



DETERMINANTS OF CADAVER ACQUISITION AT HUMAN ANATOMY LEARNING INSTITUTIONS IN KENYA

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ABSTRACT

Background: Human anatomy instruction in Kenya is based on dissection of cadavers during practical sessions. Institutions get these cadavers using procedures available to them. However, the processes used are not standardized, and several problems are likely to develop during the cadaver acquisition process. Several factors appear to have an impact on the source, availability, and cadaver collection techniques. Some of the issues affecting cadaver acquisition may not be sufficiently addressed by current anatomy practice guidelines. This study evaluated the determinants of cadaver acquisition at human anatomy learning institutions in Kenya.

Methodology: Anatomists and anatomy laboratory personnel handling cadavers in Kenya were interviewed for the study. A cross-sectional study design was used, as well as a purposive sampling strategy. The self-administered surveys were completed by 68 study participants. The data was tallied, loaded into SPSS version 26 for analysis, then plotted into graphs and tables for interpretation. **Results:** Cadavers were mostly acquired from unclaimed bodies (100%). In most situations (80.9%), anatomy laboratory technicians oversee cadaver collection. A cadaver acquisition delay of more than two weeks was reported by 80.88% of respondents. According to 44.12% of respondents, the biggest reason for cadaver collecting delays was the need for financial compensation. Most cadavers (98.5%) are obtained through lobbying at the source. According to 92.6% of responders, defaced or damaged cadavers are mostly rejected. According to 94.2% of respondents, the Kenya Anatomy Act has no instructions on how to obtain cadavers.

Conclusion: The efficiency of cadaver acquisition is affected by several factors that affect both the procedure and the people in charge of procuring the cadavers. Institutions in Kenya lack a comprehensive cadaver acquisition policy that describes the procedure and personnel in charge of procuring cadavers. There is no specified documented protocol or guideline for cadaver acquisition in the Kenya anatomy act.

Keywords: Cadaver acquisition, Unclaimed bodies, Anatomy act

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INTRODUCTION

One of the most difficult duties for an anatomist is acquiring cadavers for anatomical study. The recent expansion in the number of institutes training medical and allied scientific courses has resulted in a scarcity of cadavers for anatomical investigations. The demand for cadavers has skyrocketed and now exceeds the available supply. This imbalance in demand and availability has produced a competitive

climate in which institutions compete for the few accessible cadavers (Singh et al., 2011). According to Kramer et al. (2019), a study by Humphrey, 1973; Jones, 1994; Magee, 2001; McLachlan and Patten, 2006; Halperin, 2007; Buklijas, 2008; Hildebrandt, 2009; Mitchell et al., 2011. In addition to such dubious sources, some cadavers are obtained as body donations from hanged criminals. According to Nnadozie (2013), as described in Kramer et al. (2019), the

cadavers used are frequently unclaimed bodies. Unclaimed bodies come from a variety of origins, many of which are disadvantaged by cultural or ethnic biases or have low financial standing. Dasgupta (2004), as reported in Kramer et al. (2019), further stated that cadavers of low socioeconomic class and of African descent account for around 20% of cadavers in medical schools in Canada and the United States of America.

According to Anyanwu et al. (2011)'s journal article titled "The use of unclaimed bodies for anatomical studies," using unclaimed cadavers for anatomy training is a comparable documented practice. According to this article, most countries rely on unclaimed bodies as a source of cadavers. However, the findings of this study, as well as those of the articles we reviewed, could not adequately explain why there is such extensive dependence on unclaimed cadavers. Anecdotal evidence suggests that using unclaimed cadavers is a practical and convenient approach to acquire cadavers, albeit this is only true in particular cases. Additional research by Biasutto et al. (2014) demonstrated the attractiveness of unclaimed bodies as a supply of cadavers. Most countries appear to rely on unclaimed bodies as a source of cadaver. Most countries' legislative frameworks have not been updated to include cadaver acquisition. Depending on the country and geographical area, many techniques of obtaining cadavers for anatomical investigations have been used. Because of religious convictions, several countries have had to import cadavers.

Medics and anatomists are likely to oppose individual body donation after their demise. Body donation appears to be an uphill task in the African setting including Kenya. Several factors determine the acceptance and implementation body donation program in the general population. Amongst anatomy practitioners and the highly informed group of intellectuals, culture and religion rank high as clear barriers that determine the possible implementation of such a body donation program (Mwachaka et al., 2016).

Body donation is an uncommon occurrence in Kenya, and it involves individuals who willingly consent in writing before their death to their bodies being used for anatomy research after their death. The Kenya Health Act number 21 of 2017 defines regulatory standards for body, organ, and tissue donation but is ambiguous on the development of a cadaver body donation programme in Kenya (GoK & NCLR, 2017).

The Kenya Anatomy Act specifies the establishment of anatomy teaching by institutions training anatomists or anatomy as a core subject in medical disciplines. The statute, however, is unclear on cadaver acquisition, and no provision is made for the acknowledgment of morticians who play a critical role in cadaver acquisition (NCLR, 2012).

The determinants of cadaver acquisition at human anatomy learning institutions where the source of cadavers, responsible persons in cadaver acquisition, reasons for late receipt of cadavers, criteria for rejecting cadavers, and the application of the anatomy act in cadaver acquisition were investigated in this study.

MATERIALS AND METHODS

This study used a cross-sectional design and a purposive sampling technique. The study enrolled a total of 68 study participants. Staff in the Department of Human Anatomy at Maseno University, Uzima University, Masinde Muliro University of Science and Technology, Kabarak University, Egerton

University, Kenya Methodist University, University of Nairobi and Jomo Kenyatta University of Science and Technology; who were active in teaching anatomy and/or collecting cadavers were chosen, whereas those who did not consent to the study and new employees who may not grasp cadaver

acquisition processes were excluded. Self-administered closed and open-ended questionnaires were utilized to obtain data from study participants. For analysis, data was imported into SPSS version 26.0. Variables regarding determinants of cadaver acquisition were collected and analyzed.

RESULTS

The results of this study indicate that unclaimed bodies are the source of cadavers. This was reported by 68 respondents (Table 1). No Cadaver was received as body donation. Of the 68 respondents, 80.9% (55) noted that it's the duty of the technicians to solicit and acquire for cadavers, only 1 respondent said it was a multidisciplinary process while 3 (4.4%) respondents noted that it was the duty of the teaching staff to make cadaver acquisition (Table 2). Most of the respondents (80.88%) reported receiving cadavers more than two weeks after approval for cadaver collection (Figure 1). Only 4.41% of the respondents agreed that they collect cadavers within one week after approval.

Most of the responded (44.12%) noted that the most common delay in releasing cadavers was due to bribes/financial kickback demanded by the morticians and other officials who have gate keeper's access to teaching specimen. Other factors associated with delayed release of cadavers included bureaucratic legal approval (39.7%), arrogance on part of the mortician releasing the cadavers and the application of other procedures when releasing the cadavers (Figure 2).

Majority (98.5%) of the respondents agreed that the best way of searching for cadavers is through lobbying and solicitation from mortuaries across the country whilst only one (1.5%) respondent noted that they check the data base for availability of cadavers (Table 3).

Of the total 68 respondents, 92.65% would reject cadavers due to defaced, damaged or lack of body parts (Figure 3). Only 5 (7.35%)

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respondents would not collect cadavers due to unclear medical history.

Of the total 68 respondents, 46 (68.1%) reported that the Kenya Anatomy act was not clear on cadaver acquisition whilst 14 (20.3%) of the respondents noted that the act had no provisions for cadaver acquisition. It was also observed that the act lacks provision for guidance on cadaver source as reported by 8(11.6%) of the respondents (Table 4).

Table 1: Source of cadavers.

		Male	Female	Total	
Source of cadaver	Unclaimed bodies	59	9	68	100.0%
	Body donation program	0	0	0	0.0%

Table 2: Responsible persons for Cadaver acquisition

	Male	Female	Total	
Anatomy professor	1	1	2	2.9%
Associate professor	1	0	1	1.5%
Lecturer	0	0	0	0.0%
Tutorial fellow	8	1	9	13.2%
Lab techs	48	7	55	80.9%
Multidisciplinary	1	0	1	1.5%

Table 3: Information on availability of cadavers.

		Male	Female	Total	
Information on availability of cadavers	Data Base	1	0	1	1.5%
	Lobbying	58	9	67	98.5%

Table 4: Gaps of anatomy act in cadaver acquisition.

Response	Frequency	Percent
Not clear on cadaver acquisition	46	66.7
No provision on cadaver acquisition	14	20.3
Lacks provision on cadaver source	8	11.6
Total	69	100.0

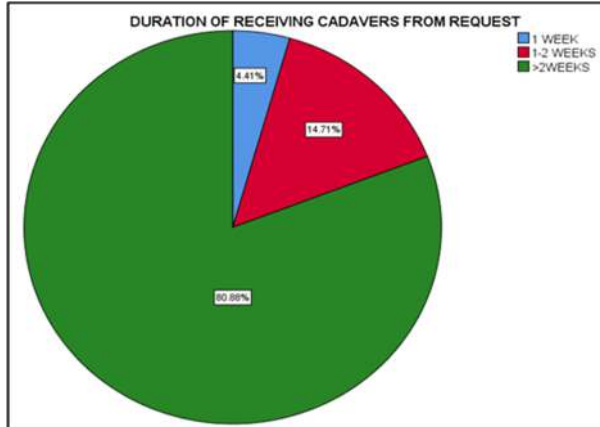


Figure 1. Duration of receiving cadaver after request.

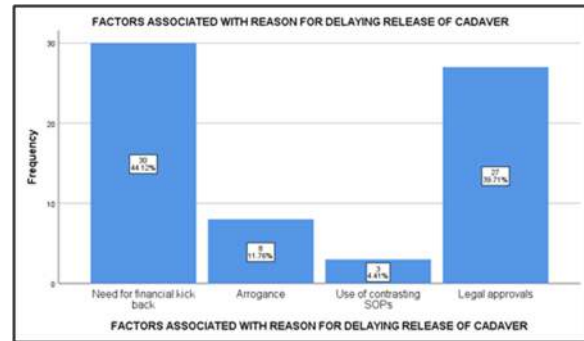


Figure 2. Factors associated with reasons for delaying release of cadavers

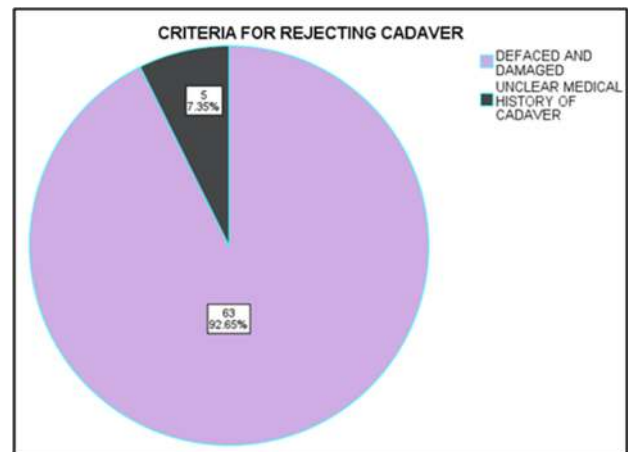


Figure 3. Criteria for rejecting cadaver.

DISCUSSION

There According to the findings of this study, the vast majority (100%) of cadavers were obtained as unclaimed bodies. These findings are congruent with those of (Anyanwu *et al.* 2011; Tesfaye *et al.* 2021), who discovered that 100% and 69.44% of acquired cadavers, respectively, came from unclaimed cadavers. The findings of this study, however, contradict with those of Kramer *et al.* (2019), who got 96.8% of cadavers from cadaver donations. This could imply that, notwithstanding the popularity of unclaimed bodies as a source of cadaver, corpse donation is a viable cadaver acquisition alternative. Anatomy laboratory technicians are predominantly used (80.9%) in the cadaver procurement process in this study. These findings are consistent with the findings of Tesfaye *et al.* (2021), who discovered that the majority (59.2%) of the individuals

charged with procuring cadavers were morticians. According to the findings of this study, anatomy laboratory workers who have received additional training as morticians are the primary players in cadaver collection. According to the findings of this study, anatomy laboratory personnel are primarily in charge of procuring cadavers. These experts play an important role in the anatomy department, although they are not recognized as anatomists under Kenya's anatomy statute. This cadre of professionals has no recognized professional legislation guidelines. As a result, the question of the legislative structure for this cadre in anatomy practice is still not clear (NCLR, 2012). According to the findings of the current study, the average turnaround time for obtaining cadavers in Kenyan anatomy teaching institutions is more than two weeks. The cadaver procurement procedure is time-

consuming, beginning when organizations in need of cadavers contact many potential mortuaries to inquire about any available unclaimed body. These are bodies that have been unclaimed by family or next of kin for at least three months. According to anecdotal evidence, institutions will first contact morticians in mortuaries to inquire about unclaimed dead.

From anecdotal reports, during cadaver acquisition, once the unclaimed cadaver is assessed, the institution in need is expected to organize for their own means of transporting the body and this should be done a day prior or on the day of disposal. The court order has no specifications for reserve of cadavers for anatomy learning institutions and they are not covered by that order. The bureaucratic process of enquiry, certification by Public Health Officer and issuance of a court order are some contributing factors to the delayed process of acquiring factors. This finding agrees with Biasutto *et al.* (2014) who reported that human tissues and bodies typically took 6 to 8 weeks to receive. This similarity could perhaps be due to protracted bureaucracies in that study.

The delayed duration in release of acquired cadavers is attributed majorly to the need for financial kickbacks by morticians releasing the cadavers from the mortuaries. Due to the shortage of cadavers and increase in the number of institutions that need cadavers for anatomy studies, a competitive state of cadaver acquisition has resulted from these factors. Once an institution place reservation for unclaimed cadavers, it is not automatic they will receive those cadavers as they must make timely arrangements for collection and in most instances 'motivate' the morticians to reserve the best cadavers and not release them to rival institutions. This 'motivation' entails parting with financial incentives per cadaver reserved and released. Based on the findings of this research, this could be interpreted to mean that cadaver acquisition in Kenya experiences delays beyond 2 weeks

and the need for payment and/or financial kickbacks is a major cause of delay in releasing cadavers from the source.

In this study, lobbying and solicitation from mortuaries were used in the majority (98.5%) of cadaver acquisition cases. The utilization of a reference database for information on available cadavers, based on our findings, is a novel strategy that needs further evaluation to determine its applicability. However, the reference data base for cadavers appears to be a novel strategy but we could not verify the existence of such database and therefore it must have been reported erroneously by 1.5% of the respondents. The practicability of a cadaver data base can be a practical means of reporting and search for cadavers and is likely to mitigate lobbying. Additionally, data base combines with regional zoning for cadavers can ensure rationalization of available cadavers and tracking of cadavers incase legal tussle erupts after cadavers are issued to institutions. The available public health act covers disposal of human remains but lacks provision for issuing the unclaimed human remains for institutions to utilize them for studies. This gap in the legislative framework has likely contributed to a competitive state of first come first serve or highest bidder acquire the best and therefore encourages demand for financial kickbacks and solicitation.

In this study, majority of cadavers (92.6%) that were rejected were disfigured, damaged, or severely mutilated. These findings contrast Rajasekhar & Dinesh Kumar (2021) who reported infectious diseases as the main reason for rejection of cadavers in India. Even though cadaver rejection criteria were typically based on the deterioration and mutilation of such specimens, in contrast, no documented cadaver rejection criteria were identified by the current study. These findings could be interpreted to mean that cadavers are majorly rejected when not

suitable for learning purposes and not due to any other documented reasons.

The results of this study indicate that the anatomy act has numerous inadequacies governing cadaver acquisition. The act in its current form; does not offer (94.2%) guidance on cadaver acquisition, offers no clarification on the acquisition of cadavers for use in anatomy instruction (68.1%) and lacks guidance on the cadaver source. These findings could be interpreted to mean that the anatomy act in its current state does not mitigate any legal issue in cadaver acquisition. Additionally, The Kenya Anatomy act offers no regulatory framework for licensing of practicing anatomists even though the act has provision for licensing anatomy practitioners (NCLR, 2012). In Kenya, anatomists come from a variety of medical fields, including nursing, medicine, clinical medicine, public health, biomedical sciences, and environmental health, among others. Professionals have unique regulatory bodies at the graduate level that offer licensing (Muthaka *et al.*, 2004).

Conclusion

In conclusion the process of cadaver acquisition by institutions is impacted by various factors that affect the timeliness of cadaver acquisition and availability of such cadavers. This study was limited by lack of documented legislative guidelines on some of the issues identified during the process of acquiring cadavers. There are few documented studies on the determinants of cadaver acquisition and the gaps of the Kenya anatomy act. The findings of this study were limited to the information obtained from the anatomists and individuals handling cadavers at the anatomy training institutions.

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