

**Practices of Makerere University Students during Anatomy Dissection.****I. Munabi, J. Ochieng, C.B.R. Ibingira**

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**Background:** The knowledge, skills and practices medical students acquire during gross anatomy dissection are fundamental to the learning of human anatomy and eventual practice of medicine. The changes in the curriculum and the global concerns about how students acquire their anatomical skills and knowledge, made it important to find out what students in our low resource settings do in the anatomy dissection room.

**Methods :** This was a cross-sectional descriptive survey with a qualitative component on two cohorts of 305-second year health professional students on what they do during anatomy dissection practical.

**Results:** The overall response rate was 26.9%. Of the 82 respondents, 35 (42.7%) reported that they only observed the dissection, 25 (31.7%) read the manuals, 20 (24.4%) had actual hands on dissection and one (1.2%) had never dissected. Significantly less male students read the manuals as opposed to doing the hands on dissection (0.18,  $P=0.0007$ ). The interviews highlighted some of the reasons behind the students preferred roles.

**Conclusion:** The students' responses highlight differences between institutional expectations of dissection and the actual student practices. Specific roles like reading the manual and dissecting show significant sexual bias. There is a need to examine of the institutional definition of dissection in relation to its low resource settings.

## Introduction

Gross anatomy dissection laboratory is vital for the learning of human anatomy in most medical schools<sup>1</sup>. The lessons learned through work on the human body are thought to have formed the basis for the beautiful works of art by great artists like Michelangelo<sup>2</sup>. Students working on the human body as part of the anatomy program report to have learned how to work in teams, acquire practical skills, and get emotional preparation for future clinical practice. In addition they get to combine theory and practice, develop familiarization and respect for the body as well as acquire a sense of status with respect to other members of society.

A study on the views of anatomists shows that they agree with most of the student's observations stated above. Anatomist also believe that the student cadaver relationship prepares students for their future patient-doctor relationship<sup>5</sup>. However, the changes

in curriculum and the way students acquire their anatomical skills and knowledge has become a cause for concern for many universities all over the

world<sup>6</sup> While most literature deals with educational arguments related to methods of instruction delivery and participants perceptions of the dissecting process none looks at what is happening in the dissection room<sup>3,5,7,8,9</sup> In our low resource settings where staffs are limited and the student to cadaver ratio is large, it was important to find out what students do in the anatomy dissection room. The main objective of this study was to identify students' practices during anatomy dissection.

## Methods

This was a cross-sectional descriptive survey with a qualitative component on what happens during the anatomy dissection practical. The study was carried out at the faculty of medicine, Makerere University. The study involved two cohorts of 2<sup>nd</sup> year health professional students who were studying anatomy as a course. The first

cohort was surveyed in 2005 and the other in 2007. A total 305 questionnaires were distributed to students.

In an effort to determine the practices of students, we had questionnaires distributed, filled and later returned to the investigators by the study participants' class representatives from each cohort of students. In the 2007 cohort, an additional convenient sample of thirty students was selected for a comprehensive follow up interview. Their selection according as per the best ten, middle ten and worst ten performances in a class multiple choice question test. Only 24 students turned up for the interview, each was asked to describe their usual role during the dissection practical.

**Results**

Three hundred and five (305) questionnaires were handed out to two cohorts of students during their second year of study at the faculty of medicine Makerere University. Only 82 questionnaires were returned giving a response rate of 26.9 percent. In the first cohort in 2005, of the 150 eligible students surveyed only 23 returned their filled questionnaires to the investigators. This resulted in a 15.3 percent response rate. There were 11 female and 12 male respondents, giving a male: female ratio of

approximately 1:1. Of the 23 students, 26.1 percent usually dissect, 43.5 percent observed, while 30.4 percent read the manual for the dissectors (Table 1).

In the second cohort surveyed in 2007, of the 155 eligible participants only 59 filled questionnaires were returned. This resulted in a 38 percent response rate. The male were 31 and 28 females giving a ratio of almost 1:1. Out of 59 students interviewed, only 23.7 percent usually dissected, 42.4 percent observed, 32.2 percent read the dissection manual for the dissectors. One student (1.7 percent) had never done any of these roles. Both cohorts show a similar pattern of participation in the dissection laboratory as evidenced by the total percentage results in respect to the roles in dissecting. (Table 1) The odds ratio for a female student observing across the two cohorts was 1.91 giving a p-value of p= 0.47. The odds ratio for a male student reading a manual as opposed to dissection across both cohorts was 0.18 giving p-value of p=0.007, which is highly significant.

In addition, 30 students from the 2007 cohort were invited for an in depth interview on what their roles are during the dissection practical. Only 24 of the 30 students actually participated in the interview to describe their preferred roles in dissection roles. The group of 24 students was made of 13 males and 11 females.

**Table 1.** Reported participation in dissection laboratory for both cohorts

Activity	Year 2 cohort 2005 No. (%)	Year 2 cohort 2007 No. (%)
Observing	10 (43.5)	25 (42)
Reading the manual	7 (30.4)	19 (32)
Actual dissection	6 (26.1)	14 (23.7)
Never done	0	1 (1.7)
<b>Total</b>	<b>23</b>	<b>59</b>

**Table 2.** Students reported participation according to sex for the first cohort

		Sex (%)		Total (%)
		Male	Female	
Role in dissection	Observing	4 (40)	6 (60)	10 (43.5)
	Reading the manual	2 (28.6)	5 ((71.4)	7 (30.4)
	Actual dissection	5 (83.3)	1 (16.7)	6 (26.1)
<b>Total</b>		<b>11 (47.8)</b>	<b>12 (52.2)</b>	<b>23 (100)</b>

**Table 3.** Students reported participation according to sex for the second cohort

		Sex (Percentage)		Total (%)
		Male	Female	
Role in dissection	Observing	14 (56)	11 (44)	25 (42.4)
	Reading the manual	7 (36.8)	12 (63.2)	19 (32.2)
	Actual dissection	10 (71.4)	4 (28.6)	14 (23.7)
	Never done	0	1 (100)	1 (1.7)
<b>Total</b>		<b>31 (52.5)</b>	<b>28 (47.5)</b>	<b>59 (100)</b>

The following were some of the responses: "Observing initially had hands on later (in the program)" from a female student, "dissected limbs and brain" from a male student, "liked dissecting, some people not interested in actual dissecting" from another male student. One female student reported, "Participated actively but no hands on" while another male student said "I dissected in year one but preferred to observe in year two" yet another admitted to having used videos to learn anatomy. Another response was "formalin sparks off allergy" from a female observing student.

### Discussion

The overall response rate was 26.9% for the survey which was low but acceptable since these surveys tend to attract low response rates<sup>3,10,11</sup>. However, the interview group gave a response rate of 80 percent as 24 out of 30 invited students participated. Makerere dissection group normally comprises a team of eight to ten students with a fair gender representation, the team works together for a total period of the anatomy courses of two academic years which gives about 480 scheduled hours although many students do dissect during their free time. This is comparable to duration of anatomy dissection in other medical schools<sup>3,5,12</sup>. During this period, students develop teamwork, leadership and communication skills as the dissector has the responsibility of demonstrating to the rest of the group what he finds during dissection, while the reader of the manual should be articulate and able to instruct the dissector on the procedure to follow. The

rhythm of the dissection laboratory is the same; observation to distinguish observable structures from unknowns; interpretation of what you see to develop a differential identification; and further dissection/exploration to distinguish between the possibilities of the differential identification. This process involves the scholarship, discussion and teamwork that is promoted by the small group formats of learning<sup>13</sup>. It is this process of small group learning that eventually impacts on the knowledge the students take with them into clinical practice<sup>14</sup>. The teamwork also fosters good working relationships that allow the both the dissectors and non-dissectors to share in the learning experience as they revise together actively.

In defining the roles of students during dissection, it was observed that out of 82 students, respondents, only 20 (24%) of the students reported that they usually did the actual dissection. This figure is also close to the figures of each of the cohorts alone that were 26 and 23.7% respectively. The dissectors were usually the male students. The number of students who preferred reading the dissection manual was 26 (31.7%) which was higher than the dissecting group and mainly comprised of female students. This highlights a gender dependent distribution of the roles during the practical confirmed by the significant odds ratio for a male student reading a manual as opposed to dissection across both cohorts of 0.18 with a p-value of p=0.007.

There were many reasons why students preferred to observe and these ranged from personal choice to observe, fear of allergic reactions to leaving room to the more aggressive dissectors. The observing group also admitted to having had no hands on. One female student said she; “participated actively but no hands on.” The big challenge is that this group comprised a high proportion (42.7%). There was no significant sexual preference in this group as shown by the odds ratio for a female student observing across the two cohorts of 1.91 giving a p-value of  $p=0.47$ . The size of this group poses a potential threat to medical practice as they may not acquire the desired levels manual dexterity that are vital to meet the expectations of our low resource settings. In our setting, on completion of the undergraduate degree, a graduate works as all round general practitioner performing both medical and surgical procedures with or without supervision.

There was one student who admitted to have performed none of the above roles a view also echoed during the verbal interview by the male student who noted that though he “liked dissecting, some people are not interested in actual dissection”. Much as this may be uncommon in our traditional methods of anatomy teaching, many universities around the world do not have dissection as a compulsory component of the curriculum<sup>12,15</sup>.

In the interviews one of the respondents reported to have used videos to learn anatomy as opposed to the dissection room. This suggests that the students have found alternative method of learning anatomy, which according to literature can be as effective as dissection<sup>16</sup>. The other explanation for this could be that this is evidence of student’s failed adjustment to a noxious or stressful trigger stimuli as shown by adopting avoidance behaviour<sup>17,18</sup>.

The reported student roles and their responses to the interview also allude to the fact that there is a difference in the institutions expectations, the written curriculum, and what they actually do in the

sessions, the learned curriculum<sup>8</sup>. This is especially important in view of the nature of work place expectations described above.

## Conclusion

The knowledge and skills acquired by students are very important for health professionals practicing in low resource settings. In this survey, it was observed that only 25% of students in both cohorts reported to regularly doing active dissection in the cadaver room. There was a significant sexual bias in the roles assumed during the sessions for dissecting and reading the manuals. The students responses given during the interview suggest that there are many reasons behind the students preferred roles and that these reasons in turn determine the way they participate in the dissection sessions.

## Recommendations

There is a need to examine of the institutional definition of dissection in addition to a more detailed exploration of the explanations for the students reported preferences. There is also a need to explore different variations in the dissection protocol to achieve the desired level of hands on participation required for successful practice in low resource settings.

## Acknowledgements

Our appreciation goes to the students who were so kind as to participate in the study, members of the Department of Human Anatomy and the Makerere University Faculty of Medicine and SIDA-SAREC for the financial support through a staff small grant research award.

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