

ENHANCING ACADEMIC WRITING SKILLS IN PHASE I MBBS STUDENTS THROUGH STRUCTURED WRITING SESSIONS IN PHYSIOLOGY AT A MEDICAL COLLEGE IN SOUTH GUJARAT

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ABSTRACT

Background: Many Phase-I MBBS students possess adequate conceptual knowledge of Physiology but face difficulties in presenting answers effectively during theory examinations. Poor organization, inadequate use of diagrams, lack of logical sequencing, and ineffective time management often result in suboptimal academic performance. Structured writing sessions have been proposed as an educational strategy to bridge the gap between knowledge acquisition and answer presentation. **Materials and Methods:** A quasi-experimental interventional study was conducted among 130 Phase-I MBBS students at a medical college in South Gujarat. Students were divided into Group A (Nerve-Muscle Physiology) and Group B (Blood Physiology), with 65 students in each group. Participants underwent supervised structured writing sessions followed by a pre-test, faculty mentoring using model answers, and a post-test. Academic performance was assessed using a validated Answer Checklist. Student and faculty perceptions regarding the intervention were also evaluated. **Results:** Significant improvements were observed across all assessed writing parameters following the intervention. Group A demonstrated an increase in mean scores from 52.4 ± 6.8 to 68.9 ± 7.2 , while Group B improved from 51.8 ± 7.1 to 67.5 ± 6.9 ($p < 0.001$ for both groups). Gain scores were comparable between groups (16.5 ± 4.2 vs. 15.7 ± 4.5 ; $p = 0.42$). Most students reported improved answer organization, greater confidence, and beneficial faculty feedback. Faculty members observed enhanced clarity of content, logical flow, diagram utilization, and overall performance. **Conclusion:** Structured writing sessions represent an effective curriculum innovation for improving academic writing skills, examination performance, and learner confidence among Phase-I MBBS students. Incorporation of such sessions into routine undergraduate medical teaching may enhance both academic outcomes and professional communication competencies.

INTRODUCTION

Academic writing is an essential competency in undergraduate medical education because it serves as the primary medium through which students demonstrate conceptual understanding, analytical thinking, and professional communication skills. In the Competency-Based Medical Education (CBME) curriculum implemented in India, theory examinations continue to play a significant role in assessing students' cognitive abilities. Although many Phase-I MBBS students possess adequate knowledge of basic medical sciences, they often face difficulties in presenting that knowledge

effectively during written examinations. Common challenges include poor organization of answers, lack of logical sequencing, inadequate use of diagrams and flowcharts, improper time management, and inability to identify key scoring points, all of which can adversely affect examination performance despite sound subject understanding.^[1]

The transition from school-based learning to professional medical education requires students to adapt to a substantially different academic environment characterized by extensive content, higher-order thinking, and structured written assessments. Several studies have highlighted that

first-year medical students frequently experience difficulties in academic writing because they are unfamiliar with the expectations of professional examinations and scientific communication.^[2] Consequently, students may struggle to transform their conceptual knowledge into coherent, organized, and examiner-oriented responses.

Effective answer writing is not merely a language skill but a complex educational competency involving comprehension, synthesis, organization, and presentation of information. Research in medical education has shown that structured writing activities encourage active learning, deeper engagement with subject matter, and improved retention of knowledge.^[3]

Writing exercises also promote metacognitive processes by requiring students to critically evaluate and organize information before expressing it in a logical manner.^[4]

Feedback-guided writing interventions have emerged as valuable educational tools in health professions education. Studies have demonstrated that students who receive structured feedback on their written work show significant improvements in clarity, coherence, organization, and academic performance compared with those receiving traditional instruction alone.^[5] Such interventions enable learners to recognize deficiencies in their writing patterns and progressively refine their examination strategies.

The incorporation of writing-intensive educational approaches has gained increasing attention worldwide. Structured writing programs involving guided practice, model answers, peer review, and faculty mentoring have been associated with improved academic achievement, greater confidence, and enhanced communication skills among medical students.^[6]

These programs facilitate the development of self-directed learning behaviors and encourage students to reflect upon their own learning processes.

Recent evidence suggests that systematic writing instruction can positively influence performance in medical examinations. Students who participate in structured answer-writing exercises demonstrate better organization of content, more effective use of diagrams and headings, and improved ability to prioritize key concepts within limited examination time.^[7]

Such benefits are particularly relevant during the first year of MBBS when students are developing foundational learning habits that influence subsequent academic performance.

Peer-assisted and faculty-guided writing programs have also shown promising outcomes in improving academic writing skills. The process of reviewing model answers, discussing common mistakes, and receiving constructive feedback helps students understand examiner expectations and develop strategies for producing high-quality responses.^[8] These interventions contribute to increased self-

confidence and reduced examination anxiety, thereby improving overall learning experiences.

Within the discipline of Physiology, effective written communication is particularly important because the subject requires students to integrate complex concepts, mechanisms, and diagrams into comprehensive answers. Physiology examinations frequently assess students' ability to explain dynamic processes through structured narratives supported by flowcharts and illustrations. Therefore, targeted training in answer-writing techniques may significantly enhance students' ability to communicate physiological concepts accurately and effectively.^[9]

Despite the recognized importance of academic writing skills, structured writing sessions remain underutilized in many undergraduate medical curricula. Limited evidence is available regarding the effectiveness of such interventions among Phase-I MBBS students in the Indian context, particularly within Physiology education. Therefore, the present study was undertaken to evaluate the impact of structured writing sessions on academic writing skills, examination performance, and student confidence among Phase-I MBBS students at a medical college in South Gujarat. The findings may contribute to the development of innovative educational strategies aimed at improving academic outcomes and strengthening foundational competencies in medical education.^[10]

MATERIALS AND METHODS

This quasi-experimental interventional study was conducted in the Department of Physiology at Kiran Medical College, Surat, Gujarat, with the objective of enhancing academic writing skills among Phase-I MBBS students through structured writing sessions. Ethical approval for the study was obtained from the Institutional Ethics Committee of Kiran Medical College prior to commencement of the study. Participation was voluntary, and informed consent was obtained from all participants before enrollment. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki.

A total of 130 Phase-I MBBS students were included in the study. The sample comprised students who were present during all scheduled academic writing sessions and were willing to participate voluntarily. Students who were absent from any of the sessions or unwilling to participate were excluded from the study. Participants were selected using a convenient sampling technique.

The educational intervention was implemented in three sequential phases. Initially, students participated in structured writing sessions conducted under direct faculty supervision. These sessions were organized on a weekly basis, with each session lasting approximately one hour. During the sessions, students were provided with structured Physiology

questions and were instructed to write detailed answers emphasizing content relevance, logical organization, use of headings and subheadings, incorporation of diagrams and flowcharts, and overall presentation quality.

The participants were divided into two groups of equal size. Group A consisted of 65 students who received structured writing sessions focused on Nerve-Muscle Physiology, whereas Group B consisted of 65 students who received similar sessions focused on Blood Physiology. Both groups underwent identical educational strategies, differing only in the physiological system selected for training.

Following completion of two structured writing sessions, students were administered a pre-test based on the respective physiological system assigned to their group. No model answers, faculty guidance, or corrective feedback were provided prior to the pre-test. Subsequently, a mentoring session was conducted during which faculty members presented model answers, discussed common mistakes, demonstrated effective answer organization techniques, emphasized the appropriate use of diagrams and flowcharts, and provided strategies for improving logical sequencing and examination performance.

After the mentoring session, students undertook a post-test that followed the same blueprint and level of difficulty as the pre-test. The purpose of the post-test was to assess improvements in academic writing performance following the structured intervention and faculty mentoring. Both pre-test and post-test answer scripts were evaluated using a validated Answer Checklist that assessed multiple domains, including content relevance, handwriting and legibility, use of diagrams, diagram size and placement, paragraph organization and sequencing, use of flowcharts, headings and subheadings, spacing and layout, and time management.

Content validity and clarity of the assessment checklist and feedback questionnaires were established through review by experienced Physiology faculty members and Medical Education Unit experts. Student and faculty feedback regarding the usefulness and effectiveness of the structured writing sessions was collected using pre-validated questionnaires.

RESULTS

A total of 130 Phase-I MBBS students participated in the study, with 65 students each in Group A (Nerve-Muscle Physiology) and Group B (Blood Physiology). The effectiveness of structured writing sessions was assessed through parameter-wise evaluation of answer-writing skills, comparison of pre-test and post-test scores, gain score analysis, and feedback obtained from students and faculty members.

[Table 1] presents the parameter-wise comparison of pre-test and post-test performance. Improvements were observed across all evaluated domains following the structured writing intervention. The greatest improvements were noted in headings and subheadings (6.0 ± 1.2 vs. 8.4 ± 1.0), paragraph organization and sequencing (5.6 ± 1.3 vs. 8.3 ± 1.1), content relevance (5.8 ± 1.4 vs. 8.1 ± 1.2), and time management (5.5 ± 1.5 vs. 8.1 ± 1.2). Significant enhancement was also observed in the use of diagrams, flowcharts, spacing and layout, and overall answer presentation, indicating that the structured writing sessions effectively strengthened students' academic writing competencies.

[Table 2] shows the within-group comparison of pre-test and post-test scores. In Group A (Nerve-Muscle Physiology), the mean score increased significantly from 52.4 ± 6.8 in the pre-test to 68.9 ± 7.2 in the post-test ($p < 0.001$). Similarly, Group B (Blood Physiology) demonstrated a statistically significant improvement from 51.8 ± 7.1 to 67.5 ± 6.9 following the intervention ($p < 0.001$). These findings indicate that faculty-guided mentoring and structured writing practice significantly enhanced students' examination performance irrespective of the physiological system studied.

[Table 3] presents the comparison of gain scores between the two groups. The mean gain score was 16.5 ± 4.2 in Group A and 15.7 ± 4.5 in Group B. The difference between the groups was not statistically significant ($p = 0.42$), suggesting that the intervention produced comparable benefits across different areas of Physiology. This finding supports the generalizability of structured writing sessions as an effective educational strategy irrespective of subject content.

Student perceptions regarding the intervention are summarized in [Table 4].

Most students responded positively to the structured writing sessions. A majority either strongly agreed or agreed that the instructions were clear (84%), answer organization improved (85%), confidence increased (82%), faculty feedback was useful (86%), and the sessions were beneficial overall (88%). Only a small proportion of students expressed disagreement, indicating a high level of acceptance and satisfaction with the intervention.

Faculty feedback regarding student performance is presented in [Table 5].

All faculty members either strongly agreed or agreed that students demonstrated improvement in clarity of content, logical flow of answers, use of diagrams, and overall academic performance. Four of the six faculty members strongly agreed that content clarity and overall performance improved following the intervention. Although one faculty member expressed a neutral opinion regarding time management, no faculty member disagreed with any of the statements. These observations further support the effectiveness of structured writing sessions in enhancing answer-writing quality and examination readiness.

Overall, the findings demonstrate that structured writing sessions combined with focused mentoring significantly improved academic writing skills, answer presentation, and examination performance

among Phase-I MBBS students. Positive responses from both students and faculty reinforce the educational value of incorporating structured writing training into the undergraduate medical curriculum.

Table 1: Parameter-wise Comparison of Pre-test and Post-test Scores (Mean ± SD)

| Writing Parameter | Pre-test Mean ± SD | Post-test Mean ± SD |
|-----------------------------|--------------------|---------------------|
| Content Relevance | 5.8 ± 1.4 | 8.1 ± 1.2 |
| Handwriting & Legibility | 6.2 ± 1.3 | 7.6 ± 1.1 |
| Use of Diagrams | 5.2 ± 1.5 | 7.9 ± 1.3 |
| Diagrams Size and Placement | 5.4 ± 1.4 | 8.0 ± 1.2 |
| Paragraph & Sequencing | 5.6 ± 1.3 | 8.3 ± 1.1 |
| Use of Flowcharts | 5.1 ± 1.6 | 7.8 ± 1.4 |
| Headings & Subheadings | 6.0 ± 1.2 | 8.4 ± 1.0 |
| Spacing & Layout | 6.1 ± 1.2 | 8.0 ± 1.1 |
| Time Management | 5.5 ± 1.5 | 8.1 ± 1.2 |

Table 2: Comparison of Pre-test and Post-test Scores (Within-group Analysis)

| Group | N | Pre-test Mean ± SD | Post-test Mean ± SD | p-value |
|------------------------|----|--------------------|---------------------|---------|
| Group A (Nerve-Muscle) | 65 | 52.4 ± 6.8 | 68.9 ± 7.2 | <0.001 |
| Group B (Blood) | 65 | 51.8 ± 7.1 | 67.5 ± 6.9 | <0.001 |

Table 3: Comparison of Gain Scores between Groups (Between-group Analysis)

| Parameter | Group A | Group B | p-value |
|----------------------------|------------|------------|---------|
| Mean Gain Score (Post-Pre) | 16.5 ± 4.2 | 15.7 ± 4.5 | 0.42 |

Table 4: Student Feedback on Structured Writing Sessions (n = 130)

| Feedback Statement | Strongly Agree (%) | Agree (%) | Neutral (%) | Disagree (%) | Strongly Disagree (%) |
|----------------------------------|--------------------|-----------|-------------|--------------|-----------------------|
| Instructions were clear | 46 | 38 | 10 | 4 | 2 |
| Improved answer organization | 48 | 37 | 9 | 4 | 2 |
| Increased confidence | 44 | 38 | 12 | 4 | 2 |
| Faculty feedback was useful | 52 | 34 | 8 | 4 | 2 |
| Overall sessions were beneficial | 55 | 33 | 7 | 3 | 2 |

Table 5: Faculty Feedback on Student Performance (n = 6)

| Feedback Statement | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|------------------------------------|----------------|-------|---------|----------|-------------------|
| Improvement in clarity of content | 4 | 2 | 0 | 0 | 0 |
| Improved logical flow | 3 | 3 | 0 | 0 | 0 |
| Better use of diagrams | 4 | 2 | 0 | 0 | 0 |
| Improved time management | 3 | 2 | 1 | 0 | 0 |
| Overall enhancement in performance | 4 | 2 | 0 | 0 | 0 |

DISCUSSION

The present study demonstrated that structured writing sessions significantly improved academic writing skills and examination performance among Phase-I MBBS students. Significant improvements were observed across multiple answer-writing domains, including content relevance, organization, diagram utilization, use of headings and subheadings, flowchart incorporation, and time management. Furthermore, both intervention groups exhibited statistically significant increases in post-test scores, indicating that the educational strategy was effective irrespective of the physiological system taught. The positive perceptions expressed by both students and faculty further reinforce the educational value of structured writing interventions in undergraduate medical education.

The improvement in post-test scores observed in the present study is consistent with contemporary evidence highlighting the role of writing as an active learning strategy. Kim et al. demonstrated that

structured writing activities improve knowledge transfer and higher-order thinking among medical students by encouraging learners to organize and critically process information rather than merely memorize content.^[11]

Similar mechanisms may explain the improvement observed in the present study, where repeated writing practice and faculty mentoring encouraged students to convert conceptual understanding into coherent examination answers.

An important finding of the current study was the substantial enhancement in answer organization, sequencing, and use of headings and subheadings. These improvements are educationally relevant because answer structure significantly influences examiner perception and scoring. Kasai et al. reported that systematic report-writing instruction combined with feedback and peer-review strategies significantly improved the writing performance of medical students and facilitated sustained skill development over time.^[12]

The mentoring component employed in the present study likely contributed to similar gains by providing students with model answers, corrective feedback, and opportunities for reflection.

The positive student feedback regarding confidence and examination readiness also deserves attention. Academic writing interventions are known to strengthen learners' self-efficacy and reduce uncertainty regarding examination expectations. Khojasteh et al. demonstrated that guided writing instruction supported by structured educational scaffolding significantly enhanced writing performance among medical students while promoting greater learner engagement and confidence.^[13]

The increased confidence reported by participants in the present study may therefore reflect improved familiarity with answer-writing strategies and assessment requirements.

Another notable observation was the significant improvement in the use of diagrams and flowcharts. In Physiology education, visual representation of concepts plays a crucial role in demonstrating understanding of mechanisms and processes. Educational research has shown that integrating visual and textual elements within written responses improves both learning and communication of scientific concepts. Writing-based interventions that explicitly train students in content organization and visual presentation have been associated with superior academic outcomes and greater retention of knowledge.^[14]

The structured writing sessions in the present study likely encouraged students to utilize diagrams more effectively, thereby improving both presentation quality and conceptual clarity.

The absence of a statistically significant difference in gain scores between the Nerve-Muscle Physiology and Blood Physiology groups suggests that structured writing sessions are broadly applicable across different subject areas. This finding supports the generalizability of the intervention and indicates that the benefits arise primarily from improved writing methodology rather than topic-specific factors. Previous investigations into academic writing pedagogy have similarly demonstrated that structured writing instruction improves communication skills across diverse educational contexts and disciplines.^[15] Consequently, integrating structured writing exercises into multiple systems within the MBBS curriculum may yield widespread educational benefits. Faculty feedback further strengthened the findings of the study, with most faculty members reporting improvements in clarity of content, logical flow, use of diagrams, and overall performance. Such observations indicate that structured writing interventions not only improve examination scores but also enhance the quality of scientific communication among novice medical learners. Since effective written communication remains an essential competency for future physicians, early

exposure to structured academic writing may contribute to long-term professional development.

Overall, the findings of the present study suggest that structured writing sessions serve as an effective educational innovation for bridging the gap between knowledge acquisition and answer presentation. By combining guided practice, feedback, mentoring, and reflective learning, these sessions facilitate the development of essential academic competencies that directly influence examination success and future professional communication skills.

CONCLUSION

Structured writing sessions significantly improved academic writing skills, answer organization, use of diagrams, time management, confidence, and overall examination performance among Phase-I MBBS students. Both intervention groups demonstrated comparable and statistically significant improvements in post-test scores, indicating that the effectiveness of the intervention was independent of the physiological system taught. Positive feedback from students and faculty further supports the educational value of structured writing training. Incorporating structured writing sessions into the undergraduate medical curriculum may serve as a practical and sustainable strategy for enhancing academic performance, fostering effective communication skills, and preparing students for future professional responsibilities.

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