

# Status of Cadaver for Anatomy Education in Medical Schools of Nepal

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## ABSTRACT

**Introduction:** Anatomy is a core subject in medical sciences where cadavers play a pivotal role in understanding the subject. As the number of medical institutions tends to grow the demand for medical resources is increasing. However, the sources of cadavers vary in different geographical regions due to differences in related laws and sociocultural aspects. The predominant sources of cadavers are donated, unclaimed and bequeathed bodies.

**Objective:** This study aims to explore the status of cadavers in medical colleges of Nepal.

**Methods:** A descriptive, cross-sectional study was conducted from 2023 to 2025 in 18 fully functioning medical colleges. Data was collected by a non-probability convenience sampling method. Professionals working in the anatomy departments were contacted via tele-communication after ethical clearance. The authors filled self-structured proforma sheets which included the number, sources, gender of cadavers and the total number students in the medical institutions.

**Results:** Among all medical colleges there were 91 cadavers, predominantly of male gender in the academic year 2023/2024. A total of 1715 students were recruited in these medical colleges. The ratio of cadaver and students was 1:19 and the sources were mostly unclaimed. The ratio of cadaver and students ranged from 1:5 to 1:100.

**Conclusion:** The cadavers being used in the medical colleges were mostly males and unclaimed bodies.

**Keywords:** Anatomy; Cadavers; Medical Education.

## INTRODUCTION

The word anatomy is translated as cutting up in Greek. It is a core subject in basic medical sciences all over the world.

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Cadavers provide a multiple dimensional understanding of the human body in this

subject.<sup>1</sup> To practice medicine and surgery adequately cadaveric dissection provides a good understanding of the human anatomy.<sup>2</sup> Cadavers have been referred to as the first teachers and patients for medical students.<sup>3</sup> The dissection of cadavers is essential to develop a medical professionals cognitive and motor skills and it should not be undermined.<sup>4</sup>

The history of sources of cadavers in the past has been controversial and unethical at times. There were times where cadavers were

obtained by means like robbing.<sup>5</sup> Bodies of criminals were used as sources for cadavers before Anatomy Act in 1832.<sup>6</sup> The Anatomy Act, 1832 allows scholars of anatomy to perform dissection on donated bodies for educational purposes.<sup>7,8</sup> Acts are variable in different regions and states for one Karnataka Anatomy Act, 1957 permits medical colleges to use unclaimed bodies in police custody for anatomical education.<sup>9</sup>

The International Federation of Associations of Anatomists (IFAA) in 2012 recommended avoiding use of controversial sources of cadavers like bodies of criminals and unclaimed bodies and use of only willingly donated bodies.<sup>10</sup> The number of medical institutions in the country is increasing, this has raised demands on resources required for medical education.<sup>8</sup> However, there is a global lack of programs for body donation. Donations of bodies are influenced by social and regulation factors of a country. Variations in laws associated with cadavers among countries and deprivation of rightful ritual procedure are some obstacles associated with lack of body donations.<sup>11</sup> Overlooking the lack of data on the status of cadavers for Anatomy education in Nepal, this study aims to describe the status of Cadavers in medical colleges of Nepal.

## METHODS

This is a quantitative, descriptive, cross-sectional study conducted among 18 fully functioning medical colleges. A census method

was used to calculate the sample size. The study was conducted from 2023 to 2025. A non-probability convenience sampling method was used to collect the data. The authors contacted the Anatomy departments of the 18 fully functioning medical colleges after obtaining ethical clearance (Approval Number: IRC-006-079) from Institutional Review Committee of Madan Bhandari Academy of Health Sciences. Data was obtained voluntarily from professionals working in the Department of Anatomy in different Medical Colleges of Nepal after explaining the study. The data was filled in a self-structured proforma which was sent to three experts for validation. The obtained data was entered into a Microsoft Excel sheet by the authors. The proforma included the total number, sources and gender of the cadavers and total number of medical students in the medical institutions. The age of the cadavers were removed from the proforma as data could not be obtained from the majority of the respondents. Statistical analysis was done using SPSS version 16. The categorical variables were expressed in frequencies and percentage

## RESULTS

A total of 91 cadavers were being used in 18 fully functioning Medical Colleges of Nepal in the Academic Year 2023/2024 which recruited a total of 1715 students. The overall cadaver to student ratio was 1:19. The majority of the cadavers were male (85.7%) and almost all the

cadavers being used were unclaimed bodies (98.9%) as shown in table 1.

**Table 1: General Characteristics of cadavers.**

Gender	N (%)
Male	78 (87.7%)
Female	13 (14.3%)
Sources	
Unclaimed	90 (98.9)
Donated	1(1.1%)
Bequeathed	0
Total	91(100%)

The number of cadavers in medical institutions ranged from one to as high as 18 cadavers in an institution. The cadaver to student's ratio ranged from as low as 1:5 to 1:100 as shown in table 2.

**Table 2: Cadavers in accordance to students recruited per year.**

Students	Institutions	cadavers	Student: cadaver
100	16	1-18	1:6 to 1:100
65	1	2	1:33
50	1	2	1:25

The majority (12) of the institutions had a cadaver to students' ratio of 1:20 and 1:25. Only two institutions had lower than 1:10 ratios which included a private and a semi government institute. The institutions in the study were mostly private medical colleges where the cadaver to students ratio ranged from 1:6 to 1:100 as shown in table 3.

**Table 3: Student to cadaver ratio in accordance to type of institution.**

Type of institution	Number of Institutions	Ratio
Government	1	1:17
Semi-government	3	1:10 to 1:33
Private	14	1:6 to 1:100

## DISCUSSION

Among 18 medical colleges that enrolled a total of 1715 MBBS students a batch had a total of 91 cadavers. The cadavers were mostly males 85.7% and mostly unclaimed (98.9%). Overall the cadaver to student ratio was 1:19. The cadaver to student ratio ranged from as low as 1:6 to 1:100.

Habicht et al 2018, reported the majority of countries all over the world mostly or exclusively relied on unclaimed bodies similar to the status in Nepal. Countries especially from Africa (12/14) and Asia (14/20) mostly were dependent on unclaimed bodies.<sup>10</sup>

Similar to this study, Popoola et al. in 2019, Nigeria reported the source of the cadavers used for anatomy education were predominantly from unclaimed bodies (68.3%). The cadavers were mostly male bodies (92.7%). The cadaver to student ratio was better than the ratio reported in this study (1:5). However, the sources of the bodies, unlike this study, included bodies from armed robbery.<sup>3</sup>

In contrast to this study Osuagwu et al. in 2004, Nigeria reported the majority of the cadavers used in the Anatomy Department were of bandits 22/28 and only 6/28 were unclaimed. Similar to the present study, cadavers were predominantly males 26/28. Predominance of male cadavers being used may deprive medical students of understanding female anatomy.<sup>1</sup>

Appaji et al. in 2012, India reportedly donated and unclaimed cadavers to be the predominant

sources among medical institutions for anatomy education. The study referred to 1:10 as the ideal cadaver to student's ratio. However, only 49% of the institution had an ideal cadaver to student's ratio. In the present study the cadaver and student ratio of 1:10 was found in only 2 institutions.<sup>12</sup> The ratio of cadavers to students for an anatomy practical class is usually managed by dividing the students into two or three subgroups. However, it is evident that donated cadavers are minimal in this part of the world.

Rokade et al. in India, 2012 reported 90.9% of the surveyed medical colleges in India reported inadequate amounts of cadavers. Among the surveyed population only 19.5% of the general public were willing to donate their bodies for anatomic education. The health care professionals had a higher percentage of respondents who were willing to donate their bodies 44.9% for anatomic education. Lack of awareness, religious and cultural beliefs, fear of mishandling and unwillingness not to have one's body dissected are some reasons for the low percentages of willingness among the respondents.<sup>13</sup>

Bharambe et al, 2023, India among 97 anatomists 24.7% reported insufficient cadavers, 26% did not know that death certificates were necessary and 35% did not

know unique identification documentation were required for body donation. The scarcity of cadavers in medical institutions must be acknowledged and donation programs must be introduced. Factors like tradition, legal knowledge, human resources and lack of awareness should be considered while implementing donation programs.<sup>14</sup>

A systematic review in 2023 reported digitized human cadaver may be beneficial for medical students and are more preferred than traditional methods. However, these newer and modern techniques of teaching anatomy would be more efficient when incorporated with the traditional cadaveric trainings.<sup>15</sup>

## CONCLUSION

The cadavers used for anatomical education are mostly from unclaimed sources and of male gender. The cadaver to student ratio is high and donated cadavers are less. Implementation and promoting body donation programs from the policy making levels and introducing alternatives like digitized human cadaver may benefit students in understanding anatomy education.

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**Conflict of Interest:** None.

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