

Assessment of Understanding And Perception of Undergraduate Medical Students Regarding Medico-legal Autopsy

Muhammad Maqsood,¹ Muhammad Kashif Butt,² Saad uz Zaman Adhami,³ Muhammad Hassan Hafeez,⁴ Tahira Javaid,⁵ Hira Sardar⁶

Abstract

Objective: To address the declining interest in forensic medicine and contribute to curriculum improvements by identifying knowledge gaps and exploring perceptions of undergraduate medical students in Pakistan regarding autopsies. It seeks to investigate the impact of autopsy exposure on students' attitudes toward pursuing forensic medicine as a career.

Material and Methods: A cross-sectional study based on a questionnaire was conducted among 272 third and fourth-year MBBS students at a private medical college, over a six-month period.

Results: According to the results of this study, most of the of students correctly understand the basic purpose of forensic postmortem examination, which is to determine the cause of death. However, there are knowledge gaps in understanding the legal and procedural aspects of autopsy. Additionally, the study highlights the students' perception of autopsy, with a substantial portion feeling uncomfortable or considering it disrespectful to the body.

Conclusion: The findings provide insights into how the curriculum can be enhanced to prepare medical students for the ethical, emotional, and professional aspects of forensic pathology.

Keywords: Autopsy, forensic pathology, postmortem examination, medical education, medical students

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Introduction

Autopsy (Autos-self, opis-view) refers to the complete scientific scrutiny of a dead body consisting of both external and internal examination after opening the body, and collection of specimens for chemical and histological examination.¹ It can be used to establish the identity of the body and determine the cause, manner, mode and mechanism of death.² It also helps in evaluation of post mortem interval, fatal period as well as causative weapon, and plays an important role in clinical quality control and medical auditing, documentation and edu-

cation.³⁻⁵ It is divided into two categories: clinical and medico-legal autopsy. Medico-legal autopsy is the scientific study of a dead body done under the law of the state, conducted on the requisition of a legal authority responsible for the investigation of all sudden, suspicious or unnatural deaths.⁶ In Pakistan, medico-legal autopsy is used to investigate only the deaths occurring in suspicious conditions and where foul play is suspected by a competent investigating officer under section 174 of Criminal Procedure Code (Cr.P.C) or section 176 Cr.P.C. conducted by a magistrate if death has occurred in police custody or to issue orders for exhumation.^{7,8} It is to be conducted by an authorized medical officer appointed by the provincial government at an authorized health care centre.⁹ All doctors are required to be proficient in autopsies as well as medico-legal examinations. To this end, undergraduate medical students in Pakistan are taught forensic medicine during the third year of teaching with 100 teaching hours, including practical

1-6. Forensic Medicine & Toxicology, Shalamar Medical and Dental College, Pakistan

Correspondence:

Muhammad Hassan Hafeez, Demonstrator, Forensic Medicine & Toxicology, Shalamar Medical and Dental College, Pakistan.
Email: hassanhafeez911@gmail.com

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aspects of Forensic Medicine and Toxicology, to equip the students with appropriate knowledge, skills and attitude.¹⁰ Observation of forensic autopsies specifically provides an opportunity for students to learn about autopsy protocols, as well as the medico-legal and ethical issues concerned with death, and certification of death. The skills and attitude gained by observing autopsies allow them to cope with medico-legal issues properly when they enter the practical field.^{11,12} Despite the established importance of autopsies in terms of clinical medicine, forensic medicine, and moreover as a learning tool, globally, clinical and medico-legal autopsy rates have been declining for the last few decades.^{13,14} A major reason behind this is the lack of specialists in the field of forensic medicine.¹⁵ While students show curiosity towards forensic medicine as a subject during their studies, they are less willing to pursue a career in forensic medicine.^{16,17} The possible reasons for this phenomenon may include prevalent legislation, political, religious or financial factors.¹⁸ This shortage of forensic specialists may also be due to the negative perception of autopsy by undergraduate medical students. There are many social stigmata surrounding postmortem examination which may lead students to have a skeptical view of forensic autopsy.¹⁹ Observation of autopsies by undergraduates may also induce emotional reactions in them not compatible with their learning goals.²⁰ Students may feel that autopsy is disrespectful to the body, or they may consider it to be a dirty procedure.²¹ Students may also be unwilling to conduct autopsies due to a lack of knowledge regarding medico-legal autopsy. This includes medical aspects such as the actual autopsy procedure, as well as legal aspects e.g. proper authorizations and protocols. Therefore students may also be reluctant to specialize in forensic medicine as they do not want to be involved in legal matters.^{22,23} In light of the evidence given above, this study aims to assess the knowledge and perception of undergraduate medical students after exposure towards autopsy and its potential role in deterring students from specializing in forensic medicine.

In Pakistan, very few studies have so far been conducted regarding the knowledge and perception of undergraduate medical students. In this situation, it is imperative to conduct a study to assess these factors. The objective of the study is to ascertain the understanding and perception of medical undergraduates towards medico-legal autopsy.

Materials & Methods

A cross-sectional study based on a questionnaire was conducted among 272 students of third and fourth year MBBS medical students of Shalamar Medical & Dental College, Lahore, over a period of 2 months, where participants were selected by convenience sampling. The first seven questions assessed the knowledge of students while the remaining 12 questions assessed the perception of the students towards forensic autopsy.

We have included students who are currently enrolled in their third year and fourth year of MBBS, and ages between²⁰⁻²⁵. All genders will be included. Students who have not attended autopsy visits to King Edward Medical University, irrespective of age and gender, will be excluded. A self-administered, structured questionnaire written in English related to medico-legal autopsy designed to assess the comprehension, perception, and attitudes of the students of a medical college and the reasons indicating a decline in interest in the subject based on published research.^{18,19,24,25} The questionnaire comprised of structured questions with regard to demographic data, the knowledge, perception, experience, and attitude of medical students regarding medico-legal autopsy. After IRB committee approval, students of the third and fourth of Medical College were approached and questionnaires were filled. The collected data was subjected to analysis by SPSS version 17.0 for calculating the frequency and percentage for significance at various levels.

Results

Among the total 272 students, 124 (46%) were male and 148 (54%) were female students. The number of third year students was 147 (54%) and that of fourth year students was 125 (46%) respectively. Out of 272 students, only 19 students observed 7 autopsies during his MBBS, 3 students observed 6 autopsies, 7 students observed 5 autopsies, 27 students observed 4 autopsies, 16 students observed 3 autopsies, 40 students observed 2 autopsies, 25 students observed a single autopsy, whereas 8 students were such who did not observe any autopsy throughout.

Frequency and percentage of responses of students regarding the different questions reflecting the knowledge and perception of the medical undergraduates towards forensic autopsy is as under.

Table 1: Percentages of Students' Responses in the 'Yes' Category asked in the Questionnaire

Sr. No.	Question	Yes/ response %
1	Is the chief objective of a medico-legal autopsy to determine the cause of death?	97
2	Is autopsy a legal requirement in case of all unnatural deaths occurring in suspicious circumstances?	75
3	Do you know who the authority to issue orders for autopsy in Pakistan is?	74
4	Is it necessary to take consent of the relatives to conduct a Medico- legal autopsy?	71
5	Can a Medico-legal autopsy be performed by any medical officer posted at any healthcare center?	90
6	Does postmortem involve both external & internal examinations?	82
7	Does postmortem involve collection of samples to be sent to a chemical examiner and his pathologist?	87
8	Do you think that autopsy helps in achieving the objective of solving crimes?	91
9	How many autopsies have you observed during your 3 rd year of MBBS?	
10	Are the the number of autopsies you have observed is sufficient for learning purposes?	78
11	Do you think that teaching of autopsy in MBBS is beneficial for medical students?	78
12	Should the medical students watch the procedure of autopsy for learning purposes?	88
13	Did you feel comfortable while watching autopsy for the first time?	52
14	Do you think opening of a dead body is disrespectful to the body?	42
15	Would you like to opt for this subject in future as a career?	45
16	Do you dislike this subject as it does not deal with living persons?	28
17	Would you like to touch & dissect dead bodies?	45
18	Is autopsy an unpleasant job?	38
19	Would you like to go to court as a witness?	44

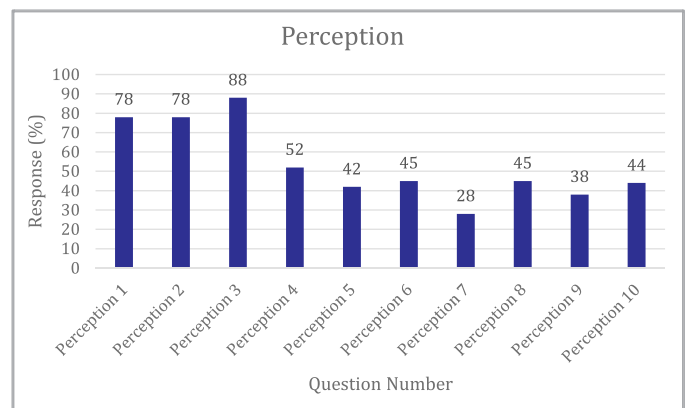
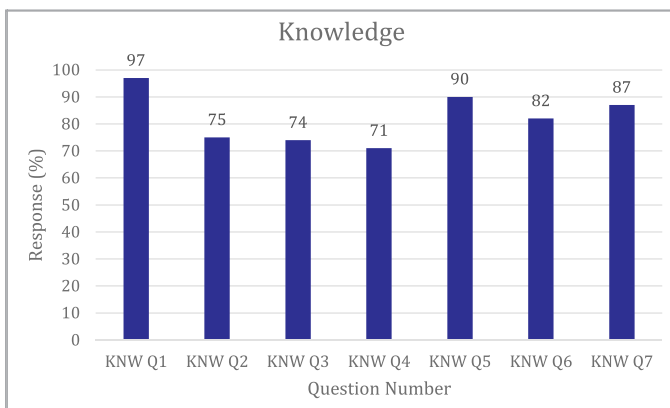


Fig-2: shows the response percentages of each question regarding perception of students

Fig-1: shows Response Percentages of Each Question Regarding Knowledge of Students

Discussion

Forensic autopsy is a significant component of MBBS academic curriculum, where students are encouraged to visit King Edward Medical University Forensic Medicine department once a week throughout their 3rd year, to closely observe and note down their findings on

a human body undergoing post-mortem examination. Despite the efforts, students manifest an unwillingness and reluctance to pursue an interest in adopting a potential career in autopsy and its related affairs. The findings of our study reveal valuable insights into how these undergraduate medical students perceive the importance of forensic autopsy in their training period. The knowledge assessment questions shed light on the students' understanding of forensic autopsy's funda-

mental aspects. It is encouraging to note that the majority of respondents (97%) correctly identified the chief objective of a medico-legal autopsy as determining the cause of death. This high level of awareness among the students suggests that they have a solid grasp of the primary purpose of forensic autopsy. However, some knowledge gaps were identified in the responses. The fact that only 75% of students recognized that autopsy is not a legal requirement for all unnatural deaths in suspicious circumstances highlights the need for improved education in this area. Additionally, the relatively low percentage (74%) of students who could identify the authority to issue orders for autopsy in Pakistan suggests that more attention should be given to teaching students about the legal aspects of forensic autopsy. In the case of obtaining consent from the relatives for a medico-legal autopsy, 71% of the students correctly understood its necessity. This result underscores the importance of emphasizing the ethical and legal considerations surrounding autopsies in medical education. The perception assessment questions explored the students' attitudes and beliefs about forensic autopsy, its role in solving crimes, and its relevance to their medical education and future careers. The high percentage of students (90%) who understood that a medico-legal autopsy cannot be performed by just any medical officer demonstrates a well-established perception regarding the specialization and expertise required in forensic pathology. This suggests that students recognize the importance of trained professionals in this field. The positive response (91%) regarding the belief that autopsy contributes to solving crimes reflects the students' acknowledgment of the broader societal impact of forensic autopsy beyond the realm of medicine. This viewpoint is crucial in fostering a sense of responsibility and social duty among future medical professionals. While a significant portion of the students (78%) felt that the number of autopsies they had observed was sufficient for their learning purposes, similar to a study by Qasim et al, it is essential to consider this result in the context of the medical curriculum's goals and resources. Assessing whether this level of exposure aligns with the educational objectives of the program should be a point of discussion.²¹ The perception that watching an autopsy for the first time was uncomfortable (52%) suggests that students may experience psychological and emotional challenges when first exposed to such procedures. This is similar to 57% response given by students in a previous study by Chawla et al.²² This highlights the need for compre-

hensive support and guidance to help students overcome these initial difficulties. Regarding career aspirations, the relatively low percentage of students (45%) interested in pursuing forensic pathology as a career path raises questions about the factors influencing their choices. Previous studies have shown an even lower percentage of students considering forensic medicine as a career option in future.^{21,22} A deeper exploration of these factors, such as societal perceptions, professional prospects, and personal preferences, could provide valuable insights. The findings indicate a mixed perception regarding the teaching of autopsy in the MBBS program, with 78% of students considering it beneficial. The positive response to whether students should watch autopsy procedures (88%) suggests a willingness to engage in practical learning experiences, despite initial discomfort. In a previous study by Naz et al, about 67% students preferred watching autopsies on a live basis as compared to video learning.⁶ Similar to previous studies, our study revealed that a substantial number of students (42%) felt that opening a dead body is disrespectful.^{6,21,22} This result underscores the need for addressing ethical and emotional aspects in the curriculum to help students reconcile their emotions with the demands of their future profession. Our study, being a single-institute survey, had a limitation that needs to be addressed, including the need for a larger data sample and the engagement of multiple institutes to approach students on a city-scale, or at a provincial level.

Conclusion

Our study highlights the strong knowledge base among students regarding the primary purpose of forensic autopsy, while also identifying knowledge gaps in legal and procedural aspects. Furthermore, the study underscores the importance of enhancing students' perception of forensic autopsy's role in the field of medicine and their career prospects. It also suggests the need for additional support and guidance to address the psychological challenges associated with autopsy observations. These findings can inform curriculum improvements and provide a foundation for discussions on how to better prepare medical students for the ethical, emotional, and professional aspects of forensic pathology.

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References

1. Menenezes RG, Monteiro FN. Forensic Autopsy. [Updated 2023 Sep 4]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK539901/>
2. Abdul Sami Khan, Navneet Bichha, Revathi N. An epidemiological retrospective profile of medico-legal autopsy cases reported at a tertiary care center in Dhulikhel, Nepal. *Indian Journal of Forensic and Community Medicine* 2022 9(1):20–24- <https://www.ijfcm.org>
3. Mendoza O, Bonilla JC, Moreno L, Piedrahita C, Mosquera, Parra R. Review of clinical Page 4 of 7 non-medico-legal autopsy: a descriptive study in 747 patients. *Egyptian Journal of Forensic Sciences* (2018) volume 8, 66.
4. Bharathi M, Loo C, Venkatesan M, Sharma P, Virender K, Chhoker SK, Kaluba D. Current status of perceptions towards autopsy and post-mortem examination among medical undergraduate students. *O Int J Med Soc Sci*. 2015 1(3):66-71.
5. Payne-James JJ. Forensic Medicine, History of. *Encyclopedia of Forensic and Legal Medicine*. Elsevier 2016. p. 539–67. DOI 10.1016/b978-0-12-800034-2.00203-2.
6. Naz R, Fatima M, Zameer S, Tariq S, Rubeen R, et al. AUTOPSY: Knowledge and Perception of undergraduate medical students in current teaching system I. *J Muhammad Med Coll*, 2017 (vol 8) 1-4
7. Parmar PB, Rathod, Gunvanti B, Prerna B Yadukul, S Kumar BA Utility of inquest and medico-legal autopsy in community deaths at tertiary care hospital of India. (JFMPC) *Journal of Family Medicine and Primary Care* 2022 11(5):2090-2093 doi: 10.4103/jfmpe.jfmpe_1813_21
8. Awan NR. *Death, Principles and Practice of Forensic Medicine*. Lahore: Umair Book Depot, 2004 104- 105
9. Pakistan Penal Code - CHAPTER XVI [https:// www.oecd.org/site/adboecdanticorruptioninitiative/46816797.pdf](https://www.oecd.org/site/adboecdanticorruptioninitiative/46816797.pdf)
10. Shamshuddin. R. Kakkeri et al. Knowledge and attitude of medical students towards medico-legal autopsy, *IP International Journal of Forensic Medicine and Toxicological Sciences*, January-March, 2018 3(1):8-11.
11. Pakanen L, J, Paula Kuvaja, Lunetta P. Autopsy-Based Learning is Essential But Underutilized in Medical Education: A Questionnaire Study *Anat Sci Educ*. 2022 Mar 15(2):341-351. doi: 10.1002/ase.2073. Epub 2021 May 4.
12. Pakistan Medical and Dental Council Act 2022 [https:// pmdc.pk/Documents/law/PMDC%20Act.pdf](https://pmdc.pk/Documents/law/PMDC%20Act.pdf)
13. Latten BG, Overbeek LI, Kubat B, Zur Hausen A, Schouten LJ. A quarter century of decline of autopsies in the Netherlands. *European Journal of Epidemiology*. 2019 Dec 34:1171-4.
14. Waidhauser, J., Martin, B., Trepel, M. et al. Can low autopsy rates be increased? Yes, we can! Should post-mortem examinations in oncology be performed? Yes, we should! A postmortem analysis of oncological cases. *Virchows Arch* 478, 2021: 301–308
15. Weedn VW, Menendez MJ. Reclaiming the Autopsy as the Practice of Medicine: A Pathway to Remediation of the Forensic Pathology Workforce Shortage? *Am J Forensic Med Pathol*. 2020 Dec 41(4):242-248. doi: 10.1097/PAF.0000000000000589. PMID: 32732591.
16. Ali A, Rasheed A, Hussain Zaidi SM, Ashraf Jahangeer Alsaani SM, Naim H, Hamid H, Farrukh S. Recent Trend in Specialty Choices of Medical Students and House Officers from Public Sector Medical Universities, Karachi. *J Pak Med Assoc*. 2019 Apr 69(4):489-494. PMID: 31000850
17. Khan Q, Rao M, Anwar H, Qamar M, Hafeez F, Asif S, Rashid H. Preference of Specialty in medical students of Private and Government medical colleges. *Pakistan Journal of Medical and Health* 2022 14(4): 750-754
18. Awadi S, Al Sharie S, Faiyoumi BA, Alzu'bi E, Hailat L, Al-Keder B. Factors affecting medical student's decision in choosing a future career specialty: A cross-sectional study. *Annals of Medicine and Surgery*. 2022 Feb 1;74:103305.
19. Oluwasola OA, Fawole OI, Otegbayo AJ, Ogun GO, Adebamowo CA, Bamigboye AE. The autopsy: knowledge, attitude, and perceptions of doctors and relatives of the deceased. *Arch Pathol Lab Med*. 2009 Jan 133(1): 78-82. doi: 10.5858/133.1.78. PMID: 19123741.
20. Shamshuddin. R. Kakkeri et al. Knowledge and attitude of medical students towards medico-legal autopsy, *IP International Journal of Forensic Medicine and Toxicological Sciences*, January-March, 2018 3(1):8-11.
21. Qasim A, Hashmi K, Ahmad M, Naheed K. The Value Of Autopsy In Medical Education: Student's Attitudes & Opinion. *J. Univ. Med. Dent. Coll*. 2015, 6, 17-25.
22. Chawla H, Tyagi A, Kumar R, Malhotra R, Kumar N, Shankar S. A study evaluating effectual of Page 5 of 7 knowledge, attitude and perception of undergraduate medical students towards medico-legal autopsy. *Indian Journal of Forensic and Community Medicine*. 2019 Jul 6(3):138-43.
23. Zaki MK, Estantoli H, Alduhailib HA, Bossi A, Sultan IN. Final Year Medical Students' Knowledge, Attitude And Practice Of Medico-Legal Problems: A Cross Sectional Study At Ibn Sina National College In Jeddah. *International Journal of Life Science and Pharma Research*. 2019 Apr 9(2):16-23.
24. Singh VP, Biswas G. Knowledge and attitude of medical students and interns toward forensic autopsy. *J Indian Acad Forensic Med* 2014;36(1):9-12
25. Jadav JC, Patel BN, Tandon RN. Knowledge and attitude of medical students on forensic autopsy in Ahmedabad city. *J Indian Acad Forensic Med* 2013;35(1):26-8

Authors Contribution

MM: Conceptualization of Project
SZA: Data Collection
MKB: Literature Search
MHH: Statistical Analysis
MHH: Drafting, Revision
HS: Writing of Manuscript