

Original Article

English Language Proficiency in Medical Education: Exploring Performance Variations Between Undergraduate and Postgraduate Students

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Abstract:

Background: English proficiency is crucial for medical students to comprehend textbooks, lectures, and academic materials, particularly in Anatomy, which involves complex texts and terminology. Bangladeshi medical students often face difficulties in academic reading and grammar, potentially affecting learning outcomes. Aim of this study was to assess and compare the English language proficiency of undergraduate and postgraduate medical students and examine its impact on their academic performance.

Materials & Methods: A descriptive cross-sectional study was conducted at the Department of Anatomy, BMU, Dhaka, from January to December 2021. A total of 181 participants were included: 121 first-year MBBS undergraduates (Group A) from one government and one private medical college in Dhaka, and 60 postgraduate students/residents enrolled in MPhil/MS Anatomy courses (Group B).

Result: Postgraduate students outperformed undergraduates in most academic reading tasks, e.g., factual questions (56.7% vs. 40.3%), inference (50.6% vs. 26.2%), and sentence simplification (62.8% vs. 52.0%). Vocabulary (29.2% vs. 27.3%) and reference questions (30.0% vs. 29.7%) showed similar performance. In grammar, postgraduates scored higher in conjunctions (59.4% vs. 46.3%), collocations (78.3% vs. 71.1%), and past participle forms (87.5% vs. 63.2%), whereas both groups struggled with connectors, prepositions, and keyword transformations.

Conclusion: The study underscores the importance of tailored English language support to enhance medical students' comprehension of Anatomy texts and improve academic performance.

Keywords: Academic English, Medical education, Reading skills, Grammar proficiency, Undergraduate, Postgraduate.

Introduction:

English language proficiency is a critical determinant of academic success in medical education, particularly in non-English language proficiency is a fundamental requirement in medical education worldwide, as it

enables students to access scientific literature, communicate effectively in clinical settings, and succeed in academic assessments. In many countries, including Bangladesh, medical instruction is delivered

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primarily in English, despite most students coming from non-English-speaking backgrounds.¹ Consequently, students' English skills critically affect their

comprehension of textbooks, lecture materials, and journal articles, which in turn influences their academic and clinical performance.²

The importance of English proficiency in medicine is widely acknowledged. English has become the global language of science, medicine, and technology, serving as the primary medium of communication in journals, textbooks, and international conferences.^{3,4} Studies indicate that inadequate proficiency can hinder students' understanding of complex medical concepts, reduce their ability to engage in discussions, and limit participation in research and professional development activities.^{5,6} For medical students, the ability to read, write, listen, and speak English effectively is essential not only for academic success but also for professional competence in clinical environments.

Undergraduate and postgraduate students often exhibit differences in English language proficiency due to variations in prior education, exposure to English, and academic demands. Undergraduate students, particularly those from Bangla-medium backgrounds, frequently struggle with technical terminology, reading comprehension, and effective communication in English.^{7,8} The sudden transition to English-medium instruction at medical college often poses a significant barrier, leading students to rely on memorization and secondary guidebooks rather than understanding primary textbooks.⁹ These difficulties can compromise their academic performance and long-term professional development.

Postgraduate students, in contrast, generally possess more advanced English skills acquired through years of academic training and exposure to clinical practice. However, even at this level, variations in proficiency persist, particularly among students who have not had consistent exposure to English in earlier education or in clinical research settings.^{8,10} Such disparities can affect their ability to present seminars, write research papers, participate in international conferences, and communicate effectively in hospitals where English serves as a lingua franca.

Understanding the differences in English language proficiency between undergraduate and postgraduate medical students is crucial for designing targeted interventions. Needs-based English courses, peer-assisted learning programs, and practical communication workshops can help students overcome language barriers, improve comprehension, and enhance overall academic performance.^{9,11} Hence, the present study aims to explore the variations in English language

proficiency between undergraduate and postgraduate medical students and examine how these differences affect their academic performance, clinical communication, and professional development.

Materials and Methods:

This descriptive cross-sectional study was conducted in the Department of Anatomy, Bangladesh Medical University (BMU), Dhaka, from 1st January to 31st December 2021.

The study included two groups: Group A, with 121 first-year MBBS undergraduates from one government and one private medical college in Dhaka, and Group B, with 60 postgraduate students/residents enrolled in MPhil/MS Anatomy courses in Bangladesh. Participants were recruited through convenience sampling for undergraduates and total population sampling for postgraduates and residents.

Data collection was involved a structured language test designed to assess academic reading and grammar skills. Reading passages were selected from widely used anatomy textbooks (Moore, Snell, Drake) covering thorax, superior extremity, and abdomen. Question types were adapted from standardized tests such as TOEFL and Cambridge English Advanced (CAE), including factual, inference, rhetorical purpose, vocabulary, reference, sentence simplification, insert-text, and summary items. Grammar assessment comprised 30 questions covering 20 core grammar issues. Instructions were provided in English with Bengali translations, and the test was validated by an English language expert, a TOEFL instructor, and a senior Anatomy faculty member. Students' responses were scored and categorized into proficiency levels (Advanced, High-intermediate, Low-intermediate, Below Low-intermediate).

Data were analyzed using SPSS 22, applying descriptive statistics (frequencies and percentages) to test scores. The study was approved by the Institutional Review Board of Bangladesh Medical University (BMU), and informed consent was secured from all participants.

Results:

Table 1 shows the academic reading skills between undergraduate and postgraduate medical students in the English language test. Postgraduate students did better than undergraduates in many areas. They scored higher in factual information questions (56.7% vs. 40.3%),

inference (50.6% vs. 26.2%), and sentence simplification (62.8% vs. 52.0%). Both groups scored almost the same in vocabulary (29.2% vs. 27.3%) and reference questions (30.0% vs. 29.7%). Negative factual information was the hardest, with only 29.0% of undergraduates and 16.7% of postgraduates answering correctly.

Table 1: Comparison of percentage frequencies of correct, incorrect, and unattempt responses to different types of questions assessing ‘academic reading skills’ between undergraduate and postgraduate medical students in the English language test (N=181, Under graduate-121, postgraduate =60)

Type of question	Undergraduate			Postgraduate		
	Correct	Incorrect	Unattempt	Correct	Incorrect	Unattempt
Factual information questions	40.3%	53.3%	6.4%	56.7%	42.1%	1.7%
Negative Factual information question	29.0%	68.6%	2.5%	16.7%	82.5%	1.7%
Inference question	26.2%	66.9%	6.9%	50.6%	47.2%	2.2%
Rhetorical purpose question	30.9%	63.1%	6.1%	32.2%	65.6%	3.4%
Vocabulary questions	27.3%	69.4%	3.3%	29.2%	68.9%	2.3%
Reference question	29.7%	66.9%	5.0%	30.0%	68.9%	1.7%
Sentence simplification question	52.0%	43.8%	4.2%	62.8%	36.1%	1.7%
Insert text question	19.8%	74.4%	5.8%	27.5%	45.4%	2.1%
Prose summary question	25.2%	44.1%	5.55%	27.0%	41.1%	5.0%

Table 2 shows the comparison of grammar skills between undergraduate and postgraduate medical students in Parts 1 and 2 of the exam papers. Postgraduates performed better in conjunctions (59.4% vs. 46.3%), collocations (78.3% vs. 71.1%), participles (65.0% vs. 62.0%), semantic precision (60.0% vs. 32.2%), and determiners (73.3% vs. 38.8%). Both groups scored low in connectors, with 2.5% correct among undergraduates and 6.7% among postgraduates. Undergraduates performed better in relative pronouns (40.5% vs. 20.0%) and phrasal verbs (36.4% vs. 28.3%). The modifier was the weakest area for both groups, with only 0.8% of undergraduates and 1.7% of postgraduates answering correctly.

Table 2: Comparison of undergraduate and postgraduate students in percentage of correct, incorrect, and unattempt responses to questions assessing different grammar issues in Parts 1 and 2 of the exam papers. (N=181, Under graduate-121, postgraduate =60)

Type of grammar	Undergraduate			Postgraduate		
	Correct	Incorrect	Unattempt	Correct	Incorrect	Unattempt
Conjunction	46.3%	40.8%	12.9%	59.4%	32.8%	7.8%
Collocation	71.1%	21.5%	7.4%	78.3%	16.7%	5.0%
Preposition	23.7%	62.0%	14.3%	23.3%	69.5%	7.2%
Connector	2.5%	73.6%	24%	6.7%	81.7%	11.7%
Modal auxiliaries	22.8%	61.6%	15.7%	19.2%	73.4%	7.5%

Participle	62%	30.6%	7.4%	65.0%	30.0%	5.0%
Modifier	0.8%	81.8%	17.4%	1.7%	91.7%	6.7%
Phrasal verb	36.4%	56.2%	7.4%	28.3%	65.0%	6.7%
Relative pronoun	40.5%	52.9%	6.6%	20%	75.0%	5.0%
Semantic precision	32.2%	61.2%	6.6%	60.0%	33.3%	6.7%
Determiner	38.8%	38.0%	23.1%	73.3%	15.0%	11.7%

Figure 1, shows that overall performance in academic reading skills between undergraduate and postgraduate medical students. Postgraduates answered more correctly (39.0% vs. 31.2%) and had fewer incorrect responses (58.4% vs. 61.2%). Unattempt responses were very low for both groups, but slightly higher in undergraduates (7.6% vs. 2.6%).

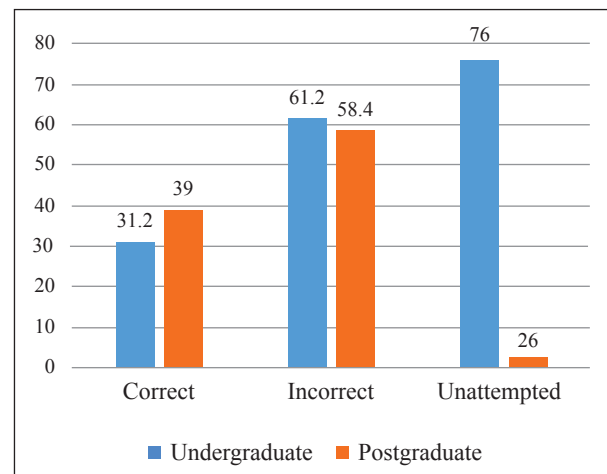


Figure 1: Overall proportions of correct, incorrect and unattempt responses to questions assessing the ‘academic reading skills’ of medical undergraduate and postgraduate students/residents in the English language test

Table 3 shows comparison of grammar skills in word formation between undergraduate and postgraduate students. Postgraduates performed better in most areas, especially in verb to noun (78.3% vs. 61.2%), past participle form (87.5% vs. 63.2%), and adjective to noun (68.3% vs. 41.3%). In verb to adjective, undergraduates scored very low (3.3%), while postgraduates did much better (61.7%). Both groups struggled with prefixes, with correct responses of only 20.3% in undergraduates and 11.7% in postgraduates.

Table 3: Comparison of undergraduate and postgraduate students in percentage of correct, incorrect, and unattempt responses to questions assessing grammar issues of ‘word formation’ Parts 3 of the exam paper. (N=181, Under graduate-121, postgraduate =60)

Type of word formation	Undergraduate			Postgraduate		
	Correct	Incorrect	Unattempt	Correct	Incorrect	Unattempt
Adjective to noun	41.3%	30.6%	28.1%	68.3%	28.3%	3.3%
Verb to noun	61.2%	14.0%	24.8%	78.3%	18.3%	3.3%
Verb to adjective	3.3%	72.7%	24.0%	61.7%	36.7%	1.7%
Past participle form of verb	63.2%	18.2%	18.6%	87.5%	10.9%	1.7%
Prefix	20.3%	57.1%	22.8%	11.7%	85.0%	3.4%
Singular to plural	38.0%	38.0%	24.0%	70.0%	28.3%	1.7%

Table 4 shows the comparison of grammar skills in keyword transformation between undergraduate and postgraduate students. Postgraduates performed better in voice change (45.0% vs. 35.0%) and coordinating clause (20.0% vs. 12.4%), while undergraduates scored slightly higher in adjective (24.0% vs. 23.3%) and adverbial clauses (16.5% vs. 13.3%).

Table-4: Comparison of undergraduate and postgraduate students in percentage of correct, incorrect, and un-attempted responses to questions assessing grammar issues of ‘keyword transformation’ Parts 4 of the exam paper. (N=181, Under graduate=121, postgraduate =60)

Type of keyword transformation	Undergraduate			Postgraduate		
	Correct	Incorrect	Unattempt	Correct	Incorrect	Unattempt
Co-ordinating clause	12.4%	57%	30.6%	20.0%	76.7%	3.3%
Adjective clause	24.0%	44.6%	31.4%	23.3%	73.3%	3.3%
Adverbial clause	16.5%	51.2%	32.2%	13.3%	80.0%	6.7%
Voice change	35.0%	32.2%	32.8%	45.0%	51.7%	3.3%

Figure 2: Overall proportions of correct, incorrect and unattempt responses to questions assessing the ‘grammar skills’ of medical undergraduate and postgraduate students/residents in the English language test.

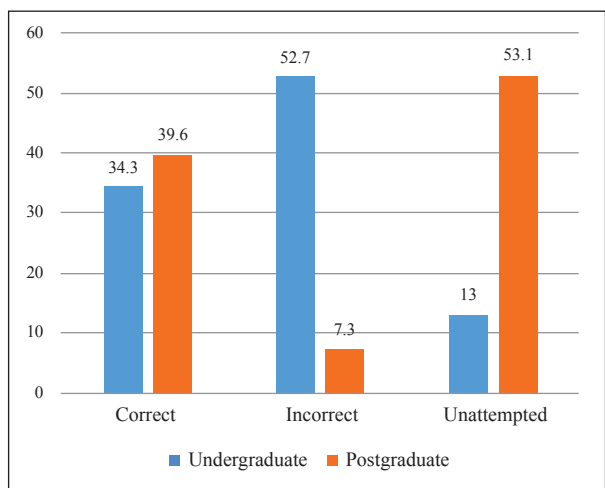


Figure 2: Shows the overall performance of undergraduate and postgraduate students in grammar skills. Postgraduates had a higher proportion of correct answers (39.6% vs. 34.3%) and fewer incorrect answers (7.3% vs. 52.7%) compared to undergraduates. Undergraduates left fewer questions unattempted (13%) than postgraduates (53.1%), indicating that postgraduates were more cautious or selective in answering.

Discussion:

The present study investigated the academic English language skills of Bangladeshi medical students and residents, focusing on reading and grammar in Regional Anatomy. In academic reading, postgraduate students demonstrated superior performance compared to their undergraduate counterparts. Specifically, postgraduates achieved higher accuracy rates in factual information questions (56.7% vs. 40.3%), inference questions (50.6% vs. 26.2%), and sentence simplification tasks (62.8% vs. 52.0%). Both groups exhibited similar proficiency in vocabulary (29.2% vs. 27.3%) and reference questions (30.0% vs. 29.7%). Negative factual information questions posed significant challenges to both groups, with undergraduates scoring 29.0% and postgraduates 16.7%. These findings align with previous studies indicating that postgraduate students, due to prior exposure to complex academic texts and advanced cognitive skills, often perform better in comprehension-based tasks than undergraduates.^{12,13} Similar trends were observed in studies assessing English proficiency among medical students, where advanced learners exhibited stronger inference and reading comprehension abilities.^{14,15} Regarding grammar proficiency, postgraduate students consistently outperformed undergraduates across most grammatical issues assessed. Notably, postgraduates achieved higher accuracy rates in areas such as conjunctions (59.4% vs. 46.3%), collocations (78.3% vs. 71.1%), and determiners (73.3% vs. 38.8%). However, both groups faced challenges with complex structures like connectors and modifiers, with undergraduates scoring 2.5% and 0.8%, respectively, and postgraduates scoring 6.7% and 1.7%. These results are consistent with previous research indicating that higher-level learners, such as postgraduate students, generally demonstrate stronger grammatical competence due to repeated exposure to formal academic English and complex syntactic structures.¹⁶

Challenges in certain areas, such as modifiers and prefixes, suggest persistent difficulties even among postgraduates, highlighting the need for targeted grammatical interventions.¹⁷ In the assessment of word

formation, postgraduate students demonstrated higher proficiency in converting adjectives to nouns (68.3% vs. 41.3%) and verbs to adjectives (61.7% vs. 3.3%). However, both groups exhibited challenges in converting prefixes, with undergraduates scoring 20.3% and postgraduates 11.7%. Similarly, in keyword transformation tasks, postgraduates outperformed undergraduates in converting coordinating clauses (20.0% vs. 12.4%) and adjective clauses (23.3% vs. 24.0%). Both groups struggled with adverbial clauses, with undergraduates scoring 16.5% and postgraduates 13.3%. When considering overall performance, postgraduate students achieved a higher percentage of correct responses (39.6% vs. 34.3%) and a lower percentage of incorrect responses (7.3% vs. 52.7%) compared to undergraduates. However, postgraduates had a higher rate of unattempted questions (53.1% vs. 13.0%), which may indicate a more cautious approach to answering questions or a higher level of uncertainty in their responses. The high rate of unattempted questions among postgraduates in grammar may indicate cautious answering strategies or uncertainty in complex grammatical structures.¹⁸ These patterns support prior observations that postgraduate learners may be more selective and analytical in responding, especially in advanced tasks.^{19,20} The disparities observed between undergraduate and postgraduate students underscore the importance of tailored educational interventions to address specific language proficiency needs at different stages of medical education. For undergraduates, focused instruction on complex grammatical structures and reading comprehension strategies may enhance their language skills. For postgraduates, opportunities to engage in advanced linguistic tasks and critical analysis of complex texts could further refine their proficiency.

Conclusion:

This study reflects notable differences in academic English language proficiency between undergraduate and postgraduate medical learners in Bangladesh, particularly in reading comprehension and grammatical competence within the context of regional anatomy. Postgraduate students consistently demonstrated stronger academic English reading and grammar skills than undergraduate students, likely due to their greater academic exposure and experience. However, both groups showed difficulties in complex reading tasks and advanced grammatical structures, highlighting the need for English language support. Structured English-in-Regional Anatomy guidelines are recommended to improve comprehension and academic performance.

The English language test focused only on reading and grammar, excluding speaking, writing, and listening skills. Self-reported survey responses may be subject to bias. The cross-sectional design provides a snapshot of proficiency and perceptions but cannot determine changes over time.

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