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Original Research

Perceptions of medical students towards autopsy as an educational tool

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ABSTRACT

This study explored the perceptions of medical students towards autopsies. After attending an autopsy session, three cohorts of medical students were given questionnaires that included feedback about their emotional responses, cognitive aspects and general questions regarding their experience. There were 129 respondents out of a total of 141 students (91.5%). Approximately half the students (48.1%) found the autopsy experience tolerable while another 18.6% found it unpleasant and distasteful. Nearly 70% of them agreed that their religious beliefs did not censure autopsies but about 9.3% felt that the procedure was disrespectful to the dead. A majority of students felt that the autopsy experience was beneficial (70.5%) and would request autopsies for their patients in future if necessary (72.9%). However, they were less likely to want autopsies on themselves or their family members (34.1%). More than ¾ of students recommended autopsy viewing for all medical students because of its various beneficial roles. Our study showed that students were aware of the potential benefits of autopsies. There was a variety of emotional reactions from students towards this experience but the majority were acceptable to the procedure and recommended autopsy viewing for all medical students. This teaching tool should be revived and used as part of the medical curriculum.

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INTRODUCTION

In the past, post-mortem examinations played a significant role in medical education. However, over the last few decades non-medicolegal autopsy rates have been declining worldwide due to improvement in ante-mortem diagnostic investigations leading to heightened diagnostic confidence in determining the cause of death [1]. The low autopsy rates meant fewer opportunities to use post-mortem examinations as a teaching tool. Coupled with modern computer-assisted teaching methods, this has seen the decline of using autopsies as an educational tool in many universities. Still, the benefits of attending an autopsy cannot be replaced by these new educational techniques. Students attending autopsies can learn anatomy and pathology first-hand, and therefore gain better understanding of clinico-pathological correlation. Through this, they have the opportunity to learn about the indications for

both medicolegal and non-medicolegal requests for an autopsy and also discuss legal and ethical issues relating to death, including death certification and indications for a coroners' referral.

Our medical faculty believed that medical graduates, in the virtual absence of an autopsy experience, would have an incomplete medical education. Hence, participation of students in viewing an autopsy session was incorporated into the medical curriculum. This was supplemented with three one-hour lectures on forensic pathology for third-year medical students. The lecture topics included an introduction to forensic pathology, non-accidental deaths and deaths in motor vehicle accidents.

The aim of this study was to explore the perceptions of medical students undergoing this experience in the

following areas:

- a) The students' understanding of the indications for the autopsy and the procedure of obtaining police inquest and permission from relatives of deceased
- b) The perceived benefits of the autopsy experience towards their overall learning
- c) If they were agreeable to post mortems for themselves, their own relatives or their patients if required
- d) Their general emotions, thoughts and reactions towards the autopsy experience, and
- e) If they would recommend viewing autopsy for all medical students

METHODS

In Malaysia, autopsies are conducted in the government hospital by a registered pathologist or a trainee pathology registrar in the hospital mortuary. Cases that require an autopsy were mostly requested by the police because of the nature surrounding the circumstances at the time of death. These included medico-legal cases and deaths resulting from different types of injuries sustained; for example victims of motor vehicle accidents, injuries from fall from a height, drowning, suicidal hanging, electrocution and carbon monoxide poisoning. Other autopsy cases included unexplained deaths among hospital inpatients from disease processes. Autopsies for these cases may be requested by the clinicians with the relatives' permission. Some of these cases observed during this study included natural causes of death like coronary heart disease, haemorrhagic stroke, cardiomyopathy, tuberculosis, acute pulmonary oedema and pulmonary thromboembolism.

Pathology is mostly taught to our university's medical undergraduates in their third academic year. Students go through a series of clinical cases with clinico-pathological correlation with their Pathology tutors weekly in small groups of 10 to 12 students. They also have laboratory classes that include sessions at the blood bank, microbiology, histopathology and cytology laboratories. In addition, students in the Malaysian campus of Monash University must attend at least one autopsy session in their third academic year as a requirement for their Pathology curriculum. Under the Memorandum of agreement with the Malaysian Ministry of Health, our undergraduate medical students of the Malaysian campus were allowed to observe autopsies conducted by the pathologists in the hospital mortuary in Sultanah Aminah Hospital, Johor Bahru. They were required to attend autopsies in small groups of up to four students. Students were also required to

obtain a clinical history of the case they were going to observe prior to the autopsy procedure.

They had to follow strict protocol according to hospital regulations, which included proper surgical gowns, boots and masks when observing the autopsy. No photography was allowed.

Questionnaires were distributed to all third-year medical students of three cohort groups for the years 2007 to 2009 after they attended the autopsies. The questionnaire contained seven questions on personal reflections (emotional aspects) of the autopsy experience, six questions on educational benefits of autopsies (cognitive aspects) and nine other general questions about autopsies including its role in the practice of medicine. The students' responses were recorded as 'agree, neutral or disagree' for these 22 questions. The students were also invited to express their reflections and personal opinions about the autopsy experience in a free-style text form at the end of the questionnaire.

RESULTS

A total of 129 out of 141 medical students participated in this study from 2007 to 2009. This was equivalent to a 91.5% survey response rate. There were 67 female (51.9%) and 62 male (48.1%) respondents (Table 1). All students were between the ages of 20 to 24 years.

Table 1. Details of medical students in their 3rd academic year participating in the study (n=129)

Academic Year	2007	2008	2009	TOTAL
Gender				
Males	23	17	23	63 (48.8%)
Females	23	18	25	66 (51.1%)
TOTAL	46	35	48	129 (100%)

Responses

Out of the 129 respondents, almost ninety per cent (89.9%) of the students stated that they understood the indications of the post mortem they observed. Eighty nine students or 69.0% understood the procedure of obtaining police inquest for the medico-legal post-mortems and 87 students (67.4%) indicated that they understood the procedure of obtaining relatives' consent for clinical post mortems. Only 27.9% or 36 students felt the experience helped them to be better equipped in future to support the relatives of the deceased. Although they agreed the experience exposed them to the actual procedure, 31.8% (or 41 students)

felt they would not be able to handle the queries of relatives regarding autopsies satisfactorily.

Nearly half of the students (62 students, 48.1%) found the autopsy experience tolerable and not unpleasant, while a smaller proportion (24 students, 18.6%) found the experience unpleasant and distasteful. One student affirmed his distaste for Pathology after the autopsy experience and “vowed” he would not be pursuing this specialised field in his career. Most students (69.8%) believed that autopsies were not against their religion. However a small proportion of students (9.3%) felt the procedure was disrespectful to the dead. This was further explained in their comments.

Only one third of the students (34.1%) would not object to post-mortems performed on themselves or on their immediate relatives but a much higher proportion or 72.9% of the students would readily request post-mortems on their patients if required. Two-thirds of students (66.7%) agreed they would attend autopsies of their patients in their future practice. Some students suggested discussing autopsy findings with the pathologists if they were not able to attend the procedure as they believed this will help in their clinical practice.

The majority of students (70.5 %) viewed the autopsy experience as useful and beneficial. They believed it improved their general medical knowledge and understanding of anatomy and pathology. More than half of the students (54.3%) found the experience allowed them to reflect on death and felt more equipped to handle patient-deaths in the future. They agreed that this improved their ability to empathize for their dying patients and their relatives and felt the experience allowed them to gain medical humility. The majority of students (77.5%) agreed that all medical students should experience at least one autopsy in their medical education. They recommended student participation in autopsies for the many beneficial roles it played in medical education.

However, some students expressed reservations and cautioned its limitations. Some suggestions to improve this experience together with their reservations were found in their comments. A few students expressed their interest in more active participation by assisting in the autopsy procedure. They felt that a hands-on experience would be more beneficial than merely viewing the procedure. The students were also diverse in their comments of the attitudes and behaviour of the staff. Some students felt there was good explanation and teaching during the autopsy while others noted that the procedure was observed with minimal explanation, therefore conferring little benefit. They felt that the pathology registrars performing the procedure were not as responsive to their questions and gave them very

little explanation of the procedure or the findings. Some students expressed dissatisfaction with this lack of verbal communication between themselves and the doctors performing the procedure.

Some students expressed that they were alarmed and distressed by the procedure. One described the procedure as nauseating and a handful of students disliked the perceived “mutilation of bodies”. The students also commented on the attitudes of the mortuary (para-medical) staff while handling the bodies and organs. They had mixed reactions to this. A few of them were able to understand the behaviour of the staff while some were uncomfortable with the jokes and flippant discussion among the staff during the procedure. They felt the given atmosphere was not appropriate and was disrespectful to the deceased. They preferred a revered silence and suggested more care in handling the bodies and organs. Table 2 summarised the comments from the students regarding the autopsy experience.

Table 2. Students’ comments & suggestions in free-style text

Summary of key points
Cognitive aspect
Improved my general medical knowledge
I re-learnt Anatomy ('get a chance to see organs in body')
Appreciated the pathological changes in the organs
Gained understanding of Clinicopathological correlation
Acquainted with Death certification
Emotional aspect
Felt saddened with death & empathise towards bereaved family
Felt discomfort, distasteful, alarmed
Unable to tolerate the smell (nauseous)
Disgusted with way of handling & flippant discussion in mortuary
Distressed by the 'mutilation of bodies'
Confronted with human mortality & vulnerability
Preferences / Suggestions
Wanted to assist in the procedure or 'do some cutting'
Asked for explanatory narration during procedure
Preferred more interaction and communication with operating pathologists/registrar
Preferred a more respective revered silence & careful handling of bodies

DISCUSSION

Throughout medical history, autopsies not only helped determine the cause of death but also allowed a better understanding of anatomy, pathology and clinico-pathological correlation. It played a vital role as a medical audit to confirm, clarify and dispute ante-mortem diagnoses [2]. In the past, post-mortem examination contributed significantly to the scientific basis for the practice of medicine and was central to medical education. However, over the years the decline in its use has contributed to the present abandonment of using autopsies as an educational tool in many medical schools. Many medical schools today do not include attendance or participation in an autopsy in their medical curriculum [3,4]. It was therefore not surprising to find many young doctors who had never attended an autopsy [5-7].

However, many medical educators still recognised the important role of autopsies in medical education [8,9]. In our university, the Pathology curriculum was mainly covered in the third academic year in small tutorial groups covering clinico-pathological cases and spanned over 2 semesters of 18 weeks each. The Pathology unit in the undergraduate medical curriculum included mandatory attendance of an autopsy session for third year medical students in addition to three hours of lectures in forensic pathology. It was felt that there were many benefits from viewing an autopsy for medical students. Doctors who were unfamiliar with the practice may deprive bereaved families of the benefits an autopsy could give in terms of closure and coping with their grief. On the other hand, doctors with exposure to the autopsy experience may be more receptive to asking for a post-mortem examination for their patients if required. They may be more knowledgeable and be better equipped to answer questions from the bereaved family.

The responses to the questionnaire in the study showed that the students were aware of the importance of autopsy practices. This finding was consistent with many other studies reported [10-12]. The majority of students in this study indicated that an autopsy experience should be mandatory in their medical education. This was similarly reported by Conran et al [13] who described 85% of his students recommended the autopsy experience for all medical students.

Many students knew the indications for autopsy and were aware of the procedure of procuring permission for the autopsy for both medico-legal cases requiring police inquests and hospital (clinical) cases requiring permission from bereaved family members. However, many students did not witness the communication between family members and the clinicians, and were unable to feel empathy towards the family members of

the deceased. Most students attended the autopsy in the mortuary after permission for the procedure was obtained without seeing the patient prior to their death in the ward or the Emergency Department. Students should thus be encouraged to spend time with bereaved families before the autopsy procedure to give them opportunity to develop appropriate communication skills and empathy towards the families.

Although a large proportion of students knew the importance of autopsy practices and would readily ask for an autopsy on their patients, only a third of students would allow an autopsy on their relatives or themselves. Many felt they would be distressed knowing what would happen to their family members after having witnessed the procedure. Some students still could not come to terms with procedure and would not allow the "mutilation of bodies" to their loved ones. They were thus less likely to agree for autopsies to be performed on their family members should such circumstances arise. This was similarly reported by other researchers [12,14,15].

The responses and comments in the questionnaire showed that although the students regarded the experience as useful in their medical education, they were also aware of its limitations. It cannot be denied that a single autopsy experience with less-than-ideal explanations may not be entirely beneficial. The comments from some students which included a preference for a hands-on experience and requests for explanatory narration highlighted their possible different learning styles amongst the students. Similarly several workers [16-18] reported that students with kinaesthetic learning styles were eager for a hands-on experience while the audio and visual learners learnt by listening and watching the procedure to acquire new knowledge. In an ideal situation a varied form of teaching styles would be preferred to allow for different learning styles that could cater for a wider range of students. However, this may not be possible in a one-time autopsy viewing. We would recommend an opportunity for any interested students to come back for a more interactive autopsy experience where they may actually assist in the procedure with guidance.

Some student groups complimented the standard of teaching given by the pathologists while others noted poor student-teacher communication. This controversy of opinions reflected that the different attending pathologists for different post-mortems resulted in different learning experiences. The students' experience and learning was influenced by the pathologists' communication, skills and professionalism [13,19,20].

Although the majority of students were appreciative of the educative value of autopsy and were tolerable to the

experience, twenty-four students (18.6%) were not. These students felt distressed and were uncomfortable with the whole experience. The students described the experience as distasteful, nauseating and alarming. Benbow [12] reported a similar proportion (20%) of his students describing the experience as distasteful. The students should have been prepared psychologically before viewing autopsies to avoid unpleasant reactions in order to reap the benefits of the procedure [14,21,22]. Our medical curriculum included three one-hour-lectures introducing students to the use of autopsy in forensic pathology and other aspects of forensic autopsy. However, the potential psychological reactions were unfortunately not covered in these lectures. In many medical schools, students' emotional and psychological reactions to confronting situations are often overlooked in medical training. One suggestion may be to incorporate preparatory talks or small-group debriefing sessions for students to deal with their experience of death and discuss their reactions to the autopsy procedure. This would help buffer the experience psychologically. We should be mindful of the negative emotions some students may experience, particularly if they were recently bereaved. These students who were adversely affected should be supported and provided an opportunity for debriefing or counselling.

Most of the students (69.8%) agreed with Geller [23] who reported that most religions do not forbid autopsy. However, a handful of the students (9.3%) felt there were some elements of disrespect for the dead during the autopsy procedure. They felt the bodies and organs should be handled with more care and stated that a quieter environment during the procedure was more appropriate and respectful to the deceased. This opinion was shared across medical students in other reported studies [14,20,24]. De Villiers and Ruhaya [24] reported that 22% of their students considered the bodies were handled disrespectfully during autopsy. In their study, students recommended anonymity of the deceased, fewer observers viewing the procedure, more respectful environment and careful handling of organs by morticians. Perhaps feedback to the mortuary staff may help curtail any inappropriate behaviour and improve the learning experience.

CONCLUSION

The viewing of an autopsy could be a positive experience where students could learn many aspects of medicine in addition to the legal and ethical issues relating to deaths. However, there were limitations. The teaching autopsy, if properly executed and utilised, could bring about a multitude of benefits as an educational tool. There was a variety of emotions displayed by students towards this experience but the

majority were acceptable to the procedure. Students perceived autopsy viewing as beneficial and most of them recommended this as an educational tool in the medical curriculum. A true autopsy experience could provide lasting impressions that cannot be easily replaced by computer programs or virtual tools [10].

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