

Original Article

IS DOING A COMPLETE AUTOPSY AIDING IN REACHING THE CAUSE OF DEATH IN PAKISTAN?

Asim Zia¹, Faiza Ahmed², Zia ul Haq³, Farhat Ijaz⁴, Amjad Zafar⁵, Aamenah Malik⁶

ABSTRACT

Background: One of the primary objectives of a forensic autopsy is to establish the cause of death. Various approaches may be taken to decide the extent of the autopsy required for a particular case. In Pakistan, all bodies found under suspicious circumstances are mandated by law to undergo a complete autopsy after registration of a first information report (FIR) by the police. This study aimed to compare and analyze the cause of death recorded in the police FIR before the autopsy is performed and the final autopsy report after a complete, 3-cavity autopsy has been done.

Materials and Methods: This retrospective study analyzed records of postmortem examinations carried out at a single, tertiary-level autopsy center between June 2009 to July 2018. The study included 769 reports of complete autopsies performed and compared the cause of death stated in the final autopsy report to the FIR recorded by the police.

Results: Of the 769 autopsies included, based on a comparison of the cause of death between police FIR and autopsy reports, five different groups were established. 504 (65.5%) cases were categorized as “similar”, 74 (9.6%) cases as “dissimilar”, 72 cases (9.4%) had no cause of death mentioned in the FIR, 65 cases (8.5%) had no cause of death mentioned in the autopsy report and 54 cases (7%) neither the FIR nor the autopsy report stated any cause of death. The leading cause of death noted to be similar in FIR and autopsy was from firearm injuries.

Conclusion: A large proportion of the cases included in the study had similar causes of death recorded in the FIR, documented before the autopsy was done and the autopsy report. The value of doing a complete autopsy stands questioned and it may be advisable to look into adopting alternate practices as seen in other parts of the world. Moreover, outdated, or absent guidelines for the actual carrying out of autopsies must be looked into and policies/ legislations surrounding it reviewed.

Key Words: Autopsy, Cause of death

doi: <https://doi.org/10.51127/JAMDC5I4OA02>

How to cite this:

Zia A, Ahmed F, Haq Z, Ijaz F, Zafar A, Malik A. Is doing a complete autopsy aiding in reaching the cause of death in Pakistan. JAMDC. 2023;5(4): 204-211

doi: <https://doi.org/10.51127/JAMDC5I4OA02>

INTRODUCTION

A postmortem examination or a medico-legal autopsy is an examination of the dead body by the statutory mandated

medico-legal examiner to provide a neutral and objective medical assessment, primarily of the cause and manner of death and to establish the identity, if unknown.¹ The purpose of the forensic autopsy is to assist the legal justice system at the request of law enforcement agencies about deaths under unexpected, dubious, inexplicable, abnormal, disputed, or suspected nefarious circumstances.² The autopsy performed may include a mere external examination, encompassing a partial autopsy, or a complete autopsy in which all the body

¹Assistant Professor Forensic Medicine, CMC, Lahore.

²Demonstrator Biochemistry, CMH Lahore.

³Assistant Professor Forensic Medicine, CMC, Lahore.

⁴Associate Professor Physiology, CMH Lahore.

⁵Consultant Oncology, Hameed Latif Hospital, Lahore.

⁶Professor Biochemistry, CMH Lahore.

Date of submission 13-12-2022

Date of review 06-09-2023

Date of acceptance 19-09-2023

cavities are mandatorily opened, and all specified samples collected.^{3,4}

An autopsy commences with identification of the body with comments on the size, build and state of health.⁵ This is followed by an exploration into the mode (respiratory, cerebral, or cardiovascular failure) and time of death to lead to the ascertainment of the cause of death. Internal and external examinations are carried out and any peculiarity or injury is noted. Samples for microbiological, histological, and toxicological examinations are obtained to confirm or refute the physical findings.⁶ The entire examination and all the findings, positive or negative are recorded in a clear and systematic format on a proforma for reference.³ Beyond this point the procedural commonality of a forensic autopsy ends.

The approach taken to a forensic autopsy varies greatly across different regions, that is, the process followed to tag a body for a forensic autopsy and whether this will be a complete or partial autopsy as is required for a particular case. In England, Wales, and Australia, under the Coronial system, a notifiable death is referred to the coroner, who may either be a qualified solicitor or a Fellow of the Chartered Institute of Legal Executives and must have more than 5 years of experience. The coroner then decides the extent (complete or partial) of the autopsy which will take place.³ In Scotland, under the non-invasive “view and grant” system, an experienced pathologist externally examines the unclothed body of the deceased taking into consideration the deceased’s history and the events surrounding the death. The pathologist will then confirm to the Procurator Fiscal (Scottish counterpart of a coroner) that a full postmortem examination is required or not based on their position to certify the cause of death following the “view and grant” examination.⁷ This system aims at ascertaining the most plausible cause of death while maximizing on expertise and minimizing on resources and time.

In Pakistan, forensic autopsy is mandatory for every reported, unnatural death under article 174 C of the Code of Criminal Procedure Pakistan (CrPC). Unnatural deaths can be reported by the police, next of kin or the attending doctors. The autopsy may be ordered by the superintendent of police or a magistrate.⁸ It is noteworthy that neither the SP nor the magistrate has any training in forensic pathology nor is their decision based on any discriminatory evidence. The law mandates that every suspicious death undergo a complete autopsy which includes external and internal examinations with opening of all three cavities and sample collection for analysis. The body tagged for autopsy is handed over by the police to the autopsy center. The documents required along with the body include the police’s First Information Report (FIR), containing the presumed date, time, apparent cause, and circumstances surrounding the death. The autopsy surgeon carries out an autopsy for every case, filling out prescribed proforma and sending samples collected to the forensic lab for further analysis.⁹

| Australia, England & Wales | Scotland | Pakistan |
|---|--|--|
| ↘ | ↓ | ✓ |
| Body found under suspicious circumstances/ notifiable death | | |
| ✓ | ↓ | ↘ |
| The coroner orders an autopsy if needed | A trained pathologist advises Procurator Fiscal if an autopsy needed | SP or Magistrate order autopsy of all bodies |
| ↓ | ↓ | ↓ |
| Autopsy ordered | Autopsy ordered | Autopsy ordered |
| ↘↘ | ↘↘ | ↓ |
| Yes No | Yes No | Yes |
| ↘↘ | ↘↘ | ↓ |
| Complete Partial | Complete Partial | Complete |

Figure-1. Comparative flow chart of approaches taken to autopsy in Australia, England, Scotland, Wales, and Pakistan.

The approach to autopsy and its consequential contribution to the establishment of the cause of death warrants a study of the current practice in Pakistan. In this study, the objective is to ascertain whether the current practice of carrying out a complete autopsy for every case helps in establishing the cause of death. To the best of our knowledge, no similar work has been done in Pakistan regarding this topic. In this study, autopsy records available of the last 10 years of a single, tertiary-level autopsy center were obtained and the cause of death as recorded in the police's first information report were compared and analyzed with the final autopsy report.

MATERIAL AND METHODS

The study is a retrospective, descriptive study including 769 autopsy reports entered into the autopsy registers at one of the main autopsy centers in Lahore, Pakistan (the name of the autopsy center being kept confidential due to the sensitive nature of data involved). The reports included were those which could be obtained, and which were marked as completed. Permission was obtained from the competent authority of the autopsy center and ethical approval was obtained from the Ethics Review Board of Continental Medical College, Lahore, Pakistan. The reports included in the study were based on non-probability, convenience sampling of autopsy

examinations performed from July 2009 to July 2018. The reports included autopsies performed on bodies brought by the police along with the FIR for each case. The data from the police FIR and the final autopsy report by the autopsy surgeon for each autopsy were tagged by the autopsy number issued by the autopsy center. Then data from each autopsy was entered into MS Excel sheets. The causes of death in all the reports were analyzed and were classified into 25 main categories. This was done to minimize the variation in terminology used and for standardization of categories formed. For comparison, the number of deaths classified into a specific category (of cause of death) based on the FIR and by the autopsy were entered into two separate columns. Where the causes of death were the same in both columns, it was marked as "similar". Where the cause of death mentioned in the FIR was different from the autopsy report, it was grouped as "dissimilar". A "no comment" group was made for cases where neither the FIR nor the autopsy report stated a cause of death. The final two groups were "no comment by police" and "no comment after autopsy" where the police or the autopsy report were silent respectively. The data was analyzed using percentages of the number of cases in each group.

RESULTS

The total number of cases included in the study was 769, which were categorized into 5 groups. The groups were based on a

comparison of cause of death as per FIR and autopsy. Table 1, mentions the number and frequency of cases in each group.

Table-1. Groups based on comparison of cause of death between FIR and autopsy report, along with respective number of cases and frequencies

| Sr. No. | Groups | Number of cases (n= 769) | Percentage of cases (%) |
|---------|------------------------------|--------------------------|-------------------------|
| 1 | Similar | 504 | 65.5 |
| 2 | Dissimilar | 74 | 9.6 |
| 3 | No comment by the police | 72 | 9.4 |
| 4 | No comment after the autopsy | 65 | 8.5 |
| 5 | No comment | 54 | 7 |

The highest number of cases were noted in the similar group indicating that in 65.5% of cases, FIR and autopsy findings were categorized under the same cause of death. Two groups were identified in which there were no comments on the cause of death based on the autopsy, with the aggregate frequency of these two groups being 15.5%. Furthermore, two groups were identified in which the FIR-based cause of death was absent, the total frequency of these groups being 16.4%.

Expansion of the data in the similar group is shown in Figure 1. This group included 504 cases with the highest cause of death

being firearm injury, amounting to 242 cases. Firearm injuries constituted 48% of the cause of death in the similar group and 31.5% of all deaths. This was followed by road traffic accidents and sharp weapon injuries forming the second largest cause of death at 8.1% and 7.9% respectively in the “similar” group and 5.3% and 5.2% respectively of all the cases. Altogether, 323 cases out of 769 (42%) were noted to have the same three causes of death before and after a complete autopsy was performed, comprising of firearm injury, road traffic accident and sharp weapon injury.

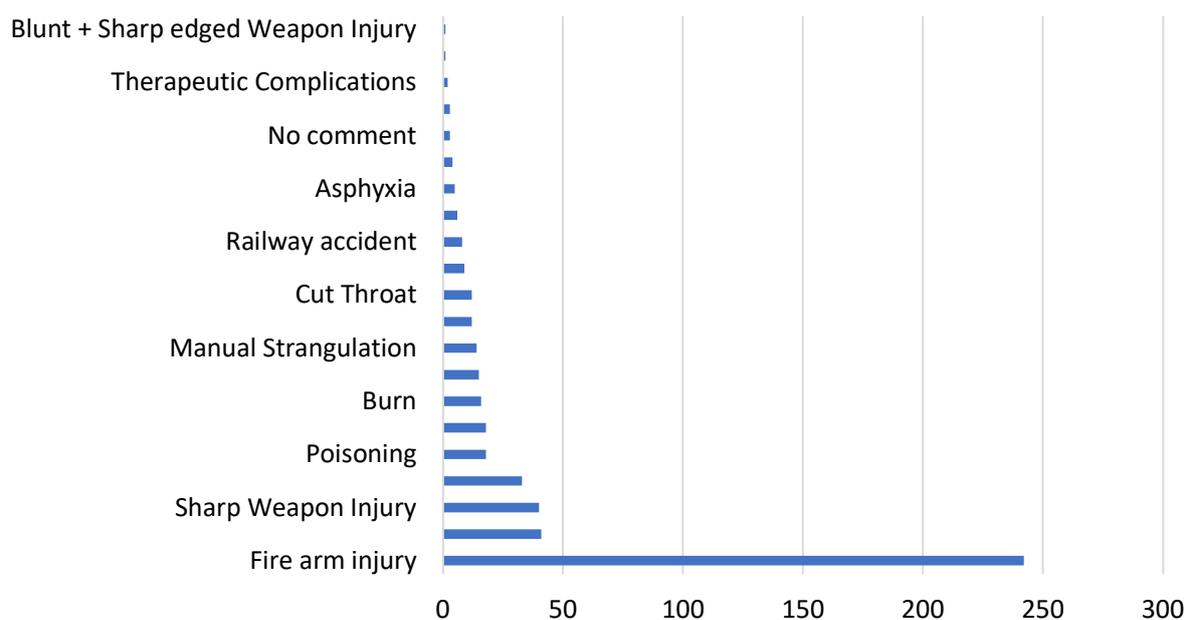


Figure-1. Number of cases belonging to different cause of death in “similar” group.

DISCUSSION

Death perhaps is the only certainty of this world. Matters beyond death would be dabbling in religion or philosophy. But death and the manner of death, more specifically one considered unnatural, is subjected to forensic examination and inquiry into its causes forms the basis of investigations helpful to the legal justice system. The results of this study show that in 65.5% of cases, the autopsy yielded similar results for the cause of death as the police report, the latter being based on details surrounding the death, evidence found and interviews of witnesses and families. This reveals that in the majority of the cases, the cause of death remained unchanged after a complete autopsy was performed. Therefore, it may be inferred that the actual need to do a complete autopsy existed for 34.6% of the cases only. Davidson.⁷ reported that only 41% of deaths required an internal autopsy under the procurator fiscal using the “view and grant” procedure in Scotland. The findings in our study may be comparable to Scottish standards given that if alternative approaches had been adopted, the requirement for complete internal autopsy could have been limited to 34.6% (well under 41%) of the cases as opposed to 65.5%. In the US, individual states have different laws about the approach taken for an autopsy to be performed. However, complete autopsies are seldom mandated since a complete external examination along with toxicology may suffice to elucidate the cause and manner of death.¹⁰ In the Kingdom of Saudi Arabia, complete autopsies were carried out on only 31.3% of medico-legal cases reported in 2007, while 68.7% of cause and manner of death certificates were issued based on external examinations only.¹¹ The statistics seen in our study raise questions regarding the necessity of the number of complete autopsies being performed and how different approaches, such as the “view and grant” may be feasible alternate approaches. A scrutiny of the group of

similar results reveals that the highest degree of concordance in the cause of death between the FIR and the autopsy report was for firearm injury (48%). Based on the results of the present study, the establishment of the cause of death due to firearm injuries gains nothing from the performance of a complete autopsy. Reasons for performing an autopsy in these cases may be to assist in other aspects of the investigation, for instance, identification of the body or establishment of manner of death. However, a complete autopsy mandates that all three cavities, skull, chest, and abdomen are opened. When the cause of death is not a question, the rationale for a complete autopsy stands challenged. The second most frequent cause of death noted in the “similar” group is due to road traffic accidents. Similar findings were noted in a study conducted in Australia which revealed that in cases of deaths from motor vehicle accidents, complete internal autopsies added nothing to the cause of death beyond the obvious cause of succumbing to injuries due to the motor vehicle accident.³ Cumulatively the top four causes of death in the similar group formed 70.6% of all cases in this group. This highlights the fact that alternative approaches can help in bringing down the number of redundant autopsies in terms of establishing the cause of death beyond the obvious which was elicited before the performance of the complete autopsy. Moreover, a complete autopsy is a resource-intensive procedure in terms of finances as well as time taken to perform one. This is burdensome for far more affluent and developed systems and an enormous challenge for a developing nation like Pakistan. According to a study in England, trained forensic pathologists were asked to base predictions about the cause of death using a paper exercise and without an actual examination of the body, which when verified by autopsy later, were found to be correct in 39% to 46% of cases.¹² Another study from Australia revealed that the presumed cause of death determined by

the medical examiners and experienced pathologists without performing an autopsy was completely wrong in 28% of cases.¹⁰ Comparing the results of these studies involving experienced and trained pathologists with the Pakistani police's initial cause of death being right reveals that their opinion about the cause of death was correct in 65.5% of cases as echoed by the autopsy results. Furthermore, in 8.5 % of cases, the police opinion was noted to be the only opinion about the cause of death despite the performance of a complete autopsy. This cumulatively makes the police's conjecture on the cause of death correct in 74% of cases, which is the highest correct number in comparison to the English and Australian studies mentioned above. Crime scene handling and forensic investigations by the police require specialized training which is not a part of regular police training or work in Pakistan. Therefore, the results of the present study unrealistically indicate exceptional proficiency by the Pakistani police or paradoxically it may serve to highlight the inadequacy of the autopsy being performed. Despite the performance of a three-cavity opened, complete autopsy, in 15.5% of cases the autopsy failed to establish any cause of death (notwithstanding that the police have proffered an opinion in 8.5% of these very cases). It must be pointed out that in Pakistan, the autopsy surgeon is required by law to be a doctor with no further mandatory specialized training in forensics or forensic pathology.¹³ A ruling by the Lahore High Court underscores that the autopsy-performing doctors lack adequate training. Carrying this forward may help to explain why the autopsy has identical results in 65.5% of cases, as the autopsy surgeon has no independent finding to add regarding the cause of death. In 8.5% of cases, the autopsy yielded nothing where the FIR reported nothing and the most disquieting of all these figures is the 7% of cases in which despite a complete autopsy, nothing was stated regarding the cause of death. These statistics make one wonder

about the competence of the autopsy surgeons to perform an autopsy. Finally, confounding matters further is the lack of any clear standard operating procedures or guidelines for the performance of an autopsy. This was brought to the forefront in an order of the Lahore High-Court Multan Bench.¹⁴ in which the reference for autopsy guidelines are from a textbook of forensic medicine and toxicology rather than guidelines issued by the competent medical and legal authorities of the country, which would be adapted to local challenges and regulated by local laws, as seen in other countries such as guidelines issued by Royal College of Pathology in case of the United Kingdom.¹⁵ Smith.¹⁶ notes that in 80% of cases in England, cause of death can be ascertained based on basic investigation and does not require autopsies. Furthermore, Carpenter and Tait.³ point out in their review of the Coronial system, that there is an over-ordering and over-reliance on autopsies which could be minimized based on a detailed examination of the circumstances surrounding the death and coroners with a clearer understanding of medico-legal aspects. Pakistan is a predominantly Muslim country where the majority believe that an autopsy is considered mutilation of the body.¹⁷ coupled with scarce resources, innumerable, unnecessary autopsies as mandated by the current law may conversely be slowing the process of justice by failing to achieve their objective. Analysis of the data indicates that the balance of reason for performing a complete internal autopsy must therefore tilt heavily towards circumstantial evidence pointing to its need. Moreover, an audit of the current data may aid in the development of protocols and procedures aimed at improving the efficiency of the current system. It may also be noted that current legislations are outdated and require revision. And finally, the competence of the autopsy surgeon must be impeccable with well-defined targets and responsibilities. Some of the limitations encountered were

that the data used in this study was from a single center and there may be variations in data from other centers. Furthermore, the reports included were not an exhaustive record of the duration from which data was collected and were only those to which the researchers were given access. Furthermore, despite the high standards maintained in the English system, which aims to maximize efficiency, accuracy, economy, and timeliness without compromising on integrity of the death investigation. Moreover, based on the results of our study, the actual need for performing complete autopsies may be similar to those reported by Smith.¹⁶

CONCLUSION

Analyzing the degree of concordance between the FIR-based cause of death with the final cause of death as ascertained on autopsy leads one to question the need to perform complete autopsies and the laws about ordering one. Borrowing from various, robust systems existing globally, the percentage of complete autopsies could be reduced to ensure that only those cases are processed for a complete, three-cavity-opened autopsy which truly warrants one. Moreover, the existence or the lack thereof of adequately trained professionals, standard protocols, and updated legislation for carrying out autopsies needs to be looked into to ensure rationalization of the autopsies being carried out, especially about determining the cause of death.

Funding: No funding sources

Conflict of interest: None declared

AUTHOR'S CONTRIBUTION

AZ: Research proposal development, Data collection, Analysis, Article writing and Reviewing

FA: Research proposal development, Analysis, Article writing and Reviewing

ZH: Research proposal development and Data collection

FI: Analysis, Article writing and Reviewing

AZ: Data collection, Analysis and Article writing

AM: Analysis, Article writing and reviewing.

REFERENCES

- Peterson GF, Clark SC. Forensic autopsy performance standards. *Am J Forensic Med Pathol.* 2006 Sep 1;27(3):200-25. doi: 10.1097/01.paf.0000243580.43150.3c
- Modi K, Vora D, Khubchandani H, Shah K, Tandon R. Profile Study of Negative Autopsy among the Post Mortem Cases Referred from Medical Officers to Forensic Medicine Department, Ahmedabad, India. *IJMTFM.* 2017 Jan 1;7(2):138-43.
- Carpenter B, Tait G. The Autopsy imperative: Medicine, law, and the coronial investigation. *J Med Humanit.* 2010 Sep; 31:205-21. doi 10.1007/s10912-010-9111-7.
- Waidhauser J, Martin B, Trepel M, Märkl B. Can low autopsy rates be increased? Yes, we can! Should postmortem examinations in oncology be performed? Yes, we should! A postmortem analysis of oncological cases. *Virchows Archiv.* 2021 Feb;478(2):301-8.
- Cattaneo C, Porta D, De Angelis D, Gibelli D, Poppa P, Grandi M. Unidentified bodies and human remains: an Italian glimpse through a European problem. *Forensic Sci Int.* 2010 Feb 25;195(1-3):167-e1. doi: 10.1016/j.forsciint.2009.11.008.
- Bakhtiar HS, Sofyan AM, Muhadar M, Soewondo SS. The essence of autopsy in the criminal investigation process. *IJSTR.* 2019 Oct 1;8(10):9-16. <https://ssrn.com/abstract=4073294>.
- Baron MG, Rohrig T, Gonzalez-Rodriguez J. Forensic Science in the UK. Part III: Regulation of Forensic Science in England and Wales--The Role of the Forensic Science Regulator-

- . Forensic Science Review. 2020 Jan 1;32(1):2-7.
8. Farooqui MM, Ali MI, Hassan Q, Mahrukh R, Ahmed N. Knowledge and societal perceptions regarding autopsy amongst different educational backgrounds in Karachi, Pakistan. JPMA. 2021 Jun 1;71(6):1613-7. doi: 10.47391/JPMA.02-283.
 9. Mahmood MT. Rights of Accused Under International Human Rights, Islam and Domestic Legislation of Pakistan. Unpublished doctoral dissertation. Selinus University. 2021.
 10. Makino Y, Unuma K, Nolte KB, Adolphi NL. Accuracy of forensic pathologists in incorporating post-mortem CT (PMCT) in forensic death investigation. Journal of Forensic Sciences. 2022 Nov;67(6):2351-9.
 11. Al Madani OM, Kharoshah MA, Zaki MK, Galeb SS, Al Moghannam SA, Moulana AA. Origin and development of forensic medicine in the Kingdom of Saudi Arabia. Am J Forensic Med Pathol. 2012 Jun 1;33(2):147-51. doi: 10.1097/PAF.0b013e318221b895.
 12. Szeligowski T. At the limits of patient autonomy: an ethical re-evaluation of coroner's postmortems. Journal of medical ethics. 2021 Dec 1;47(12):830-4.
 13. Nasir MA. Ethical Dimension of Maqasidal-Shari'ah and Its Implication to Human Capital Development. IJISH. 2021 Apr 1;4(1):20. doi:10.26555/ijish.v4i1.2621.<http://journal2.uad.ac.id/index.php/ijish/index>
 14. Alam F. " A Living Growth": Rabindranath Tagore and Polymathy. New Literary History. 2023;54(3):1387-403.
 15. Osborn M, Howard M, Morley S, McCarthy H. Guidelines on autopsy practice: autopsy when drugs or poisoning may be involved. The Royal College of Pathologists: London, UK. 2018 Apr 26.
 16. Smith DJ. Death Certification and the Investigation of Death by Coroners. Cm5854. Stationery Office. 2003 Jul. [cited 2022 Dec 15]; Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/273227/5854.pdf.
 17. Sajid MI. Autopsy in Islam: considerations for deceased Muslims and their families currently and in the future. Am J Forensic Med Pathol. 2016 Mar 1;37(1): 29-31.doi: 10.1097/PAF.000000000000020