some features that are rare to other academic texts.

For constructing questions on the 'academic reading skills', the document of TOEFL was followed. This is because TOEFL is a highly regarded and widely accessible test accepted in more than 6000 colleges and universities in 130 countries worldwide.¹⁰

In the present research, the 'academic reading skills' were addressed since most medical undergraduates' academic activities involve reading.

Many aspects regarding the abilities of medical undergraduates in understanding English-in-Anatomy in terms of strengths and weaknesses were revealed from the English language test. The overall percentages of correct responses from the undergraduates in the English language test were 66.5% regarding the 'academic reading'.

From the test results, the undergraduates efficiently scanned for facts and stated details ('Factual information question' and 'Negative factual information question') since the percentage of correct responses was about 68.6%. The finding is consistent with the earlier study conducted on Bangladeshi medical undergraduates by Hossain et al¹ to assess their understanding of English used in Anatomy. They also found better performance by the undergraduates in understanding 'direct statements'.

It is believed that inferring meaning is deeper than the literal meaning.¹¹ Samad et al¹² asserted that the Indonesian English-major undergraduates were found to be most problematic in identifying the implied meaning of the text. But in the present research, the undergraduates performed 'high' (92.4% correct) in answering the 'Inference question'. Hossain et al¹ commented that the performance of Bangladeshi medical undergraduates could have been more satisfactory where deeper understanding was required. Since the number of questions was only one, it cannot be confirmed that their performance was actually high in this regard. Again, it is also possible that in answering 'Inference question', their academic knowledge influenced their performance positively.

A test of vocabulary predicts the performance on a reading comprehension test.¹¹ However, the vocabulary problems of EFL undergraduates have been mentioned by several researchers.^{5,13-15} The average percentage of correct responses in 'Vocabulary questions' in the test of the present research was 62.6%, which was neither 'high' nor 'low'.

In academic reading, it is also necessary to understand author's intentions and purposes. The percentage of correct responses in the 'Rhetorical purpose question' in the present study was 61.5%. So, in understanding the authors' purpose and intentions, the correct response was 'intermediate'.

Madhumathi and Ghosh⁶ believed that students generally face problems in recognizing relationships between sentences in a text. The finding from the language test in the present research showed that in understanding the logical relationship between

ideas (Insert text question), the percentage of correct responses was 52.2%. Since a higher level of understanding was required, the undergraduates may not have performed that well. Shen¹³ pointed out this area to be problematic among undergraduates who were native Chinese speakers studying in Taiwan. The undergraduates revealed that they faced difficulty understanding complex sentence structure and organization of the text.

In summarizing ('Prose summary question'), the percentage of correct responses in the present research (71.7%) was good. However, Nezami⁵ observed that undergraduates needed to be stronger in summarizing or understanding the main idea in a particular context. This weakness was also noted by Samad et al¹², who conducted a study among undergraduates (English majors) in Indonesia.

Conclusion

Correct response was found 66.5% regarding academic reading. Relatively stronger and weaker areas of skill were identified. The English-in-Anatomy proficiencies were of 'intermediate' level in about 60%.

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