

# Critical Appraisal of Autopsy Work

Altaf Pervez Qasim, Zameer Ahmad Awan, Asif Jamil Ansari

## Authors

1. **Dr. Altaf Pervez Qasim**  
Associate Professor Forensic Medicine  
Punjab Medical College, Faisalabad.
2. **Dr. Zameer Ahmad Awan**  
Assistant Professor Forensic Medicine  
Sahiwal Medical College, Sahiwal.
3. **Dr. Asif Jamil Ansari**  
Assistant Professor Forensic Medicine  
CMH Institute of Medical Sciences  
(CIMS), Multan.

## Corresponding Author

**Dr. Altaf Pervez Qasim**  
Associate Professor, Forensic Medicine  
& Toxicology  
Punjab Medical College, Faisalabad  
Contact: +92 300-9651475  
Email: drappq95@yahoo.com

*Submitted for Publication*

26-11-2016

*Accepted for Publication*

23-12-2016

## ABSTRACT

Autopsy means detailed postmortem examination of a deceased by cutting open the internal organs to determine the cause, manner and time since death. Its importance in administration of justice, especially in cases of un-natural and violent deaths, cannot be denied. **Settings:** This study was carried out by examining the record of Medico legal autopsies conducted at a tertiary care Health institution i.e. Allied Hospital Faisalabad, two District Headquarter Hospitals of Punjab; Sheikhpura and Toba Tek Singh along with three Tehsil Headquarters Hospitals and three Rural Health Centers of Faisalabad District during calendar year 2000. **Aim:** The study was aimed to critically analyze the quality of autopsy work in Civil Hospitals. **Objectives:** To identify the lapses on part of medical officers while performing autopsies & to find out the procedural irregularities in preserving and dispatch of viscera for Chemical analysis / Histo-pathological examination. **Results:** Out of 756 autopsies conducted during the study period, 100 cases were selected randomly for detailed examination. Seventy-five males outnumbered the twenty-five females with male to female ratio 3:1. Majority of the victims belonged to 3<sup>rd</sup> decade of life & died of fire arm injuries. Lapses on part of medical officers included inadequate documentation, lack of external examination on arrival, non-recording the time of death and inadequate description about extent of rigor mortis and fire arm wounds. Skull was not opened in 63% cases. Mucosa and contents of stomach were not examined in 49% cases. As regards procedural irregularities, majority of the cases were sent to the Chemical Examiner after 10–30 days of postmortem examination whereas the viscera in five cases sent for histopathology were autolyzed due to improper preservation and delayed submission of the specimen. Some of the reports of Chemical Examiner were untraceable in the record which caused further delay in finalization of the postmortem reports while most of the cases took about 2–3 months after submission of the specimen. **Conclusion:** Incomplete autopsies are being done by inexperienced doctors in peripheral hospitals having little knowledge of medico-legal autopsy which may lead to faulty medico legal opinions or end up without establishing exact cause of death & having negative impact on the criminal justice system. Only a few of them had true concept of it. There is prime need to provide opportunity to those involved in autopsy work to update their professional knowledge & skills. Healthcare institutions should take all necessary steps to create more awareness program on medico legal autopsy among entire community as well as training of the workers related to the medicolegal field. A national protocol regarding the standard autopsy procedures and documentation is need of the hour.

**Keywords:** Autopsy, Lapses, Postmortem Examination, Critical Appraisal.

**Article Citation:** Qasim AP, Awan ZA, Ansari AJ. Critical Appraisal of Autopsy Work. APMC 2016;10(4):194-202.

## INTRODUCTION

*A surgical operation is attended with pain and is for the benefit of the Individual, an autopsy is free from pain; is for the benefit of humanity.*

*“Paul. H. Brussara”.*

An autopsy is a comprehensive study of dead body, performed by a trained physician, employing a recognized dissection procedure and technique. The

word autopsy, necropsy and postmortem examination are synonymous. The term ‘Autopsy’ originates from ancient ‘Autopsia’ which is derived from ‘Autos’ i.e. ‘Self’ and ‘Opsis’ i.e. ‘to see for oneself’. ‘Autopsia’ means seeing with one’s own eyes<sup>1</sup>. However, the word autopsy is used so extensively & globally that there is no ambiguity

about its meaning. In most jurisdictions it is important to find out cause, manner & time since death but of course all these would be meaningless without ascertaining the identity of the deceased.

Autopsy implies examination of the dead body with a view of searching primarily for the cause of death. The necessity for this procedure was evident to our ancestors. Records from Roman times narrate the examination of the wounds of Gaius Julius Caesar by the physician Antistius in 44 BC. A court in Bologna in 1302, ordered the Examination of one Azzolino, who had died under suspicious circumstances of alleged poisoning and the procedure was carried out by two physicians & three surgeons including Bartolommeo da Varignana <sup>2</sup>. Religious beliefs, cultures and nations have treated dead bodies in different ways, including mummification, burials, cremation, or even using dead bodies in arts <sup>3</sup>.

The history of autopsy has several stages. In its early history, ancient Egyptians practiced mummification, and third-century Alexandrians and other Greeks dissected bodies openly. During autopsy's modern or recent ages, beginning in the 15<sup>th</sup> century, autopsies showed more consideration for pathology. Through the next three centuries, pathology continued to advance until the golden period of autopsy, the 19<sup>th</sup> and 20<sup>th</sup> centuries <sup>4,5</sup>.

Autopsy has to be conducted by a well trained and experienced doctor in the field of Forensic Medicine / Forensic Pathology; in all cases of sudden, suspicious & unexpected deaths especially those resulting due to violence. While proceeding to the scene of crime, the investigation team should include Forensic Experts or the doctors having adequate knowledge of Forensic Medicine, so that important scene evidences may be collected, evaluated and synthesized properly to fit the investigative puzzle.

The autopsies eliminate suspicion, provide reassurance to families, substitute facts for conjecture, construct a better defense and improve the quality of care. Though medical conventions and legal systems vary considerably from country to country, the autopsy can be divided into clinical or academic and forensic or medico legal autopsies. A **clinical autopsy** is a requirement for confirming the clinical diagnosis & cause of death. The medical attendants, with the consent of the relatives, seek to learn the extent of disease, to discover the lesions for academic interest, teaching / research purposes and further strategy. It also provides opportunities for medical education on both undergraduate as well as

postgraduate level. The autopsy provides opportunity for clinicians to correlate the physical, radiological and laboratory findings with pathological manifestations of diseases. In addition to that, the autopsy provides a unique window on assessment of new therapeutic & diagnostic modalities <sup>6</sup>. Medical autopsy even today in the environment of a tertiary care hospital has irrefutable contribution in establishing final diagnosis & determining errors & omissions <sup>7</sup>. Autopsy can provide valuable information regarding the cause of death, which is of great importance in view of the identification of inheritable diseases among decedents and their families <sup>8</sup>.

**Medico legal or Forensic autopsy** is performed on the instructions of legal authority responsible for investigations of sudden, suspicious, obscure, unnatural, litigious or criminal deaths. In most systems the permission of relatives is not required as the object of the legal investigation would be frustrated. Medico legal autopsy is helpful for betterment of justice in the courts by determining exact cause, manner & mechanism of death <sup>9</sup>.

The manner of death in a particular case whether natural, suicidal, homicidal or accidental and even the cause of death sometimes, is known to the attendants or the relatives of the deceased, or the doctors and the health staff who had attended that individual as patient and even the investigating authorities. But, the cause of death for legal purpose can only be given by the autopsy surgeon who is authorized to perform the medico legal autopsies under his privileges as a registered medical practitioner and can give evidence at any inquest <sup>10</sup>. It is well known that hospital autopsies are not performed in most of the Islamic countries, including Pakistan, due to social and religious limitations. In our country, clinical autopsies are negligible in number and civil hospitals mostly hinge upon the medico legal autopsies. Therefore, this study mainly focused on later type.

As we learn through the media every day that many murderers are being acquitted by the courts of law because of inconclusive & defective autopsy reports prepared by the doctors due to faulty techniques used during postmortem examinations and the beneficiaries always, are the criminals. Being a task of immense importance, the medico legal autopsies should always be conducted by trained & experienced doctors / pathologists. However, it is appreciated that this ideal situation is impracticable

in many places not only in developing countries but also in some advanced states, due to lack of trained personal, facilities or finances.

Particularly in Pakistan, the important autopsies are carried out invariably, by the fresh medical graduates without medicolegal training. As regards perspective and attitudes of medical students towards autopsy is concerned; in a study conducted by Qasim AP et al <sup>11</sup> it was observed that majority (89.52%) students agreed that watching autopsy is necessary and (87.14%) were of the view that they have learned something after watching the medico legal autopsies. The majority; (56.66%) suggested that medical students should actively participate in performing autopsies but autopsy is not given due consideration in the curriculum and fresh graduates are posted at District Headquarter Hospitals, Tehsil Headquarter Hospitals & Primary Health Centers, for this most important & sensitive task without proper medico legal training. This fact is further aggravated by the undesirable influence of the Political strata of the society. The autopsies conducted by such untrained medical officers are usually incomplete, defective & inconclusive. This can lead to an unfortunate situation, because *“a poorly performed autopsy is worse than no autopsy at all”*.

It is more than 700 years, since the first medico legal autopsy was carried out in Bologna<sup>2</sup>, Italy; however, it is unfortunate that such an important pathological maneuver has not been given its due place in medical profession. There is need to attend to this important aspect of medico legal death investigation, so that there is no room for injustice based upon faulty medico legal opinions. It is hoped that this study will bring out some concrete facts, which will help to improve the practical aspects of autopsies.

## METHODOLOGY

Review of relevant literature & Examination of the record of 100 autopsies conducted at different civil hospitals during year 2000. Visit to the office of Chief Chemical Examiner Lahore and Deputy Superintendent Police (legal) Faisalabad, for examination of the record and interviews. Field survey of civil hospitals for collection of information about mortuaries through observation check list. An Opinion survey through questionnaire was conducted from medical officers / women medical officers / casualty medical officers and demonstrators of Forensic Medicine; involved in Autopsy & Medico legal work at different Hospitals

of three districts i.e. Toba Tek Singh, Sheikhpura & Faisalabad.

## RESULTS & DISCUSSION

The study was carried out at nine different hospitals of three Districts. One teaching hospital attached with Punjab Medical College, Faisalabad; two non-teaching Hospitals i.e. DHQ Hospital Sheikhpura & DHQ Hospital Toba Tek Singh along with three Tehsil Headquarter Hospitals & Three Rural Health Centers were included in the study as representative of autopsy work being carried out at similar level all over the province, Punjab. Total 756 autopsies were carried out at these hospitals during year 2000, break-up is shown in table: 1 below:-

**Table 1: Breakdown of autopsy data of Nine Hospitals (n=756)**

S:No	Name of Institution / Hospital	No. of Cases	%
1	Allied Hospital attached with Punjab Medical College, Faisalabad (Teaching Hospital)	242	32.01%
2	District Headquarter Hospital, Sheikhpura	223	29.50%
3	District Headquarter Hospital, Toba Tek Singh	37	4.90%
4	THQ Hospital Samundari, Distt. Faisalabad.	46	6.08%
5	THQ Hospital Jaranwala, Distt. Faisalabad.	91	12.03%
6	THQ Hospital Tandlianwala, Distt. Faisalabad.	48	6.35%
7	Rural Health Center Dijkot, Distt. Faisalabad.	22	2.92%
8	Rural Health Center Khurianwala, Distt Faisalabad	21	2.78%
9	Rural Health Center Chak Jhumra, Distt. Faisalabad.	26	3.43%
	<b>Total</b>	<b>756</b>	<b>100%</b>

To make the data easily manageable, 100 cases were selected out of the total 756 by using the statistical method of random sampling to rule out the element of bias. The detailed analysis of the record of 100 autopsies carried out keeping in view to find out the lapses on part of medical officers / women medical officers conducting autopsy work which yield important findings being discussed as under:-

## DEMOGRAPHY

Male predominance was observed among 100 cases of medico legal deaths, out of those 75% were male

& 25% females; Male: Female ratio was 3:1 whereas, 15% autopsies conducted on unidentified corpse, including 12% males and 3% females.

**In relation to Gender & Age Group:**

The 3<sup>rd</sup> decade of life was at the top among the victims, resulting in 27 deaths and next to it was the 4<sup>th</sup> decade resulting in 21 deaths out of total 100 autopsies.

Involvement of the majority victims belonging to 3<sup>rd</sup> decade of life is attributed to the age which is symbol of being energetic, vocal, hyperactive and mobile. High incidence in 3<sup>rd</sup> decade has also been attributed to freedom & escape of youth from parental supervision along with drug abuse and unemployment.

However, a number of other socioeconomic factors in the society also matter to the index of crime and age incidence. The victims of homicidal deaths were less in 1<sup>st</sup>& 2<sup>nd</sup> decades of life which further decreased in 5<sup>th</sup>, 6<sup>th</sup>& 7<sup>th</sup> decades. Decreased incidence in older age groups has been attributed to the assumption that wisdom increases with age.

**Table: 2. showing distribution of Age & Gender among the victims (n=100)**

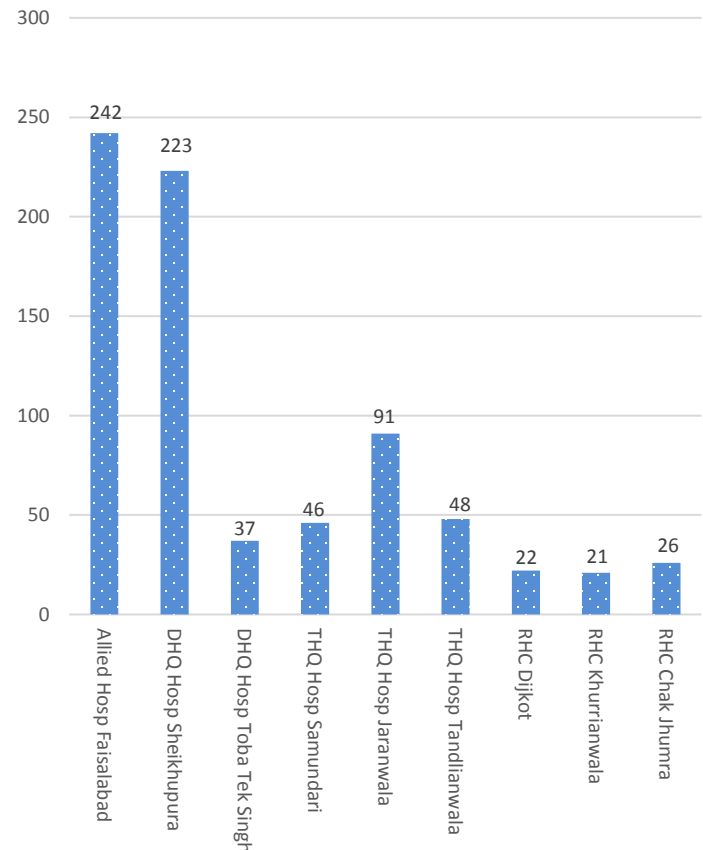
Age limit (Years)	Male	Female	Total
Upto 10	7	2	9
11 – 20	13	5	18
21 – 30	19	8	27
31 – 40	14	7	21
41 – 50	10	2	12
51 – 60	5	1	6
61 – 70	5	Nil	5
71 & above	2	Nil	2
<b>Total</b>	<b>75</b>	<b>25</b>	<b>100</b>

Firearms were found to be the most commonly used weapon responsible for killing 47% victims including 40% males & 7% females. Asphyxial deaths, due to ligature & other causes were recorded in 10% victims. Blunt objects held responsible in 10% cases while sharp edged weapons bear the responsibility for 16% deaths. Burns resulted in 3% deaths; however, undetermined cases of 7% deaths

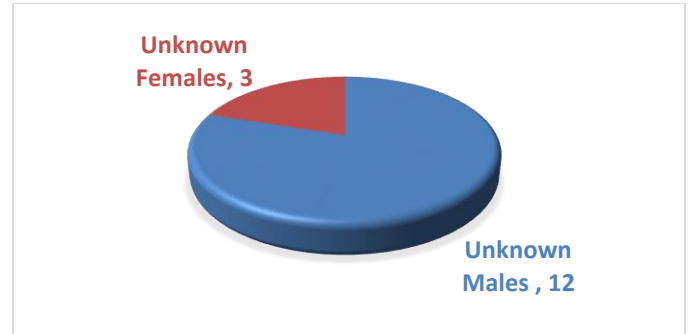
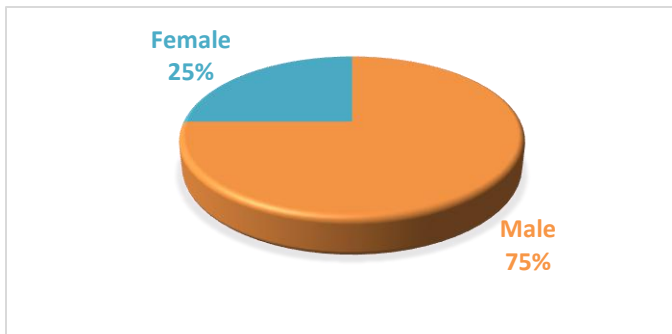
resulted in Negative autopsy. These findings are shown in table: 3 below:-

**Table: 3. showing the kind of weapon / force used to cause the death (n=100)**

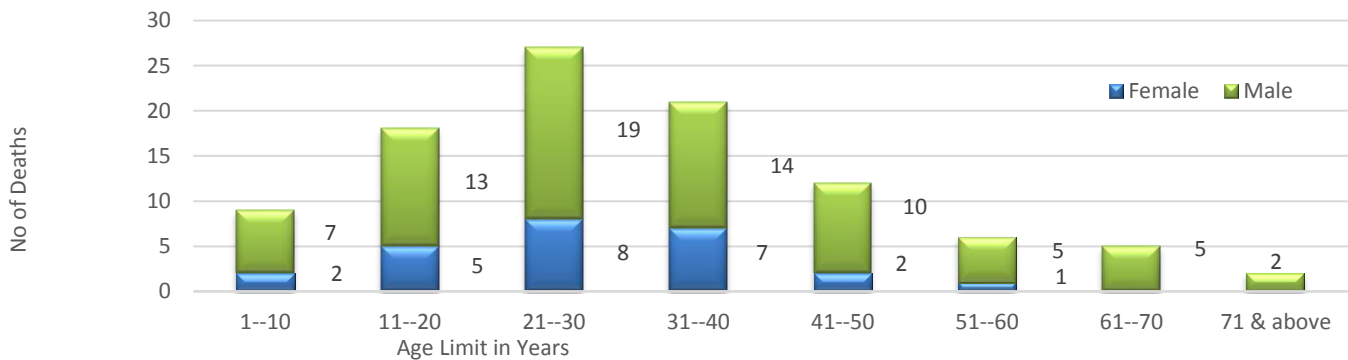
Kind of Weapon / Force involved	Male	Female	Total
Firearms	40	7	47
Sharp Edged Weapon	10	6	16
Blunt Weapon	8	2	10
Asphyxia: Hanging & Strangulation	6	4	10
Poisoning	2	3	5
Drowning	1	Nil	1
Burns	2	1	3
Rail / Road Traffic Accidents	1	Nil	1
Undetermined	5	2	7



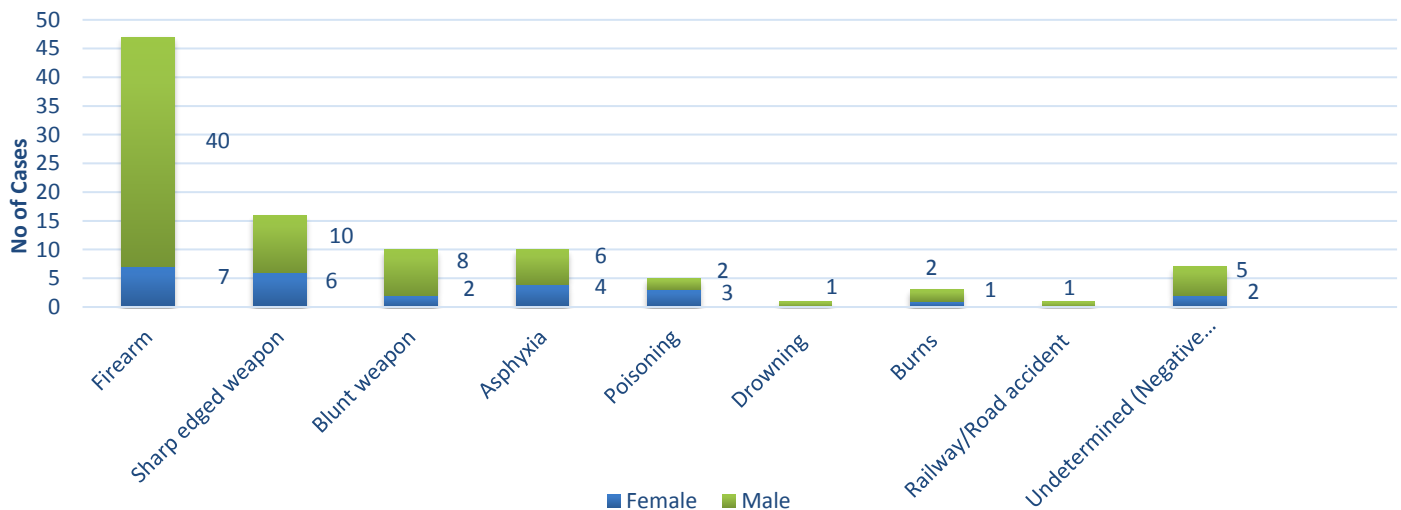
**Figure 1: Record of Autopsies Conducted In Nine Hospitals**



**Figure 2: Demography**



**Figure 3: Distribution of age and sex among 100 unnatural deaths**



**Figure 4: Kind of Weapons / Force used to cause the death**

Excessive use of firearms has been explained as an indicator of the high socioeconomic pattern of the society where expensive weapons could be easily purchased while fatalities through stabbing are attributed to lower socioeconomic areas. The use of firearms has been a source of power as well as means of pleasure & punishment; it has been a cause of grief & sorrow. Firearms are involved in almost 2/3<sup>rd</sup> of all homicidal deaths in United States of America.

#### Lapses in Autopsy Work

Inadequate biodata & personal information of the deceased were noted in 28% cases while improper documentation about registration of the dead bodies on arrival were observed in 83% of the cases while identification of the deceased was not established in 27% of the victims. The time of death & that of conduction of the postmortem was not recorded in 33% cases while the date and time of dispatching the

viscera to the Chemical Examiner & Histopathologist were not mentioned in the reports of 30% cases. The medical officers did not pay attention to correlate the cause of death with information furnished by the police in 31% cases and symptoms observed before death were not mentioned in the postmortem reports of 14% cases, those hospitalized before death.

In 33% cases, the condition of clothes for stains of blood, semen, urine, fecal matter, cuts / holes of corresponding injuries were not given due attention while in 75% of the autopsy reports, extent and degree of rigor mortis / postmortem staining were not mentioned but only their presence was indicated.

Inadequate description of the firearm wounds regarding burning, charring, blackening, tattooing and collar of abrasion etc was found in 32% of cases and no importance was given to examine the ligature mark around the neck in three victims of Asphyxial deaths.

#### **Lapses in systematic Examination**

Out of the total 100 autopsies, the skull cavity was not opened in 63 cases and brain matter was not examined which is a major lapse while conducting autopsy work. In 18% of cases, the skull cavity was opened with bone chisel & hammer which may lead to the complications afterwards giving the false impression of the fracture and bullet wounds. In almost 19 cases, no proper attention was given to examine the thoracic walls, lungs, pleura, trachea, heart and major blood vessels. Stomach contents were not examined carefully to determine the time since death in 49% of cases while in 31% victims, examination of urinary & reproductive systems was either not done or done carelessly writing "All Healthy".

#### **Lapses in Remarks / Opinion of Medical Officer**

While giving opinion / remarks in the relevant column of autopsy report, the cause of death in 29% cases was given "Cardiopulmonary arrest" instead of Firearm, Sharp Edged weapon, Blunt Trauma, Ligature Strangulation etc. The cause of death was given in probable / confusing way in 49% cases while in 15 cases time since death was given without applying scientific knowledge. The pictorial diagrams were not labeled properly in 17 cases; especially name & parentage of the deceased along with sketch of injuries were not given.

#### **Other Lapses in autopsy reports:**

Date of receipt of postmortem report and parcels of viscera for Chemical Examiner & Histopathologist

was not mentioned in 45 cases and only signatures of the police constable were obtained. Reports of Chemical Examiner & Histopathologist were not incorporated with the autopsy record of 28 cases. Four autopsies of females were conducted by male doctors; that is contrary to the orders of Honorable Supreme Court of Pakistan.

Partial or incomplete autopsies are commonly done by inexperienced doctors in peripheral hospitals which may lead to either faulty medico legal opinions or end up without establishing exact cause of death and autopsies becomes obscure or Negative. The reasons of negative autopsy may be inadequate history of the case, lapses in external & internal examination, insufficient Laboratory / toxicological analysis and lack of doctors training. The sudden Death from vagal inhibition, status epilepticus, hypersensitivity reaction etc. may not show any anatomical findings. Even if death results from laryngeal spasm in drowning no anatomical findings may be present. Moreover, coronary artery disease<sup>12</sup>, Myocardial infarction<sup>13</sup>, congestive cardiac failure<sup>14</sup>, pheochromocytoma<sup>15</sup>, mesenteric vein thrombosis<sup>16</sup>, epilepsy<sup>17</sup>, sports related activities<sup>18</sup>, congenital anomaly like situs-inversus<sup>19</sup>, spontaneous subdural<sup>20</sup> & aneurismal subarachnoid hemorrhage<sup>21</sup> may also contribute to sudden / unexpected deaths in apparently healthy individuals without showing any specific finding at autopsy.

#### **Procedural irregularities while preserving and dispatch of viscera for Histopathology & Chemical Analysis:**

Out of the total 100 autopsies, the viscera of 32 cases were sent to the Chemical Examiner & 7 cases were sent to the Histopathologist for further examination. Out of 32 cases sent for Chemical Analysis, only 4 reports were received & incorporated with the initial autopsy findings while reports of 7 cases were not traceable with the record and in remaining 21 cases, the reports not yet received from the Chemical Examiner's laboratory.

Whereas, of the seven cases sent for Histopathology, only two cases were reported and no morbidity was detected in both of them while in other 5 cases, the viscera were found autolyzed before reaching the laboratory. On discussion with the Histopathologist, it was regretted to point out that autopsy surgeons do not bother to check the quantity of the viscera and they use improper preservatives which lead to destruction of the specimen. On examining the record, it was found that majority of the cases were

received in the laboratories after the gap of 10-30 days from conduction of autopsies whereas; the viscera of two cases received 40 days after the postmortem examination.

On further inquiry, physical verification of the record and interviews with the Chief Chemical Examiner as well as Deputy Superintendent of Police Legal Faisalabad; the weaknesses in certain areas of concern were discussed which are as under:-

**Delay on part of the doctors performing autopsies:** The doctors usually get the signatures of police official on the autopsy register as a receipt of the autopsy report along with viscera for further examination but the report & sealed parcels of viscera are not handed over to police even after a week.

**Delay on part of Police:** The constable after receiving the sealed parcel of specimen has to seek the permission from his senior officers and to fulfill other formalities for onward transmission of the parcel of viscera which takes about 5–10 days in routine and even weeks can pass in this process.

**Delay in the Chemical Examiner's Lab:** The average time taken in the Lab. For finalization of the reports of Chemical analysis is usually 1–2 months after its receipt in the lab. This delay was justified by the officer incharge, by showing the track record of heavy workload on this single lab. in Lahore which has to cater for the whole Province Punjab, NWFP, FATA, AJK, Northern areas, Railways & WAPDA etc. But now a state of the Art Forensic Science Laboratory has been established at Lahore and is providing the best facilities for criminal justice system.

**Delay on part of Hospital Staff:** The reports are sent from the laboratories of Chemical Examiner & Histopathologist directly to the Medical Superintendents / Senior Medical Officers incharge of the Health centers but due to negligence of clerical staff, these are not endorsed to the concerned doctors who had performed autopsy earlier, which may cause further delay in finalization of the autopsy reports.

**Irregularities regarding Analytical Toxicology & Histopathology:**

On detailed discussion & interview with the Chief Chemical Examiner, some lapses on part of the doctors performing autopsies were pointed out as under:-

- Lack of knowledge about collection of exact viscera & required quantity.

- Lack of knowledge about use of proper preservative.
- Improper sealing of the viscera before dispatch to the laboratory.
- Failure to send the sample of used preservative along with the viscera.
- Failure to send the clothes having stains, along with vaginal swabs in cases of sexual assault.
- Lack of knowledge while preserving the vaginal swabs. The fresh vaginal swabs are usually put in wet bottles which may lead to the destruction of the specimen due to growth of fungus.

**Findings based upon observation check list for mortuaries:** An observation check list was developed for mortuaries to collect information regarding the physical infrastructure, adequacy of premises, availability of basic equipments; trained personals & storage capacity of the dead bodies etc. Mortuaries of all the nine hospitals under study were visited personally while collecting the autopsy data and observations were made accordingly. It was noted with great concern that only one mortuary located at teaching hospital of Faisalabad, to some extent meets the standard criteria while the remaining eight mortuaries including District Headquarter Hospital, Tehsil Headquarter Hospital & Rural Health Centers were in the worst conditions & the autopsy work carried out there could be well imagined. Most of the mortuaries do not have basic autopsy equipments and only one sanitary worker is the incharge of that mortuary round the clock.

**Findings based upon the questionnaire survey among doctors:** A questionnaire was sent to the doctors involved in autopsy & medico legal work at the different hospitals, to get the information about their knowledge, experience and awareness about medico legal work and to seek the opinion regarding weaknesses in the existing system and suggestions to improve the standard of autopsy work. The response rate was 66%. Out of the total 66 respondents, 70% were performing autopsy work without any training while 71.21% do not have experience of exhumation. Thirty four (51.51%) doctors had experience of undue pressure of public, politicians & police which interfere with the performance of autopsy work while 97% of them performing medico legal and postmortem work without postgraduate qualification and only 3% doctors had postgraduate qualification whereas; other all were general duty medical officers (GDMOs) and non specialists, who started

performing autopsy / medico legal work without prior training.

Out of the total 66 respondents, 77.27% were of the opinion that skull should not be opened in case the cause of death is obvious without affecting skull cavity. As far as the matter of X-Rays of the corpse died of firearm injuries are concerned, 83.33% doctors do not feel it necessary whereas, 74.24% of them don't have the basic knowledge about the preservatives used for the specimens being sent for analytical toxicology & histopathology and they were satisfied with the autopsy work at their institutions.

## CONCLUSION

Most of the respondents were of the view that use of primitive instruments such as chisel and hammer should be replaced with more modern equipment like oscillating saw and care should be taken to keep the autopsy room clean and odor free.

Findings of the study revealed that although the majority of respondents had little knowledge of medico-legal autopsy, only a few had true concept of it. There is prime need to increase the awareness among the general population and Healthcare institutions should take all necessary steps to create more awareness program on medico legal autopsy among entire community. Doctor and police should maintain positive confidence with relatives through careful talks and result of medico legal autopsy must be informed to the relatives for their satisfaction<sup>22</sup>.

There are no standard procedures or guidelines to conduct autopsies<sup>23</sup>. A national protocol regarding the standard autopsy procedures and documentation is need of the hour. In the recently established Medical Colleges of Pakistan, the autopsy work be handed over to the Forensic Medicine faculty. The teachers must appreciate & conduct autopsies for their own benefit and to the community which they are serving. This study supports previous attestations that the autopsy remains a vital tool for determining diagnostic accuracy, despite modern modalities of clinical investigation and diagnosis<sup>24</sup>.

## RECOMMENDATION:

In the light of inference drawn from analysis of the findings, a few recommendations are put forth, to be considered at appropriate level for further improvements in medicolegal and autopsy work.

- The short term training programs for the doctors actually involved in medicolegal / autopsy work

should be arranged at the regional medical colleges under supervision of Forensic Medicine deptt and training should end with evaluation.

- The scientific instructions about medicolegal work should be published by the Government from time to time in order to update medicolegal knowledge of doctors & paramedics engaged in autopsy work.
- Regular audit of medicolegal work is a must to oversee the impartiality and effectiveness.
- Being the task of immense importance, the medicolegal in teaching hospitals should be given under the supervision and administrative control of the Forensic Medicine Department. At the level of non-teaching DHQ Hospitals, a full time supervisor possessing the postgraduate diploma in Forensic Medicine should be posted to facilitate the medicolegal workers.
- An autopsy must be done perfectly, meticulously opening all the body cavities and examining each organ, because evidence contributory to the cause of death may be found in more than one organ.
- Partial autopsies have no place in the practice of Forensic Medicine because complete autopsy is necessary to substantiate the truth in the evidence of eyewitnesses. Hence, poorly performed autopsy is worse than no autopsy at all, as it is more likely to lead to a miscarriage of justice<sup>25</sup>.
- The posts of Chemical examiner and Histopathologist be decentralized & made available at the regional medical colleges to expedite the legal proceedings in those cases requiring analytical toxicology / histopathology.
- The old and out dated buildings of mortuaries, especially in the rural areas / Tehsil Head Quarter Hospitals should be upgraded, expanded & equipped with the modern facilities i.e. shadow less lights, X-Ray Unit, oscillating saw, cameras, adequate arrangements for storage of the corpse & proper ventilation system.
- Trained women medical officers along with female paramedics should always be posted at each hospital for autopsy of females.
- The doctors conducting autopsy should be included in the team of death investigation to visit the scene of death to have a clear view and to collect the necessary evidentiary material wherever feasible.

The fee for medico legal and autopsy work was fixed by the Government about 65 years ago. It should be

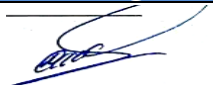
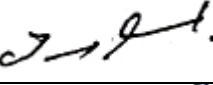


enhanced and special incentive be given to those involved in this unpleasant, unattractive & hazardous job; in order to motivate and encourage them for this important pathological maneuver.

## REFERENCES

1. Rothenberg, K. The Autopsy through History. In: Embar-seddon A, Pass AD, editors. Forensic Science. Ipswich MA: Salem Press; 2008:100.
2. Vij K. Textbook of Forensic Medicine and Toxicology, Principles and Practice. 5<sup>th</sup> Edition 2011:17.
3. Gulczynski J, Izycka-Swieszewska E, Grzybiak M. Short history of the autopsy. Part I. From pre history to the middle of the 16<sup>th</sup> century. Pol J Pathol. 2009;60(3):109-14.
4. Dada MA, Ansari NA. The post mortem examination in diagnosis. J Clin Pathol. 1996;49:965-6.
5. King LS, Meehan MC. A history of the autopsy. Am J Pathol. 1973;73:514-44.
6. Finkbeiner WE, Ursell PC, Davis RL. Autopsy Pathology. A manual and Atlas. Churchill and Livingstone. Philadelphia. 2004.
7. Ahmad Q, Malik TM, Ayyub M. Impact of Medical Autopsy on Final Diagnosis. PAFMJ. 2016;66(1):30-4.
8. Ceelen M, et al. Sudden death victims <45 years: Agreement between cause of death established by the forensic physician and autopsy results. J Forensic Leg Med. 2015;34:62-6.
9. Rautji R, Kumar A, Behera C. Attitudes of Medical Students towards Medico-legal / Clinical Autopsy. J Indian Acad Forensic Med. 2013;35(4):358-61.
10. Parikh CK. Parikh's Text Book of Medical Jurisprudence & Toxicology; 5<sup>th</sup> Edition 1990: pp114, 385, 551, 582-3.
11. Qasim AP, Hashmi KUR, Ahmad M, Naheed K. The value of autopsy in medical education: student's attitudes & opinion. JUMDC 2015;6(3):17-25.
12. Zanjad NP, Nanadkar SD. Study of sudden unexpected deaths in medico legal autopsies. J Ind Acad Forensic Med. 2006;28(1):27-30.
13. Rastogi P, Nagesh KR, Pai MR. Sudden cardiac death due to Myocardial Infarction in a young female. J Ind Acad Forensic Med. 2006; 28(4):140-1.
14. Rastogi P, Mittal T. Congestive cardiac failure-a cause of sudden death. JPAFMAT. 2008; 8(2):35-7.
15. Shahrom AW, Razana MA, Siti Aishah MA, Zarida H. Fatal acute heart failure secondary to Pheochromocytoma: A sudden death case report. Int J Med Tox Legal Med. 2006; 8(2):42-6.
16. Meera Devi T, Nabachandra H. Sudden death due to Mesenteric Vein Thrombosis in a Post Caesarean section case. J Ind Acad Forensic Med. 2006;28(4):142-4.
17. Paul LS, Kristen D, Robyn L, McClelland and Elson L. A Nationwide Survey of the Extent of Autopsy in Sudden Unexplained Death in Epilepsy. Am J Forensic Med Pathol. 2009;30(2):123-6.
18. Murty OP et al. Sudden death during sport activities: A Malaysian perspective pages. J Ind Acad Forensic Med. 2007;29(4):122-6.
19. Kumar A, Singh VP, Vij K. Situs Inversus vis-a-vis Sudden death. J Ind Acad Forensic Med. 2005; 27(2):140-1.
20. Garg SP, Mishra DK, Jain C. A rare case report of sudden death of a child due to non-traumatic (spontaneous) acute subdural hemorrhage. J Ind Acad Forensic Med. 2009;31(1):51-3.
21. Ardeshir S, Jaber G. Survey of sudden death from aneurismal subarachnoid hemorrhage in cadaver referred to Legal medicine organization of Tehran, 2001-2005. Am J Forensic Med Pathol. 2009; 30(4):358-61.
22. Parmar P, Rathod GB. Study of knowledge, attitude and perception regarding medico-legal autopsy in general population. Int J Med Pharm Sci. 2013;3(6):1-6.
23. Bhuller DS, Gorea RK, Aggarwal AD. Medico legal autopsy by panel of experts- present scenario. JIAFM 2004;26:113-8.
24. T N Gibson, S E Shirley, C T Escoffery, M Reid. Discrepancies between clinical and postmortem diagnoses in Jamaica: a study from the University Hospital of the West Indies. J Clin Pathol. 2004;57:980-5.
25. Sanjay G, Vinesh S, Kumar S. Positive Autopsy: A Case Report. JIAFM. 2007;29 (2): 71-3.

## AUTHORSHIP AND CONTRIBUTION DECLARATION

Name of Author	Contribution to the paper	Author's Signatures
Dr. Altaf Pervez Qasim	<b>Corresponding Author</b> Collection of Data, Field Visits, Interviews, Data Analysis, Literature review & Detailed Discussion	
Dr. Zameer Ahmad Awan	Tabulation of Data, Review of relevant studies, preparation of results in tables / charts Proof Reading & arranging references	
Dr. Asif Jamil Ansari	Analysis of collected Data, Proof Reading, arranging / authentication of references	