

## ORIGINAL ARTICLE

## AUTOPSY AS A PART OF CURRICULUM: STUDENT'S PERCEPTIVE

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**Background:** Autopsies continue to have a multifactorial role in the delivery of modern undergraduate medical education, despite the radical educational reforms and decline in autopsy rates over the last decade. This study was conducted to highlight the usefulness or otherwise of autopsy as a part of MBBS curriculum from students' point of view, especially in the backdrop of the controversy amongst the medical educators on whether Forensics was to be kept as a part of MBBS curriculum. **Methods:** The study design is descriptive cross-sectional study. All the students of 3<sup>rd</sup> year MBBS who had recently completed their autopsy visits, accompanied by dedicated members of the faculty, were invited to mark their comments on a especially designed questionnaire with 5 point Likert scale. Their comments were analysed about how useful and necessary is autopsy is in medical education; their personal distaste for the procedure; staff attitudes; and exploration of alternative teaching methods. The data was analysed to determine simple frequency distribution and mode of the students' responses. The difference between male and female students' responses was calculated by using Chi Square through crosstab. All analyses were carried out using SPSS Version 19. **Results:** The data collated from the questionnaire showed that, students regard the autopsy as useful in medical education, and alternatives like videos and printed literature would not be as effective. For some, autopsy was a stressful event and few actually found it an unpleasant and distasteful experience. Majority students agreed that the attitude of the teaching staff was supportive of the learning process. **Conclusions:** It is concluded that teaching based on autopsy teaches valuable skills, some of which are not easily learnt elsewhere, however, the unpleasant aspects of the autopsy demonstration should be kept to a minimum to encourage attendance and promote a sense of its value.

**Keywords:** Students, views, autopsy, medical curriculum

## INTRODUCTION

At the beginning of the 19<sup>th</sup> century, Xavier Bichat, a brilliant young rising star of the Paris school, declared, "You may take notes for twenty years, from morning to night at the bedside of the sick, upon the diseases of the viscera, and all will be to you only a confusion of symptoms—a train of incoherent phenomena. Open a few bodies and this obscurity will disappear".<sup>1</sup> At that time, it was only in a few medical capitals of Europe that the value of autopsy in medical education was beginning to be understood. It was at the beginning of the 20<sup>th</sup> century, that autopsy developed a fundamental role in medical education (ME), guided by the influential Oslerian philosophy. Students not only attended autopsies, but they learnt to conduct them as well.<sup>2</sup> However, during the 20<sup>th</sup> century a decline in the rate of autopsies performed and the use of autopsies to teach medical students, occurred worldwide.<sup>3-6</sup> Literature shows that the demise of the educational role of autopsy has followed its decline in hospital practice.<sup>7</sup> The autopsy rate for patients dying in hospital has dropped steeply over the past 40 years in New Zealand, the United Kingdom<sup>8</sup>, and the United States<sup>9</sup>.

In 2002 Auckland, New Zealand, took the unprecedented step of legally prohibiting students from attending autopsy teaching, by barring them access to coronial autopsies.<sup>10</sup> The reason given in this particular situation was the negative perception about autopsies

created by the media, resulting fall in autopsy rate. Today, fewer than half of American medical schools require attendance at autopsy, and most students graduate without attending a single session.<sup>11</sup> There is further evidence that many recent undergraduates and junior doctors have never attended an autopsy.<sup>3</sup> The Pakistan Medical and Dental Council (PM&DC) has the responsibility to maintain the standards of medical education in the country. Recently there was a discussion in some quarters of medical educationists that autopsy let alone, forensic medicine should not be a part of MBBS curriculum. Does autopsy have a place in the modern medical undergraduate curriculum is the question?

The core areas of knowledge that can be learnt effectively by the medical students by attending autopsy include Clinico-pathological correlation, Pathophysiology, Anatomy and Observation skills.<sup>12</sup> In addition to overt educational uses, the autopsy has a marked positive impact on the hidden curriculum. Autopsies raise opportunities to discuss ethical and legal aspects of death and death certification, as well as increasing empathy for dying patients and their families.<sup>13</sup> The autopsy has been shown to foster deductive reasoning, integration of diverse material, and clinical problemsolving.<sup>14</sup> These skills are well beyond the focus of Forensic Medicine and are skills of additional benefits to the students.

This study was conducted to explore the current attitudes of undergraduate medical students regarding teaching autopsy. It was conducted on structured questionnaires with 5 point Likert scale, as this is useful when the topic is controversial or emotive, and the opportunity to express personal opinions is said to improve return rates.<sup>15</sup> In this study, I have recorded and analysed the comments about autopsies made by the third year medical students. Some of these comments were predictable, but many were not. Medical students occupy a uniquely privileged position between the layman and the qualified professional which might afford the latter some important insights into the views of the former. Resultantly, such insights might even be useful in making autopsies more acceptable to the general public and formulate recommendations for changes in medical education.

### MATERIAL AND METHODS

The study design is descriptive cross-sectional study. It was study was conducted at Avicenna Medical College, Lahore, Pakistan which is affiliated to the University of Health Sciences (UHS) and follows the medical curriculum designed by the UHS. Medical students are taught in Forensic Medicine during the third year of MBBS course. At Lahore, there are only two medical institutions where autopsies are conducted for teaching purposes, the King Edwards Medical University (KEMU) and the Allama Iqbal Medical College (AIMC). Our institution made arrangements for students to go to KEMU Forensic Medicine Department to witness autopsies for two months. During this rotation the students have to attend six autopsies and ten medico-

legal cases which are written up in a ‘workbook or practical copy’ and these count towards the third year MBBS examination and these include a detailed description of the autopsies which the student has attended. These observations are supplemented by a discussion with the faculty member of Forensic Medicine Department, who accompanies the students for autopsies. For this purpose for two months each student travels twice a week in a batch of 33 students to KEMU which is about 30 km away and completed the write-up of the required number of autopsies and medico-legal cases, under the guidance of the faculty. On an average each student had attended 10 to 12 autopsies during these two months rotation.

All 100 students of 3<sup>rd</sup> year of session M-09 who had recently completed their two months rotation of visits for autopsies were seated in a lecture hall and given a questionnaire to be filled on the same occasion to meet the objective of this study. The design of the questionnaire was adopted from a prior study on medical students view’s on autopsy.<sup>16</sup> The students recorded their views by answering ten questions about their personal experiences of autopsies on a five-point Likert scale on which 1 indicates ‘strongly agree’ and 5 indicates ‘strongly disagree’. The questionnaire and the responses of students are shown in Table-1.

The data was analysed to determine simple frequency distribution and mode of the students’ responses. The difference between male and female students’ responses was calculated by using Chi-square through crosstab. All analyses were carried out using SPSS-19.

**Table 1: The responses of students as frequency and percentages (n=100)**

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
In my opinion autopsy is a useful and necessary procedure in medical education.	27	58	9	3	3
Without viewing autopsies, my ability to understand the subject of forensic medicine would be severely impaired.	26	43	16	12	3
I found viewing autopsy a personally useful and rewarding experience.	11	49	23	12	5
I have been influence by viewing autopsies in a way that I would take up forensic medicine as a postgraduate specialization.	4	4	23	36	33
Teaching staff’s attitude at autopsy supported the learning process	26	52	13	9	0
I suffered from stress on viewing autopsy	6	26	19	41	8
I have a personal distaste for viewing autopsy and it was a thoroughly unpleasant experience for me.	4	15	22	47	12
In my opinion going to view autopsies another institution (30 km away) is a waste of time and my study schedule suffered.	3	17	23	42	15
Showing videos of autopsy can be a better alternative than actually viewing autopsies.	6	25	14	38	17
I can learn this topic by reading books only, without viewing actual autopsy or its videos.	0	5	10	58	27

### RESULTS

The responses were very wide ranging and are summarised in table 1 and are discussed in greater detail below. Amongst the class of 100 students there were 28 males and 72 females. Their mean age was 21.24 years, (students ranging from 20–24 years) with standard

deviation (SD) of 1.026. There is no statistical difference in the views of male and female students on any item in the present study.

To item 1 ‘a useful and necessary procedure in medical education’ a considerable proportion of students agreed that the autopsy is valuable and a useful source of knowledge. However, 6 students disagreed with the

statement. The difference between the views of male and female students was not statistically significant. Most of the comments to item 2 'without viewing autopsies' were not surprisingly that they have learnt from autopsies and their understanding of the subject would remain deficient if autopsies were not included in the curriculum. Surprisingly, several students found autopsy a useful and actually rewarding personal experience and 60% commented to item 3 as 'strongly agree' and 'agree'. This statement was supported by the fostering attitude of the faculty members accompanying the students to KEMU for attending autopsies, which was appreciated by 78% of the students. The difference between views of male and female students to the above items here again was not statistically significant. Predictably, some of the students opined that they suffered from stress on seeing autopsy.

A few felt that it was an unpleasant and disturbing experience. On further discussion on item 6 and 7 they expressed that the only problem was the smell at first followed by 'been overtaken by grief and palpitations'. However, such feelings were more so, on their very first visit, possibly they were not mentally prepared for such a sight. Regarding the effort required in travelling about 30 Km to attend autopsies, most of the students stated that the knowledge gained was worth the time and effort spent on it. The difference, in fewer males suffering from stress while observing autopsy than the females, was surprisingly insignificant.

On the items regarding use of alternative methods for teaching post-mortem than actually view autopsies, most of the students (54%) disagreed that watching videos of autopsies would be a better alternative. A total of 5 students thought that this topic can be learned by reading books alone. However, a significant number of students emphasized their belief that the procedure of post-mortem cannot be understood by only reading the textbooks. Generally, both the groups thought that the alternate mode of teaching would not be as effective as autopsies in learning the subject. Students comments on item 4 on taking up Forensic Medicine as specialization later in the career has been ignored being pre-mature at this stage.

## DISCUSSION

The educative value of autopsy is so clearly appreciated by the students and most students agreed that autopsy is an educationally useful and necessary procedure. These views of students are comparable to other studies which have noted the views of students on autopsy.<sup>16-21</sup> Benbow has quoted that although students are ready to regard the necropsy as useful in clinical practice, a single demonstration does not clarify what its uses are.<sup>16</sup> There is no statistical difference in the views of male and female students on any item in the present study possibly because they all had similar educational

background and socioeconomic status. Since, this study is based on an academic task this could be why the students responded in almost the same way; efforts of the accompanying faculty to make this meaningful could be another.

A review of the literature reveals that the potential value of the autopsy in undergraduate teaching is very large, but its prominence has diminished in recent decades, and medical students in some schools may qualify without ever entering a mortuary.<sup>22</sup> The reasons for this decline in autopsy based teaching include; limited curriculum time, inadequate training of doctors as to the importance of autopsy, competing departmental demands and insufficient hospital autopsies, an improvement in the medical diagnostic technology available; and difficulties in obtaining consent from relatives.<sup>12</sup> Lack of effort to make the exercise meaningful, at other institution, cannot be discounted.

Hill and Anderson observed that medical educators were unified in their belief in the autopsy as a teaching tool yet constantly finding reasons not to include them in the curriculum.<sup>12</sup> Certainly, the most vehement critics of the use of the autopsy claim that 'learning from this unpleasant mutilation and barbaric procedure is one more step along the path of losing your natural feelings as a doctor'.<sup>23</sup> In our study 19 % find autopsies distasteful and unpleasant experience. According to Benbow's study 17.6% described a personal distaste for the procedure.<sup>15</sup> Studies have highlighted that students' ignorance and dislike is not merely a reflection of their experience, for many their ideas reflect those of qualified clinicians.<sup>22,24</sup> It might, therefore be useful to influence and modify students' opinions before they have firmly entrenched prejudices. Though these could change with experience and maturity; however some aspects will be more amenable to change than others. It has opined in research that without exposure to autopsy, clinicians are unlikely to become advocates of autopsy<sup>23</sup> or have the skills necessary for sensitively requesting post-mortem examinations.<sup>25</sup> Indeed, students who graduate without autopsy experience will hesitate to request an autopsy even if other techniques have failed to show a clear cause of death,<sup>26</sup> when their own knowledge and experience is lacking on the subject. Many future MBBS doctors might be relatively incompetent and unable to serve the society by assisting the judicial system in criminal investigation.<sup>27</sup>

Age and experience do not wither the revulsion that some feel in the autopsy room.<sup>24</sup> As it is likely that this revulsion colour views of many autopsies in general. The aspect of revulsion cannot be countered in a single visit. Therefore, it is important that the unpleasant aspects of the autopsy demonstration should be kept to a minimum by maintaining a proper

professional attitude throughout. Medical educators must, as was the case in this study, keep this factor in mind and strive to make it meaningful by addressing students' apprehensions.

Realistically, many of our students have still to come to terms with dying and death, and that this might influence their perception of autopsies. Students should have preparatory information about how and why autopsies are carried out, the organisation of mortuary services and the role of mortuary technicians. One of the factors contributing to the moribund state of the teaching autopsy is that mortuaries in our region provided for teaching autopsies are dilapidated or poorly designed with inadequate viewing and listening facilities. Generally it was felt that in hot weather, in which they went to attend autopsies, it was very stuffy inside the hall since the ventilation systems were not effective. This could be the major contributing factor to the element of revulsion.

The students (about 9%) who had commented that the teaching staff's attitude was not supportive of the learning process also felt that the mortuary technicians who conducted the post-mortems, were although skilful at their work, were not educated enough to explain and discuss the procedures with them aptly. It is important to ensure that mortuary technicians realise that they have an important role in the conduct of autopsy, and they should also be made aware of the difficulties faced by medical students. Some of our technicians have become used to at dealing with unhappy students, and are complacent in explaining the methods to them. This could be achieved by encouraging technicians to participate and made to feel that their role is important and rewarding for the students in the understanding of the subject.

Forensic Medicine faculty at our institution feels that a student who has never seen an autopsy may be at a disadvantage when he or she has to seek permission from a family during his or her subsequent clinical practice. On the other hand, a few students are clearly distressed by the procedure, and to coerce them into attending might be counterproductive. At the very least, we should be careful to minimise the unpleasant aspects, and to counsel any student who is visibly distressed. Improvement in Mortuary environments especially arrangement of a well-ventilated hall for teaching would be effective in removing the distress.

Predictably, most of the students are of the view that autopsy cannot be learnt by reading books alone and even videos are not an alternative to learning from autopsies. This has been supported by literature that shows that the provision of a single medical lecture on the subject of the autopsy to newly qualified doctors is of no benefit.<sup>28</sup> However, study by Burton shows that though it was generally felt that students should be exposed to autopsies, but some tutors who held this

view were nonetheless reluctant to make such exposure compulsory.<sup>7</sup> The autopsy is costly, unpleasant, frightening, dangerous and unsophisticated, and carries an inherent risk that students will develop a sanitised view of autopsies and a biased picture of the prevalence of terminal diseases. Suggested alternatives to the complete autopsy included demonstrations, video-conferences, videos, CD-ROMS and museum specimens, although these were all felt to lack the immediacy of exposure to the autopsy in the mortuary. Alternatives to the autopsy, such as demonstrations, videos and CD-ROMS, are available but are felt to lack the immediacy of the autopsy seen at first hand and in real terms.

Lastly, we are criticised for the atomisation of medicine, for not allowing our students to develop caring qualities, for our parochial view, for not having instituted meaningful quality assurance procedures in medical care and we are also criticised for producing medical students who are arrogant, insensitive, and unable to admit or cope with uncertainty, much less with failure. Teaching autopsy effectively would provide lesson after lesson in medical humility, dealing with uncertainty, and facing fallibility.<sup>12,29</sup> Autopsy as a teaching medium has additional advantage that it provides an opportunity for medical students to come to term with death. Training in discussing dying and death needs to be given a higher priority in most medical curricula,<sup>30</sup> and obtaining consent for autopsy could be usefully incorporated into such teaching. Although, a student's attendance to the mortuary is primarily intended for teaching purposes, it is also an opportunity to impress its value on each individual. In our curriculum each student has to see only six autopsies, each one made a positive and lasting impression and generally rewarding for learning Forensics in specific and medical education in general.

## RECOMMENDATIONS

Recommendations for changes in medical education are made to retain the usefulness of this vital procedure as a useful teaching tool. The workbook or practical copy exercises used in the Forensic Medicine department should be designed to enhance the conceptual learning of the procedure. The curriculum should be revised to include time for small group work with facilitators to discuss the many difficult and painful issues that surround this topic and with emphasis on preparing the student of what to expect on viewing autopsies. As an aide to education, the autopsy may be used to develop problem solving skills.

The autopsy room or mortuary should be designed to provide facilitating environment to the student. Mortuary technicians should be properly trained and communicative to explain and discuss the post-mortem procedures to the students. Students should be

trained to understand how autopsy can both be sensitively requested and performed and how it can benefit grieving relatives, the profession and society as a whole. It would require the development of attitudes towards death; and improving communication skills with the bereaved, with raised awareness of cultural and religious attitudes surrounding death and dying.

There is room for additional and improved presentation of vital findings by employment of video records or close circuit television in addition to slides. The involvement of clinicians in teaching sessions, using alternative presentation methods, would facilitate free ranging discussions. Autopsies can also be viewed as an educational tool in which trainee surgeons assist with the performance of autopsies in an attempt to further anatomical knowledge.

## CONCLUSION

A renewed emphasis must be placed on the importance of autopsy in teaching, training and clinically relevant research, and as a means of medical audit. The decision to exclude teaching autopsies from the medical curriculum means that students are denied a highly effective and popular learning resource and the autopsy is likely to decline further in clinical practice. The new generation of doctors will find themselves struggling to explain a procedure they have rarely or never witnessed. In the modern era of clinical governance and medical audit, we must not lose sight of the fundamental contribution which the autopsy makes to medical training and to quality assurance in clinical care.

Modern politically correct attitudes should pose no barrier to the autopsy. Indeed, such attitudes should be an ally, sharpening sensitivities in communicating with families and encouraging rapid and compassionate communication of results.

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