

PERCEPTION TO CADAVER DISSECTION AND VIEWS ON ANATOMY AS A SUBJECT BETWEEN TWO PIONEER COHORTS IN A KENYAN MEDICAL SCHOOL

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ABSTRACT

Cadaver dissection has been used as the main method of teaching human anatomy for the last five centuries. There are emerging concerns on the negative consequences of cadaver dissection on medical students, leading to suggestions on use of alternative technological advancements to cadaver dissection. However, literature on medical students' perceptions on cadaver dissection and their opinions on anatomy as a subject is scanty particularly for newly established medical schools. We provided a structured questionnaire with 17 items requiring 'yes, no or undecided' responses and 6 items with Likert-type questions ranging from strongly agree to strongly disagree to all preclinical students pursuing Bachelor of Medicine and Bachelor of Surgery at the new school of Medicine, Kenya Methodist University. Out of a total of 78 students, 75 correctly filled the questionnaires and were analyzed. An overwhelming majority (85.3%) found their first visit to the dissection room exciting. Most consider dissection the best method of learning anatomy, and do not support the view that it should be replaced by computer aided programs or plastic models. Despite most students indicating that they like anatomy, and find it exciting, very few are willing to take up careers as anatomists. More emphasis needs to be placed on pre-dissection training and counseling to make the experience better for students. There is need to mentor students on taking up anatomy as a career, in view of the great need for anatomists in the region.

Key words: Dissection, Perceptions, Cadaver, Anatomy

INTRODUCTION

Dissection has been the central pillar of anatomy learning since renaissance (Rajkumari et al., 2008). Cadaver dissection is a daunting experience, and is widely regarded as the first rite of passage in medical training. There is little consensus on the best mode of teaching anatomy, with some authors reporting that prosected specimens can impart similar knowledge as traditional dissection (Jones et al., 1998), while others report that traditional dissection confers greater advantage (Yeager, 1981).

Whereas students gain solid knowledge about the human body through cadaver dissection, they also confront core aspects of their own

humanity (Gustavson, 1988). Negative consequences of cadaver dissection among medical students are an emerging concern. Although many studies report positive attitude and even excitement among students attending dissection (Dinsmore et al., 2001, Rajkumari et al., 2008), there are reports of traumatic experiences (Abbay et al., 2012). Hancock et al (1998) report that the process of cutting, dismembering, mutilating and disassembling a dead body is outside the realm of everyday experience, more so to students with little or no previous exposure to dead bodies.

Most studies on medical students' perceptions and attitudes to cadaver dissection have been

done in old and established medical schools. To the best of our knowledge, literature in new medical schools is lacking. This study therefore

looked at the perceptions and attitudes of two pioneer classes of medical students to cadaver dissection.

MATERIALS AND METHODS

This was a descriptive cross-sectional, questionnaire-based study, conducted in the department of Human Anatomy, School of Medicine and Health Sciences, Kenya Methodist University, Kenya. The Bachelor of Medicine and Bachelor of Surgery programme was introduced in Kenya Methodist University in 2012. This study was conducted among the first two pioneer classes; all 45 first year students and 33 second year students undertaking Human Anatomy course towards attainment of Bachelor of Medicine and Bachelor of Surgery degree. All consenting first year medical students filled questionnaires immediately after their first dissection session, while second year medical students filled the questionnaires the

following day. The questionnaire had three sections; socio-demographic information, a 17 question section on emotional impact of dissection, anxiety, excitement, alternatives to dissection and ethical considerations in dissection, and a 6-statement section on students' opinions to anatomy as a subject. In the second part, students were supposed to tick yes, no or undecided, while the third part had five alternatives, ranging from strongly agree to strongly disagree. The objectives of the study were explained to the students. Data was entered into Epi-info version 7 for analysis. Descriptive statistics like means and frequencies were used to analyze the variables.

RESULTS

Out of a total of 78 students, 75 (96.2%) completed the questionnaires, 42 of them being in their first year of study and 33 in second year. The mean age was 20.2 +/-1.6 years. Other socio-demographic characteristics are shown in the table 1 below

Table 1: Sociodemographic characteristics of study respondents

| Characteristic | | Number and % of students |
|------------------------------------|------------------|--------------------------|
| Gender | Male | 36 (48%) |
| | Female | 39 (52%) |
| Religion | Christian | 65 (86.7%) |
| | Muslim | 5(6.7%) |
| | Hindu | 1 (1.3%) |
| | Other | 2 (2.7%) |
| | No response | 2 (2.7%) |
| Occupation of father/male guardian | Clinician/doctor | 16 (21.3%) |
| | Others | 55 (73.3%) |

| | | |
|--------------------------------------|------------------|----------|
| | No response | 4 (5.3%) |
| Occupation of mother/female guardian | Clinician/doctor | 12 (16%) |
| | Others | 36 (48%) |
| | Housewife | 21(28%) |
| | No response | 6 (8%) |

Majority of the students found their first visit to the dissection room exciting (85.3%). A third of the respondents (30.7%) felt emotional shock at initial exposure to the cadaver, but the shock wore off gradually in 87% of them. There was an overwhelming favorable attitude towards human anatomy, with most students agreeing that dissection should not be replaced by computer models (72%), gives better results than prosected specimens (96%) and is indispensable for learning. *Table 2* summarizes the attitudes towards cadaver dissection. Although most students like anatomy as a subject, most would not choose a career in anatomy, but would choose a career that involves human anatomy (*table 3*).

Table 2: Respondents' responses on attitudes towards cadaver dissection and the subject of human anatomy

| | QUESTION | YES (%) | NO (%) | UNDECID ED (%) |
|----|--|-----------|-----------|----------------|
| 1 | Did you find your first visit to the dissection room exciting? | 64 (85.3) | 6 (8) | 5 (6.7) |
| 2 | Were you upset at the beginning of dissection? | 8 (10.7) | 60 (80) | 7 (9.3) |
| 3 | Did you feel any emotional shock at initial exposure to cadaver? | 23 (30.7) | 48 (64) | 4 (5.3) |
| 4 | If so, whether the shock decreased gradually? | 20 (87) | 3 (13) | 0 |
| 5 | Did you have any apprehension to handle the cadaver directly? | 22 (29.3) | 46 (61.3) | 17 (22.7) |
| 6 | Did you experience considerable anxiety and stress immediately before and during dissection? | 22 (29.3) | 47 (62.7) | 6 (8) |
| 7 | Do you prepare mentally for dissection of human cadaver? | 51 (68) | 21 (28) | 3 (4) |
| 8 | Do you ever think that the cadaver you dissected was once a living human being like you? | 62 (82.7) | 10 (13.3) | 3 (4) |
| 9 | If so, do you ever have any sympathy and respect for him/her? | 54 (87) | 8 (13) | 0 |
| 10 | Do you have any prior experience of a dead human body before entering the dissection room? | 38 (50.7) | 37 (49.3) | 0 |
| 11 | If so, does the prior experience help you in developing a better coping mechanism to adjust to cadaver dissection? | 35 (92.1) | 3 (7.9) | 0 |
| 12 | Do you think that dissection enhances the skill of thinking | 69 | 3 | 3 |

| | | | | |
|----|---|--------------|--------------|------------|
| | in a logical manner? | (92) | (4) | (4) |
| 13 | Do you think that dissection gives the best method for learning anatomy? | 74 (98.7) | 1 (1.3) | 0 |
| 14 | Do you think that cadaver dissection for anatomical learning is ethically acceptable? | 58 (77.3) | 11 (14.7) | 6 (8) |
| 15 | Do you think that Cadaver dissection technique can be replaced by plastic models, computer assisted training programme etc .in the near future? | 18 (24) | 54 (72) | 3 (4) |
| 16 | Do you think that actual hands-on training on cadaver dissection gives better results than demonstration of prosected Specimen? | 72 (96) | 2 (2.7) | 1 (1.3) |
| 17 | Do you think that cadaver dissection is still considered important and indispensable in Anatomy learning? | 69 (92) | 5 (6.7) | 1 (1.3) |

Table 3: Respondents opinions on cadaver dissection and human anatomy

| Statement | Strongly agree (%) | Agree (%) | Neutral (%) | Disagree (%) | Strongly disagree (%) |
|--|--------------------|-----------|-------------|--------------|-----------------------|
| I dislike anatomy as a subject | 6 (8) | 3 (4) | 4 (5.3) | 16 (21.3) | 46 (61.3) |
| I find the dissection experience distasteful | 1 (1.3) | 3 (4) | 6 (8) | 22 (29.3) | 41 (54.7) |
| I like anatomy and find it exciting | 47 (62.7) | 19 (25.3) | 7 (9.3) | 0 | 2 (2.7) |
| I would choose anatomy as a career | 16 (21.3) | 15 (20) | 30 (40) | 8 (10.7) | 6 (8) |
| I would recommend anatomy as a career to my peers | 23 (30.7) | 19 (25.3) | 26 (34.7) | 2 (2.7) | 5 (6.7) |
| I would not choose a career which involves anatomy | 7 (9.3) | 2 (2.7) | 9 (12) | 10 (13.3) | 47 (62.7) |

DISCUSSION

Findings of the present study demonstrate a favourable outlook to cadaver dissection and its indispensability in anatomy learning. Although coming from two pioneer cohorts in a newly established medical school, these findings demonstrate that medical students are eager to learn from the cadaver, their 'first patient.' This is despite mounting concerns over the traumatic effects of dissection and its implications to subsequent education and

practice (Charlton et al., 1994). Distressing aspects of cadaver dissection include the sight and smell of dead bodies, shock at confronting death, desecration and dismemberment, dehumanization and invasion of privacy (Hafferty, 1988). There are also concerns that the practice of cadaver dissection may remove the fear factor and the urgency to save actual patients, since the medical students become accustomed to death and suffering.

Our study revealed that 85.3% of the respondents found their first visit to the dissection room exciting. This is in agreement with previous studies in Africa (Izunya et al., 2010, Mulu et al., 2010, Oyeyipo and Falana, 2012) and elsewhere (Rajkumari et al., 2008, Kemeir, 2012, Khan and Mirza, 2013). Only 10.7% of the respondents were upset at the beginning of dissection, while 30.7% experienced emotional shock at initial exposure to the cadaver. This is in concordance with the reports by Rajkumari et al. 2008, but contradicts the findings by Nnodim et al (1996) who reported that over three-quarters of the students were upset at the beginning of dissection. Our figures for emotional shock are lower than those reported by Izunya et al., 2010 in a Nigerian medical school. This may be attributable to extensive counseling done on our cohorts before dissection, which has previously been shown to significantly reduce stress (Ajao et al., 2008). Out of the 23 (30.7%) students who reported experiencing emotional shock at initial encounter to the cadaver, 87% reported a gradual decrease in shock, a trend similar to what has been previously reported by Mulu et al. (2010)

We found that 29.3% of the students were apprehensive about handling cadavers directly, while 29.3% experienced considerable anxiety and stress immediately before and during dissection. This is lower than the 36.7% and 35% reported for apprehension and anxiety respectively by Oyeyipo and Falana (2012). This may be caused by poor prior knowledge on what anatomy and cadaver dissection entails.

A majority of our study respondents (68%) reported adequate mental preparation for dissection. This indicates the seriousness and attention they give to the learning of anatomy, and this may possibly explain the relatively lower levels of anxiety, apprehension and emotional shock on initial exposure to cadavers among this group. It has been reported that sometimes the urge and strong interest in medicine as a career motivates students and lowers levels of mental stress while increasing their preparedness (Rajkumari et al., 2008).

Over half of the respondents (50.7%) had prior experience with a dead body, and out of these, 92.1% reported that the experience conferred them better coping mechanism to cadaver exposure. Previous authors suggest that pre-clinical students develop coping mechanisms that enable them to view cadaver dissection as an occupation (Charlton et al., 1994). Parker (2002) reported that students with prior exposure with a dead body will be better equipped to deal with issues surrounding death and are more aware of medical uncertainties.

Expectedly, a majority (92%) report that dissection enhances logical thinking, while 97% prefer dissection as the best method of learning anatomy. This is in agreement with previous authors that generally, medical students look forward to cadaver dissection (Cahill and Leonard, 1997, Izunya et al., 2010). Further, 92% of our students think that cadaver dissection is an indispensable tool in anatomy learning, and gives better results than prosected specimens according to 96% of the correspondents. This is supported by several past studies which have reported students' preference for dissection than prosected specimens, as it enhances understanding of the objectives of the course (Rajkumari and Singh, 2007., Parker, 2002), but is at variance with reports by Bernard (1972) Nnodim et al., (1996) and Izunya at el., (2010). A further proof of this preference in the current study population is the finding that only 24% would prefer replacement of cadaver dissection with plastic models or computer assisted programmes. Parker (2002) reports that cadaver dissection confers better three-dimensional appreciation of human anatomy as opposed to plastic models.

According to 77.3% of the students, cadaver dissection is ethically acceptable; while 82.7% agree that cadavers were once living humans like them and 87% had sympathy and respect for them. This is in concordance with other studies done in African medical schools (Izunya et al., 2010, Oyeyipo and Falana, 2012). There is need to emphasize the sanctity of the cadaver as a human specimen, so as to

inculcate into students carefulness and empathy, which is important in the subsequent medical practice.

Regarding the opinion of respondents on cadaver dissection and human anatomy, we found overwhelmingly favourable opinions, with majority disagreeing to the statement that they dislike anatomy, while 62.7% and 25.3% strongly agree and agree respectively that they like anatomy and find it exciting. This is in agreement with previous findings (Anand et al., 2004), that medical students generally like anatomy as a subject. However, about 40% are neutral on choosing anatomy as a career, while 21.3% and 20% strongly agree and agree respectively that they would choose anatomy as a career. Majority would recommend anatomy as a career to their peers, and would also pursue a career that involves anatomy. In an Indian study, only 35% of the respondents reported willingness to become anatomists, with 41% thinking that it is a lowly profession compared to clinical specialties (Anand et al., 2004). It is therefore evident that while medical students appreciate the usefulness of anatomy as a subject, few are willing to pursue it. This calls for immediate intervention measures to increase career interest in the subject, in the

light of expansion of medical training in Kenya, which will invariably require anatomists. Financial consideration is a major criterion for career selection (Anand, 1992) and basic sciences are associated with low financial returns, possibly further explaining the low interest in anatomy as a career.

CONCLUSION

To the best of our knowledge, this is the first study documenting students' attitudes and opinions to cadaver dissection and human anatomy in a pioneer cohort in a newly established medical school. Our findings and subsequent literature search allows us to infer that cadaver dissection still remains the most preferred and indispensable teaching tool for human anatomy, despite technological advancements. However, there is need to prepare and counsel students adequately to enable them cope better with their dissection experience. Interest in anatomy as a career remains low, as has been reported elsewhere, which is against a growing need to train more anatomists due to expansion of medical education. Better remuneration, mentorship and career guidance should be instituted to spark interest in this important basic science.

REFERENCES

1. Ajao MS, Alimi TA, Yahya WB, Eweoya OO, Jimoh OR, Olawepo A. 2008. Gender effects on physical reactions of health science students at first encounter with cadaver using Pearson chi-square test. *Research Journal of Medical Sciences* 2:100-03.
2. Anand BK. 1992. Manpower recruitment of medical teacher, measures for meeting the requirements. *Indian Journal of Medical Education* 31: 2, 50-54.
3. Anand MK, Raibagkar CJ, Ghediya SV, Singh P. 2004. Anatomy as a subject and career option in view of medical students in India. *J. Anat. Soc. India* 53(1):10-14
4. Bernard, G.R. 1972. Prosection demonstrations as substitutes for the conventional human gross anatomy laboratory. *J. M ed. Educ* 47: 724-728.
5. Cahill, D.R. and R.J. Leonard. 1997. The role of computers and dissection in teaching anatomy: A comment (Editorial). *Clin. Anat* 10: 140-141.
6. Charlton R, Dovey SM, Jones DG, Blunt A. 1994. Effects of cadaver dissection on the attitudes of medical students. *Med Educ* 28:290-5.
7. Dinsmore CE, Daugherty S, Zeitz HJ. 2001. Student responses to the gross anatomy laboratory in a medical curriculum. *Clin Anat* 14:231-6.
8. Gustavson N. 1988. The effect of human dissection on first year students and implications for the doctor-patient relationship. *J Med Educ* 63: 62-64.
9. Hafferty FW. 1988. Cadaver stories and the emotional socialization of medical students. *J Health Soc Behav* 29:344-56.

10. Hancock, D., Williams, M, Taylor, A. 1998. Psychological impact of cadavers and prosections on physiotherapy and occupational therapy students. *Australian Journal of Physiotherapy* 44:247-255
11. Izunya, AM, Oaikhena GA, Nwaopara AO. 2010. Attitudes to cadaver dissection in a Nigeria medical school. *Asian J. Med.Res* 2: 89-95
12. Jones LS, Welsh MG, Terracio L. 1998. First year medical students' views on computer programs: Give us our teaching assistants. *FASEB J* 12:5635.
13. Khan HM, Mirza TM. 2013. Physical and psychological effects of cadaveric dissection on undergraduate medical students. *J Pak Med Ass* 63:831-834
14. Kemeir MA. 2012. Attitudes and views of medical students toward anatomy learnt in the preclinical phase at King Khalid University. *J. Fam Community Med* 19: 190-3
15. Mulu A, Muche A, Tegabu D. 2010. Assessment of the attitude and views of second year medical students towards cadaver dissection in anatomy course. *Ethiop. J. Health Biomed Sci* 2:111-117.
16. Nnodim JO. 1996. Preclinical student reactions to dissection, death, and dying. *Clin Anat* 9(3): 175-82.
17. Oyeyipo IP, Falana BA. 2012. Attitude of preclinical students to cadaver dissection in a South West Nigerian Medical School. *Int. J. Trop.Med* 7 (1):1-5
18. Parker, L.M. 2002. What's wrong with the dead body? Use of the human cadaver in medical education. *Med. J. Aust* 176(2): 74-76.
19. Rajkumari A, Das BK, Sangma GTN, Singh YI. 2008. Attitudes and views of first year medical Students towards cadaver dissection in anatomy learning. *Calicut Medical Journal* 6(4):1-6.
20. Yeager VL. 1996. Learning gross anatomy dissection and prosection. *Clin Anat* 9: 57-9.