

ORIGINAL ARTICLE

Knowledge and Attitude of 2nd Year Medical Students Regarding Post Mortem Examination: A Comparative Study of Two Medical Colleges Situated at Rajasthan

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ABSTRACT

Context: Autopsy or necropsy means, postmortem examination of a dead body. Post mortem examination is a process which is required to establish the exact cause of death in sudden, suspicious or unnatural cases. In each and every suspicious case, in which police or magistrate needed a complete autopsy is necessary to substantiate the truth of the evidence of eyewitnesses. There are aim and objectives of a autopsy. It determines the mode, manner and time passed since death. In India postmortem examination used to be conducted by graduate doctors. As per New NMC guidelines the undergraduate will be called as IMG (Indian medical Graduate). As per Competency Based Medical Education (CBME) curriculum for undergraduates provided by National Medical Commission (NMC), autopsy is suggestive teaching learning method with autopsy is also a competency. The present comparison was conducted to assess the knowledge and attitude of medical undergraduate students of two medical colleges towards post-mortem as these traits will influence the quality of autopsy reports being prepared by them in their professional careers. It is very important that the emotions of the students have to be considered while training medical students but unfortunately it is bit neglected since the inception of medical curriculum. These days curriculum also emphasis only on clinical aspect.

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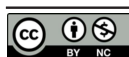
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Material & Method: it is questionnaire-based study. Study was carried out on second year undergraduate medical students of two medical colleges situated at Rajasthan, GMC, Kota & Jhalawar Medical College, Kota. Questionnaires to be answered, were administered to the participating medical students in Google form.

Statistical analysis used: For compilation of data, tabulate formation prepared one by one. 162 students of first medical college and 46 students of second medical college took part in the study.

Conclusion & Results: The undergraduate medical students should be encouraged to observe more autopsies during their study course. Problem-based learning during practical training of autopsy must be incorporated, as a part of the medical curriculum and instead of elective, compulsory rotatory internship training should be there for Forensic Medicine.

KEYWORDS

• Knowledge • Attitude • Autopsy • CBME • NMC

Key Messages: Problem-based learning during practical training of autopsy must be incorporated, as a part of the medical curriculum and instead of elective, compulsory rotatory internship training should be there for Forensic Medicine.

INTRODUCTION

The word post mortem comes from “post” means “after”, “mortem” means “death”¹. It is also called “autopsy” which comes from the Greek words “Autos” means “self” and “opis” means “view” or “to see for oneself”. The other name of autopsy is necropsy. (“Necros” means “dead body”)^{1,2} The first medicolegal autopsy was done in Bologna (Italy) in 1302, by Bartolomeo De Varignana. Post mortem is a special type of scientific examination of a dead body carried out under the law; in which all the body cavities are opened and all the organs are examined, because the evidence contributory to the cause of death may be found in more than one organ. It is usually performed in a case of sudden, suspicious, unnatural, medically unattended, unexplained deaths. The objective of autopsy includes:

1. Identification of a dead body, estimation of the time since death.
2. Identification of the manner and mode of death.
3. Interpretation of the significance and effect of injuries.
4. Determination of the presence of any disease, detection of poisons.
5. Interpretation of the significance of medical or surgical treatments.

Forensic medicine is a rare specialised branch that charms few medical graduates in

India.³ Therefore, the burden of medico-legal work is on the shoulders of general medical practitioners. It is assumed that the autopsies will be demonstrated to them in their graduation course. However, many medical students graduate without seeing an autopsy.⁴ This study was undertaken to know the knowledge of the future doctors, that is the undergraduate medical students, about the medicolegal autopsy and to ascertain the change in their attitude and perception for autopsy, if any, after passing the Forensic Medicine subject as per their medical curriculum.

MATERIAL AND METHODS

This study was carried out on 2nd year undergraduate medical students of a two Government Medical College of Rajasthan. 2nd year undergraduate medical students were included in this study. The objectives of the study were explained to them in detail. Google form based informed consent was taken before proceeding further. A questionnaire adapted to the study requirements from the published research was designed with some additional question set by the author to know the knowledge, attitude and perception of medical students toward autopsy.^{5,6} Questionnaires were administered to the participating medical students in google form. Students were asked to fill their responses in google form and were instructed to submit in 30 minutes of time provided during a lecture after obtaining the

consent. It is done same time at both colleges. The data obtained from the answer sheet was evaluated and incorporated on Microsoft Excel sheet and descriptive analysis in terms of mean, standard deviation and the percentage was carried out.

OBSERVATION & RESULT

A total of 162 undergraduate medical students of GMC, Kota and 46 Students of Jhalawar Medical College were the part of the study. Out of the 162 students 75.3% students & and 67.4% of other medical college replied that in all unnatural cases postmortem is required. Rest said it is not essential to conduct a postmortem examination in all unnatural cases. (Table 1). Out of all students 162 students 90.7% students of GMC, Kota replied yes in reply of question Type of post mortem examination include medico legal and clinical 3.1% students said no and 2.5% students said directly that don't know about the types, however students of Jhalawar Medical college 50% students out of 46 said yes three types of autopsy and 23.9% students said nothing types but yes for three types of autopsy and also 23.9% students said that only medicolegal autopsy is the only type of postmortem. (Table 2) Virtual autopsy is a new form of post mortem examination it was the third question in reply of this question 88.3% students of GMC Kota, said yes and 3.7% replied that it is not the new form of pm examination. 7.4% students did not anything about the virtual autopsy, however out of 46 students 77.8% students of Jhalawar medical college said that radiological x-ray and Ct scan is virtual autopsy and 20% students don't know about virtual autopsy. (Table 3) Whether we have to collect viscera in each and every case during pm it was the question no 4, 66.9% students of GMC Kota replied that each and every case there is no need to collect the viscera, may be the answer given by 12.3% students and 17.8% students said yes for the viscera preservation in each and every case however students from Jhalawar Medical college which were 46 out of that 55.3% said no for viscera collection in each and every case, however 23.9% said only in poison we have to collect the viscera. (Table 4). 65.4% students replied that stomach, liver spleen and kidney preserved for the chemical analysis question was asked For Chemical analysis which organs are preserved, 27.3% students replied that

stomach, liver and kidney preserved, in this question maximum variability observed, as far as concern to other medical college students, 58.7% were with 65.4% students. But 39.1% students said that all organs including hollow organ should preserved for chemical analysis. (Table 5). Next question was where sample for Chemical analysis should sent, 59.5% students give correct answer that was FSL and 30.8% students said that both FSL and pathology dept we can send the sample, 8.6% students replied that sample for chemical analysis use to send at dept of pathology. In comparsion with other college that is Jhalawar Medical college, 60% students said that FSL sample of viscera should sent, 24.4% said both FSL and pathology dept we can send the sample, (Table 6). Question 7 was that what sample collected for histopathology, most of the students replied that depends upon the disease and observation sample for histopathology used to be collected answer was given by 95.1% students. 63% Students of Jhalawar medical college replied that depends upon the disease, 28.3% don't know about it (Table 7). Question no 8 was that whether they know which preservatives are used for collection of viscera samples and 171.6% Students of GMC, Kota and 37% replied that it is saturated salt solution, 23.6% students of GMC, Kota and 34.7% replied formalin 3% students from first medical college said it is salt water (Table 8), next question no 9 is why we conduct postmortem, in this question other than option we provide open answer but most of the students, 95.6% & 89.1% of respective medical college said to find out the cause of death. (Table 9) Next question no 10 is Do you think post mortem examination is harassment to victim's family and 93.8% students and 93.5% respective medical college said no, rest said yes. (Table 10) Do you think autopsy is disrespect to a dead body was the question no 11, and 86.4% said big NO, and other medical college students were 87.2% who said no (Table 11). Question no 12 was From where did you First know about autopsy, 45.6% students heard about it from TV and other medical college students were 34.7%. (Table 12). Question 13 was Do you think students should watch post mortem examination as their part of course curriculum both medical college students respectively 96.9% & 91.3% said yes, remanning said no and don't know. (Table 13). Question 14 was regarding autopsy chapter required to be discussed in details in the under

graduate Forensic Medicine course, 96.2% said yes and 3% said no from GMC, Kota and from Jhalawar medical college yes was answered by 87.2% students. (Table 14) Question no 15 was Do you wish to have autopsy of your relative if necessary, and we got same reply yes from 96.2% & 73.9% from respective medical college students. (Table 15). Next question no 16 was, have you watched any autopsy before your admission to medical college and most of the student did not see any autopsy before second year of MBBS (Table 16). Question no 17 was that do you think there is disfigurement of the dead body by autopsy mixed response was there (Table 17), Do you think post mortem is required in a putrefied body or mutilated

body, it was the next question in which 75.9% students from GMC, Kota and 65.2% from Jhalawar Medical college said yes. (Table 18). Last question which was asked to students that How the body is preserved after post mortem student replied that 26.1% from GMC, Kota said it is cold room and 41.3% from Jhalawar Medical college gave embalming the preservation.

Table 1: Post mortem examination is required in all unnatural death cases

	Total	Yes	No
Kota	162	75.3% (122)	40.7% (40)
Jhalawar	46	67.4% (31)	15.6% (15)

Table 2: Type of post mortem examination include medico legal and clinical

	Total	No	Don't know	Autopsy	Also includes pathological autopsy 3 types 1. Medicolegal 2. Clinical, 3. Pathological	Nothing two types but yes these are types	Medicolegal autopsy	Yes
Kota	162	5 (3.1%)	4 (2.5)	2 (1.2)	1 (.6)	1 (.6)	1 (.6)	147 (90.7)
Jhalawar	46	0	0	1 (2.2%)	23 (50%)	11 (23.9%)	11 (23.9%)	0

Table 3: Virtual autopsy is a new form of post mortem examination

	Total	Yes	No	Don't know	By radiological Ct scan or other method
Kota	162	143 (88.3%)	6 (3.7%)	12 (7.4%)	1 (0.6%)
Jhalawar	46	1 (2.2%)	9 (20%)	1 (2.2%)	35 (77.8%)

Table 4: Whether we have to collect viscera in each and every case during pm

	Total	Yes	No	Don't know	In poison	May be	Only in poison
Kota	162	29 (17.8%)	109 (66.9%)	2 (1.2%)	1 (.6%)	20 (12.3%)	1 (.6%)
Jhalawar	46	9 (19.1%)	26 (55.3%)	0	11 (23.9%)	0	0

Table 5: For Chemical analysis which organs are preserved

	Kota	Jhalawar
Stomach, Liver, Kidney	45 (27.3%)	0
Stomach, Liver, Kidney, Spleen	106 (65.4%)	27 (58.7%)
Only Stomach	3 (1.8%)	0
Only Liver	1 (.6%)	0
Only Intestine	1 (.6%)	0
Exact Not Known	2 (1.2%)	0
Stomach, Liver, Kidney, Spleen, Intestine	1 (.6%)	0
Liver and kidney (solid) in one bottle and stomach, intestine (hollow) in other bottle are preserved	1 (.6%)	18 (39.1%)
Stomach, Liver, Kidney, Intestine	1 (.6%)	1 (2.2%)
Only Kidney	1 (.6%)	0
Total	162	46

Table 6: For Chemical analysis where the specimen are sent

	Total	Pathology	Fsl	Both	Don't Know	Pathology or Fsl
Kota	162	14 (8.6%)	97 (59.5%)	50 (30.8%)		1 (.6%)
Jhalawar	46	7 (15.6%)	27 (60%)	11 (24.4%)		1 (2.1)

Table 7: For histopathological analysis which organ is collected

	Total	Only Heart	Only Kidney	Only Spleen	Only Liver	Depend on Disease and Observation	Not Known
Kota	162	-	-	1 (.6%)	7 (4.3%)	154 (95.%)	-
Jhalawar	46				4 (8.7%)	29 (63%)	13 (28.3%)

Table 8: Do you know which preservatives are used for collection of viscera samples

	Total	Formalin	Alcohol	Salt Water	Saturated Salt Solutions	Don't Know
Kota	162	39 (23.6%)	2 (1.2%)	5 (3%)	116 (71.6%)	-
Jhalawar	42	16 (34.7%)	0	0	17 (37%)	13 (28.3%)

Table 9: Why we conduct pm

	Total	Detection of Cause of Death	Only Formality as Police Need it	For Identify and Arrest Theculprit	Don't Know
Kota	162	155 (95.6%)	1 (.6%)	6 (3.6%)	-
Jhalawar	46	41 (89.1%)	2 (4.3%)	3 (6.5%)	0

Table 10: Do you think post mortem examination is harassment to victim's family

	Total	Yes	No
Kota	162	10 (6.2%)	152 (93.8%)
Jhalawar	46	3 (6.5%)	43 (93.5%)

Table 11: Do you think autopsy is disrespect to a dead body

	Total	Yes	No	May Be
Kota	162	8 (4.9%)	140 (86.4%)	14 (8.6%)
Jhalawar	46	5 (10.8%)	41 (87.2%)	0

Table 12: From where did you First know about autopsy

	Total	TV, Newspaper	Web Series	Internet	Book	Teaching at Medical College
Kota	162	74 (45.6%)	30 (18.2%)	19 (11.5%)	6 (3.6%)	33 (20%)
Jhalawar	46	16 (34.7%)	5 (11.1%)	10 (22.2%)	5 (11.1%)	10 (22.2%)

Table 13: Do you think students should watch post mortem examination as their part of course curriculum

	Total	Yes	No	Don't Know
Kota	162	157 (96.9%)	3 (1.8%)	2 (1.2%)
Jhalawar	46	42 (91.3%)	0 (0%)	4 (8.7%)

Table 15: Do you wish to have autopsy of your relative if necessary

	Total	Yes	No	Don't Know
Kota	162	156 (96.2%)	5 (3%)	1 (.6%)
Jhalawar	46	34 (73.9%)	5 (10.6%)	7 (14.9%)

Table 14: Is the autopsy chapter required to be discussed in details in the under graduate forensic medicine course

	Total	Yes	No	Don't Know
Kota	162	156 (96.2%)	5 (3%)	1 (.6%)
Jhalawar	46	41 (87.2%)	4 (8.5%)	1 (2.17%)

Table 16: Have you watched any autopsy before your admission to medical college

	Total	Yes	No
Kota	162	21 (12.7%)	141 (87.0%)
Jhalawar	46	4 (8.7%)	42 (91.3%)

Table 17: Do you think there is disfigurement of the dead body by autopsy

	Total	Yes	No	May Be
Kota	162	60 (37.0%)	76 (47.5%)	26 (16.2%)
Jhalawar	46	14 (30.4%)	26 (55.3%)	6 (12.8%)

Table 18: Do you think post mortem is required in a putrefied body or mutilated body

	Total	Yes	No	May Be
Kota	162	123 (75.9%)	26 (15.9%)	13 (7.9%)
Jhalawar	46	30 (65.2%)	7 (15.2%)	9 (19.6%)

Table 19: How the body is preserved after post mortem

	Total	Cold Room	Ice Bar	Embalming	Don't Know
Kota	162	43 (26.1%)	10 (6.1%)	105 (64.8%)	4 (2.4%)
Jhalawar	46	10 (21.2%)	13 (27.6%)	19 (41.3%)	3 (9.7%)

DISCUSSION

The autopsy is the base of Forensic Medicine which is customarily taught to the medical undergraduate. As per the new changes provided by the National Medical Commission, now Forensic Medicine is taught from II MBBS to III MBBS (Part I), in which autopsy topic is very important. Authors want add that competencies are not up-to the mark. As per NMC undergraduate regulation a medical student should witness medicolegal autopsies in the both years. It is important to know that they can describe the medicolegal aspects and findings of autopsy examination in case of death due to common unnatural condition poisoning, so as to observe and interpret various findings at postmortem examination. The current study was undertaken in the Department of Forensic Medicine of two medical colleges which are situated hadoti region Government Medical Colleges of a north-western state of India, where the second year medical students voluntarily completed a questionnaire. Second-year students were those who had been taught the chapter of a medico-legal autopsy but still doesn't look out a postmortem examination. Therefore, the objective of whether practical demonstration only able to increase the knowledge of postmortem or we need more new methods. In this study students of both medical colleges gave positive answer about the requirement of autopsy in unnatural death cases. Most of the students, answered that observation of post examination should be part of MBBS course curriculum and all gave positive response about utility of this chapter in their course studies. This result coincides with previous study done by **Verma SK**⁸ where students opted for compulsory

attendance of post mortem examination as a part of undergraduate teaching. The previous study by **Botega et al**⁹ **Brazil and Conran**¹⁰ *et al* in Ohio, USA also showed that more than 85% students gave opinion in favour of mandatory autopsy observation. **Joon Joon**¹¹ in the study at Malaysia also showed that 77.5% students recommended for making autopsy session compulsory during undergraduate medical training. **Victor James**¹² in his study also showed that 88% students recommended for post mortem observation during their study period. Although the use of autopsy as an educational tool is in decline and there is evidence that many undergraduates and junior doctors it is shocking that many postgraduates have never attended an autopsy¹³. Result of same seen **Hitesh Chawla et al** where first year second year and third year undergraduates included for same question²². It is due to that knowledge of same question is updated to them while introduction to the medical subjects. But at the same time, the medical student's emotional reactions must be borne in mind. A bad memory during post mortem observation can affect them in future. Unfortunately this aspect is neglected in medical training. Literature reviewed had showed that the reaction of students to forensic autopsy procedure encompass psychological and emotional components¹⁴. In undergraduate course curriculum the training of post mortem examination on dead bodies might evoke strong emotional reactions in students that could counter act the intended learning goals¹⁵. In China medico legal autopsy has been squeezed out of the regular medical education curricula in order to accommodate increasing amount of modern medicine education during teaching technique reform¹⁶. Most of the more

than 50% of both medical colleges had right idea about the place for chemical analysis. Also more than 58% students rightly know about the preservative of viscera samples, some of them confused with formalin and saturated salt solution. In India most of the peoples don't know about the FSL, this laboratory is out of public view and an isolated/restricted establishment. Since pathology department is well approached by students for all required tests and can be found in all medical colleges or hospitals, they had a misconception about the chemical analysis of viscera at this department. During 1st and 2nd year MBBS course, the students always see formalin is used to preserve viscera; this practical exposure gave them idea about formalin as preservative in mortuary. For practical purpose saturated common salt solution is used there, because it is cheap, easily available and a very good preservative. On the other hand, formalin is expensive and causes tissue hardening which is not suitable for poison detection procedure. Post mortem is neither harassment to victim's relative answered that nor a disrespect to a dead body it is said by more than 92% students of both medical colleges, 86.5% answered, this coincides with study done by Sanner in Sweden¹⁷ where 90% students gave positive opinion and also reflects the positive attitude of medical students towards the necessity of autopsy. Only around 6% students opted that post mortem examination is harassment to the relatives of the deceased and is disrespect to a dead body which coincides with the study done by Joon Joon¹¹. but study conducted by **Hitesh Chawla et al** observed that most of the students replied that they can't say about disrespect and disfigurement which is unanswerable²². Newly invented virtual autopsy procedure, which was developed by Richard Dirnhofer, former Director of Forensic Medicine, Berne and continued by his successor, Michel Thali and colleagues at the University of Berne's Institute of Forensic Medicine, Switzerland¹⁸⁻²⁰ is known to majority students of GMC Kota but other medical colleges students know about only CT scan method. Probably a review article on Virtual autopsy²¹ written by this author played a positive role in this regards, which also indicates medical students of this college pass a lot of time reading articles and journals in college library. In our study 88.3% of first medical college students know about the virtual autopsy, which is differ from the

study conducted by **Ahmad M et al**²¹.

Authors want to add one more thing that different faculty teaching method and students interest also important regarding acquiring knowledge of forensic medicine. As the study is done on different medical colleges where teachers and learning method are different it may provide effect on learning of students.

CONCLUSION

Education is the only mean to elaborate one's knowledge and it can bring the change in perception and attitude of a learner. The data of present study supports the previous studies conducted with a quantitative methodology and recommend that forensic autopsy has great value. The undergraduates medical students should be encouraged to observe more autopsies during their study course. Teaching professionals should give more emphasis to make this chapter more interesting to the medical students. At the same time the infrastructure for morgue in medical colleges needed to be improvised and modernized. Virtual autopsy, the new technology of forensic investigation, has already been started in our country on project basis with provision to include this chapter in medical teaching curriculum. Updating the education is the only mean to elaborate one's knowledge and it can bring the change in perception and attitude of a person. More observation of autopsy, interesting teaching will help them to change their perception and give a better way if required in future, when they complete the graduation and posted in Government hospitals. It is suggested that problem-based learning during practical training of autopsy must be incorporated, as a part of the medical curriculum and instead of an elective, a compulsory rotatory internship should be there for Forensic Medicine. Further, to curb the deficiency of Forensic Medicine specialists, measures should be taken at the state level to make this branch a lucrative one, so that more medical aspirants opt this speciality for their post-graduation course. It is also needed that competencies of forensic medicine should be elaborated more and as a subject forensic medicine should be the part of III MBBS (part-II).

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