



African Journal of Biological Sciences



Title :

Utilizing Checklists in Dissection Hall for First MBBS Students: An Educational Intervention Study

Authors :

Sachin Patil^{1*}, Madhu Sethi²

Affiliations:

¹-Professor and Head, Department of Anatomy, Nootan Medical College, and Research Centre, Sankalchand Patel University, Visnagar, India

²- Assistant Professor, Department of Anatomy, Dr.Baba Saheb Ambedkar Medical College & Hospital, Delhi, India

Corresponding author:

Dr Sachin Patil

Professor and Head,

Department of Anatomy,

Nootan Medical College, and Research Centre,

Sankalchand Patel University, Visnagar, Gujarat-384315

India

Phone-+919474202316

Email- drsachinanatomy@gmail.com

ABSTRACT

Background. The utilization of checklists as an instructional strategy in anatomical dissection laboratories for First MBBS students can notably enrich the educational process through the provision of a methodical and unbiased approach.

Methods. This was an educational interventional study with a sample size of 150 participants from the MBBS phase-1 undergraduate students at GAIMS, Bhuj, Gujarat. The intervention included sharing a checklist during the teaching of gross anatomy in the dissection hall through five conducted sessions covering topics such as the Liver, Femoral triangle, Cubital fossa, Larynx, and Heart. Pre-tests and feedback using a 5-point Likert scale were collected from 145 students after each session. Data compilation and statistical analysis were conducted.

Results. Overall, statistically significant($P < 0.0001$) improvement from the pre-test to post-test results. The majority of those who completed the feedback indicated that either agreed or strongly agreed that the educational intervention of checklist was beneficial to their learning. Contrarily, only a minimal (7%) of faculties indicated that they did not find the intervention to be beneficial.

Conclusion. Using checklists in a gross anatomy laboratory improves learning outcomes and dissection quality. It is time saving, interesting, and provides greater experiential learning of the topic to students, ensuring they acquire the necessary skills and knowledge comprehensively and systematically.

Keywords-first MBBS, gross, cadaver dissection, anatomy education, checklist

Article History

Volume 6, Issue 13, 2024

Received: 18 June 2024

Accepted: 02 July 2024

doi:10.48047/AFJBS.6.13.2024.2645-2651

INTRODUCTION

The utilization of checklists as an instructional strategy in anatomical dissection laboratories for First MBBS students can notably enrich the educational process through the provision of a methodical and unbiased approach. These checklists enable students to pinpoint crucial elements and methodically arrange data, a vital aspect in intricate subjects such as anatomy [1]. Research indicates that the use of checklists enhances diagnostic precision and diminishes unwarranted confidence, thereby proving advantageous in anatomical education by directing students' attention towards critical facets while preventing the oversight of essential particulars [2]. Furthermore, experiential learning-oriented sessions incorporating checklists have been shown to cultivate profound and interactive contextual learning encounters, enhancing problem-solving abilities, and catering to diverse learning requirements [3]. The integration of checklists in dissection sessions may also assist in time management by lessening cognitive burden and optimizing the efficient utilization of the restricted teaching duration. Moreover, the credibility and accuracy of checklists in evaluating practical proficiencies have been extensively documented, underscoring their efficacy in gauging, and enhancing student's performance in anatomical practical sessions [4,5]. Despite the indispensable nature of traditional cadaver-centric instruction for practical comprehension, the incorporation of checklists can complement this approach by reinforcing the retention and conceptualization of anatomical knowledge. Feedback from both students and educators indicates a high level of satisfaction with checklist-based education, underscoring its convenience and user-friendliness [6]. Overall, incorporating checklists into gross anatomy teaching in dissection halls can provide a more structured, efficient, and effective learning experience for Phase I MBBS students, ensuring they acquire the necessary skills and knowledge comprehensively and systematically.

MATERIALS AND METHODS

This was an educational interventional study with a sample size of 150 participants from the MBBS phase-1 undergraduate students at GAIMS, Bhuj, Gujarat. Inclusion criteria comprised MBBS phase-1 students from the academic year 2021-2022, while individuals not willing to participate were excluded. Prior informed consent was obtained from all participants. The intervention included sharing a checklist during the teaching of gross anatomy in the dissection hall through five conducted sessions covering topics such as the Liver, Femoral triangle, Cubital fossa, Larynx, and Heart. Institutional ethical committee clearance was obtained, and sensitization was conducted for seven faculties from the Department of Anatomy along with the 150 MBBS phase-1 students. Validation was performed by five faculties and five non-participating students, with the documentation of checklists. Consent was secured from the entire batch of 150 students for the academic year 2021-2022. Pre-tests were administered before each session, followed by five teaching sessions using the checklists-based method in the dissection hall. Post-tests and feedback using a 5-point Likert scale were collected from 145 students after each session. Feedback was also obtained from the seven faculties of the Department of Anatomy. Finally, data compilation and statistical analysis were conducted.

RESULTS

Mean scores of pretest was 4.6 out of 10 and mean post test score was 7.38 out of 10 .Overall, statistically significant($P < 0.0001$) improvement from the pre-test to post-test results (Figure 1). This lends to the fact that the checklists-based method in the dissection hall had a positive impact on student learning.

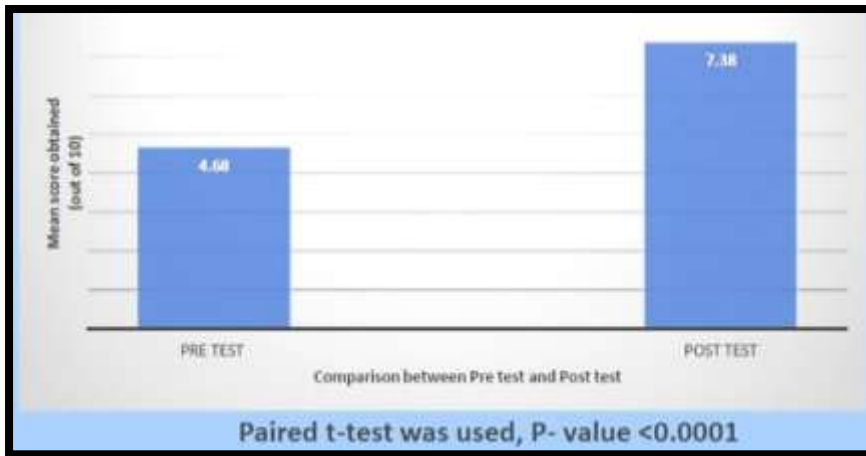


Figure 1-Mean Score of Pretest and Post-test

One hundred and forty-five students completed the feedback on a 5-point Likert scale after each session. The majority of those who completed the feedback (80%) of students indicated that they either agreed or strongly agreed that the educational intervention of checklist was beneficial to their learning. Contrarily, only a minimal (7%) of students indicated that they did not find the intervention to be beneficial. The six-question student feedback questionnaire using a 5-point Likert Scale, and the responses given are shown in Figure 2.

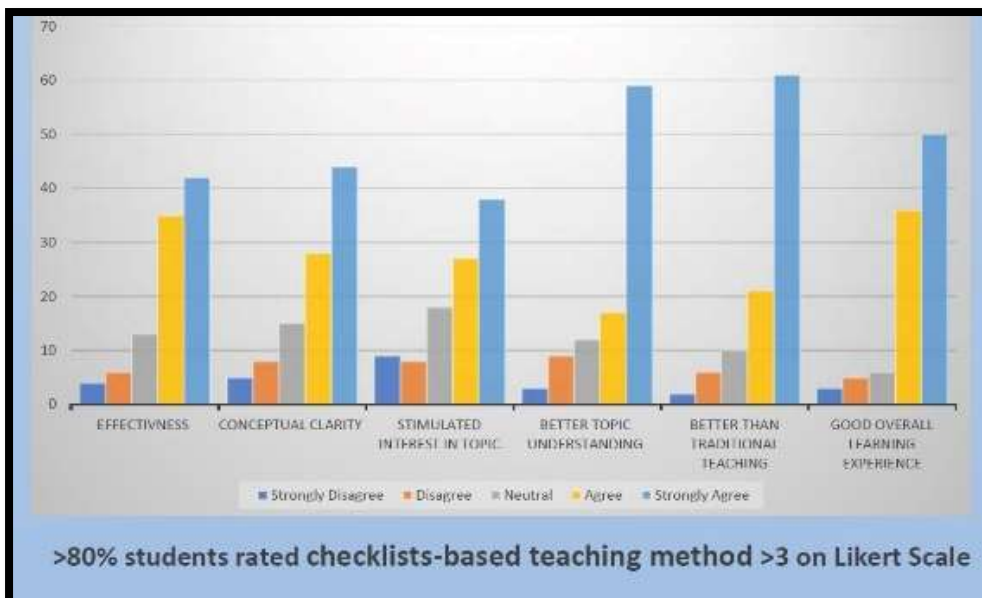


Figure 2-Students Feedback on Likert Scale

Seven faculties from department completed the feedback on a 5-point Likert scale after each session. The majority of those who completed the feedback (80%) of students indicated that they either agreed or strongly agreed that the educational intervention of checklist was useful to their teaching. Contrarily, only a minimal (6%) of faculties indicated that they did not find

the intervention to be beneficial. The Five-question faculties feedback questionnaire using a 5-point Likert Scale, and the responses given are shown in Figure 3.

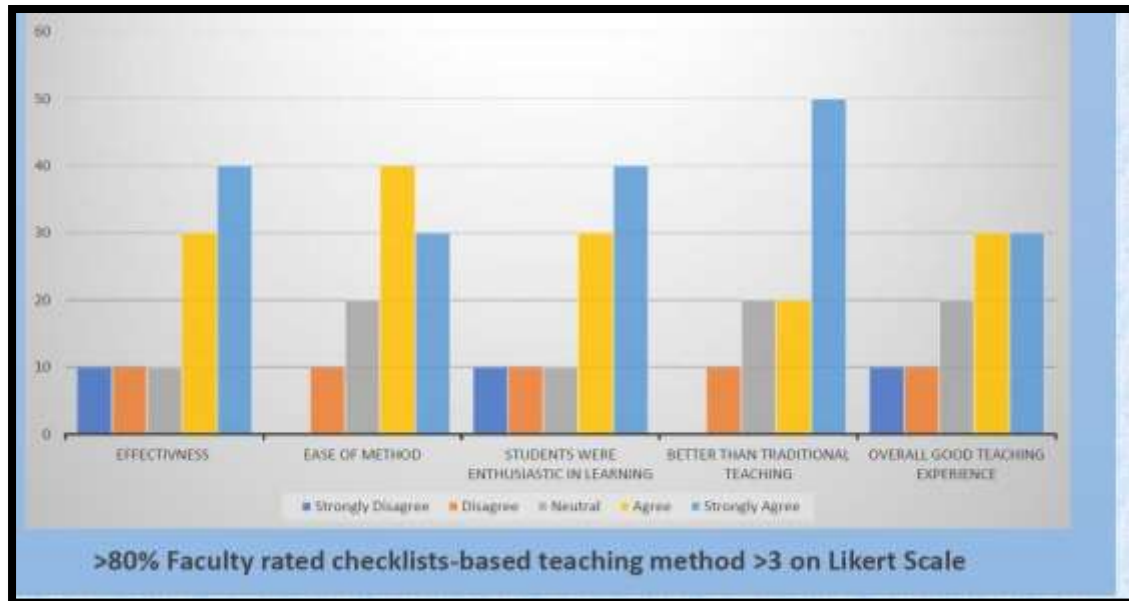


Figure 3-Faculty Feedback on Likert Scale

DISCUSSION

Health education is primarily about transferring knowledge from teachers to students. To effectively prepare future healthcare workers and researchers, it is essential to improve our teaching methods. This involves not just delivering information but also ensuring that students can apply what they learn in real-world scenarios. This means exploring and adopting new methods that can enhance the learning experience and make it more effective. One way to improve teaching is by using intentional instructional design.

Checklists are tools that help in organizing tasks, providing transparency, and reducing human errors, which is why they are widely used in various fields like surgery, aviation, and everyday tasks. The use of a checklist in interventional radiology significantly improves patient safety and outcomes by ensuring that all necessary steps are followed systematically, reducing the risk of complications and errors during procedures [7].

A student satisfaction survey by Ryan et al. revealed that students preferred hardcopy checklists over other formats like email or whiteboards, finding them more efficient and helpful in identifying pertinent structures during dissections. The findings of our study were similar to a survey that showed students felt the checklists made dissection more efficient and improved their performance in the laboratory [8].

The study by Arunthathi et al. demonstrates that the checklist used in the Objective Structured Practical Examination is more effective for teaching practical physiology compared to traditional demonstration methods, as evidenced by significantly higher mean scores obtained by students using the checklist method. The study also showed that both students and faculty perceive the checklist of Objective Structured Practical Examination as more objective and reliable, which enhances the learning and teaching experience by providing clear and measurable criteria for assessment [9].

One study demonstrated that using a checklist to assess individual Doctor of Pharmacy students' performance in group settings was a reliable and valid tool, highlighting its utility in academic assessments. Another study showed that checklists could improve the quality of care for pregnant women with opioid use disorders, indicating their potential in healthcare settings as well. The students' performance and satisfaction improved with the use of structured checklists and scoring guides, possibly because these tools help in actively forgetting non-essential information, thereby aiding memory consolidation in research by Wilson and Onwuegbuzie [10,11,12].

Increased stress and emotional distress, common among college students, can enhance forgetfulness, making the use of checklists even more beneficial as they help in organizing and retaining important information. Checklist implementation has been credited with decreasing anaesthesia-related adverse events, infection rates in intensive care [13].

In education, checklists are designed to set specific criteria that help both educators and students gauge skill development and support the learning process, making them useful for focusing on the main content of each lecture or lesson. Educational checklists have been used globally for years to address the challenges of acquiring knowledge and skills that are applicable in real-life situations, proving their versatility and effectiveness [14].

CONCLUSION

The consistent improvement in post test scores and dissection quality across the board suggests that the checklists were effective for all students, regardless of their initial skill level, which is a positive. We did not find any significant drawbacks or challenges in using checklists, which might be surprising given that new educational interventions often come with some initial resistance or implementation issues. The result of the study depicts that the use of checklists-based method in learning gross anatomy in dissection hall is time saving, interesting, and provides greater experiential learning of the topic to students. Faculties using checklists-based method can teach the topics easily and more effectively.

LIMITATIONS

The study was carried out only among one batch (150 students) of phase 1 MBBS students. Study can be extended to 3-4 batches of phase 1 MBBS.

DECLARATION

Human subjects: Consent was obtained from all participants in this study.

All authors have declared that no financial support was received from any organization for the submitted work.

Conflict of interest -none

REFERENCES

- 1) Abdelrahman, M, Makram., Julia, Wang., Gladson, Vaghela., Dhir, Gala., N., Khoi, Quan., Nguyen, Tran, Minh, Duc., A, Imoto., Kazuhiko, Moji., Nguyen, Tien, Huy. Is checklist an effective tool for teaching research students? A survey-based study. *BMC Medical Education*, (2022). doi: 10.1186/s12909-022-03632-z
- 2) Justine, Staal., Robert, Zegers., Jeanette, Caljouw-Vos., Sílvia, Mamede., Laura, Zwaan. Impact of diagnostic checklists on the interpretation of normal and abnormal electrocardiograms. *Diagnosis*, (2022). doi: 10.1515/dx-2022-0092
- 3) Suchismita, Sarkar., R., Verma., Sonu, Kumari, Amit, Kumar, Singh. Faculty and Students' Perceptions on Experiential Learning Based Anatomy Dissection Hall Sessions for Medical Undergraduates. *Advances in medical education and practice*, (2022). doi: 10.2147/AMEP.S359140
- 4) Morteza, Nasiri., Shahrzad, Yektatalab., Marzieh, Momennasab., Fatemeh, Vizeshfar. Development and assessment of validity and reliability of a checklist to evaluate the Circulating and Scrub Skills of Operating Room Novices (CSSORN checklist). *Journal of education and health promotion*, (2023). doi: 10.4103/jehp.jehp_338_22
- 5) Faculty and Students' Perceptions on Experiential Learning Based Anatomy Dissection Hall Sessions for Medical Undergraduates. *Advances in medical education and practice*, (2022). doi: 10.2147/amep.s359140
- 6) Is Checklist an Effective Tool for Teaching Research Students? A Survey-based Study. (2022). doi: 10.21203/rs.3.rs-1447674/v1
- 7) Soumil, Singhal., Mangerira, Chinnappa, Uthappa. Role of a Checklist to Improve Patient Safety in Interventional Radiology. (2019).;03(03):157-161. doi: 10.1055/S-0039-1693536
- 8) Ryan, E., Hofer., O., Brant, Nikolaus., Wojciech, Pawlina. Using checklists in a gross anatomy laboratory improves learning outcomes and dissection quality. *Anatomical Sciences Education*, (2011).;4(5):249-255. doi: 10.1002/ASE.243
- 9) Arunthathi, P., Lizann, Thomas. Effectiveness of checklist in objective structured practical examination as teaching tool for learning practical physiology. *National Journal of Physiology, Pharmacy and Pharmacology*, (2022).1-1. doi: 10.5455/njppp.2023.13.07353202223072022
- 10) Salinitri FD, Lobkovich AM, Crabtree BL, Wilhelm SM. Reliability and validity of a checklist to evaluate student performance in a problem-based learning group. *Am J Pharm Educ*. 2019; 83(8): 6963. <https://doi.org/10.5688/ajpe6963>.
- 11) Goodman D, Zagaria AB, Flanagan V, Deselle FS, Hitchings AR, Maloney R, et al. Feasibility and acceptability of a checklist and learning collaborative to promote quality and safety in the perinatal care of women with opioid use disorders. *J Midwifery Womens Health*. 2019;64(1): 104–11. <https://doi.org/10.1111/jmwh.12943>.
- 12) Wilson VA, Onwuegbuzie AJ. Improving Achievement and Student Satisfaction through Criteria-Based Evaluation: Checklists and Rubrics in Educational Research Courses. 1999

- 13) Chua C, Wisniewski T, Ramos A, Schlepp M, Fildes JJ, Kuhls DA. Multidisciplinary trauma intensive care unit checklist: Impact on infection rates. *J Trauma Nurs* 2010 17:163–166
- 14) De La Garza JR, Schmidt MW, Kowalewski KF, Benner L, Muller PC, Kenngott HG, et al. Does rating with a checklist improve the effect of E-learning for cognitive and practical skills in bariatric surgery? A rater-blinded, randomized-controlled trial. *Surg Endosc.* 2019;33(5):1532–43.[https:// doi. org/ 10. 1007/ s00464- 018- 6441-4](https://doi.org/10.1007/s00464-018-6441-4)