

Impact of induction of a module on cadaver respect and dissection room code of conduct on knowledge, attitude and behaviour of first phase MBBS students in a medical college in West Bengal

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ABSTRACT

Background –

The Cadaver is a first teacher to us doctors and dissection room the first classroom, hence respect for the cadaver and dissection room ethics are important. They lay the foundation for virtues like respect, compassion, empathy and ethics in the learners which makes a doctor humane. Hence, this study was conducted to assess the impact of module based training on cadaver respect & dissection room code of conduct on knowledge, attitude and behaviour of the learners.

Materials & Methods –

An interventional study was conducted in the department of Anatomy in a medical college in West Bengal over a period of three months on 181 phase I MBBS students. Learners were taught about ‘respect for cadaver’ & dissection room code of conduct. Their knowledge, attitude and behaviour were assessed before and after the teaching-learning sessions. A comparison was made and results were statistically analysed.

Results-

Pre-test & Post-test mean scores for knowledge and attitude assessment were 5.65 ± 2.58 , 9.69 ± 0.58 and 5.265 ± 1.95 , 8.696 ± 0.58 respectively. For behaviour, Pre-module and Post-module mean scores were 7.199 ± 4.19 and 13.525 ± 2.19 respectively. P value < 0.0001 for all three; knowledge, attitude and behaviour scores.

Conclusion-

This assessment based module was found to be successful with an evident change in the knowledge of the learners about the way they are supposed to behave in the dissection room while handling the cadavers and other human remains. The knowledge gained had brought changes in their attitude and behaviour towards the cadavers who were once living people. The module had introduced the principles of bioethics and professionalism to them which will help them in becoming a competent medical graduate and care-provider.

Key words-

Cadaver respect, dissection room, code of conduct

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Introduction –

The importance of the human touch cannot be negated even with the advent of new teaching and learning modalities. The sight and the feel of the real human tissues that one can get from a cadaver and the real human viscera cannot be compared with the simulators or 3D dissection tables. With ever increasing machines and gadgets, we are all getting into the habit of receiving everything at the press of a button. Still the virtues like respect, compassion and empathy which form the crux of doctor-patient relationship cannot be taught

artificially. These need to be inculcated into individuals (medical care-providers) right from the beginning of their medical career.

For a very long time we have been using cadavers for the study of human medical science. The first mention of dissection is found in Sushruta Samhita by Sushruta who performed the dissections in around 600 BCE and documented the human anatomy in the section ‘SariraStahna’ of ‘Sushruta Samhita’.[1,2] Section ‘Sarira-sthaka’ of ‘Charaka Samhita’ by Charaka written around 4th century BCE also discusses about the anatomy, embryology

and technique of dissection. [1] In the first half of the third century B.C. Herophilus of Chalcedon and Erasistratus of Ceos were the two Greek scientists who performed systematic dissection of human cadavers.[3] In 1836, Dr Madhusudan Gupta officially performed dissection on a cadaver and restarted the cadaveric dissection for studying the anatomy of the human body. [4]

We as a country have always believed in humanity, and believe that medical science is chosen by those who want to serve humanity but with Westernisation we have started losing touch with the great teachings of our past. We stopped taking cadavers as once living beings and they remained mere materials used for the purpose of education and research.

Now the bodies available in the anatomy department for studies are mostly donated by the deceased or their family members. This is the highest form of donation in a country like ours where proper cremation of the body after death is considered to improve one's stay in the after world.

It is now realised that a dead person's body also has an intrinsic ethical value and requires a respectful attitude just like a living person. Hence, rules and regulations are formulated for moral and ethical handling of the cadavers. [5]

For a long period of time most of the bodies used for dissection and the learning process in medical colleges were unclaimed bodies. It is now considered that the best morally accepted cadaver source for dissection would be by voluntary donation of the person's body during lifetime so that the fundamental principle of autonomy is respected.

[6] In the year 2012, The International Federation of Associations of Anatomists (IFAA) also recommended that only donated bodies be used for anatomy teaching and research. [7] Many times body donation is done by the next of kin as the last wish of the deceased. For all body donations a legalised document (declaration before a public notary, donation contract, will) which stipulates that the donation is done with an humanitarian, altruistic goal, without pursuing a material or other type of benefit, is submitted by the donors or their family members. One can say that the body donation is one of the greatest acts of human kindness and respect for the cadaver is the symbol of respecting the dead and his sacrifice for the continued medical learning. Recently, the emphasis on "humanising" the cadaver with respect as the first patient or first teacher has gained momentum. It is believed that the 'Respect for cadaver' as a teacher translates later into respect for human beings as teachers and a lifelong respect for learning. So, anatomy no longer remains a subject that imparts the knowledge of the human body to the young learners but also has the onus of teaching the virtues of life. [8]

There is also a need for proper behaviour on part of the learners in the dissection room and while handling the bones, viscera or any other human

remains. Hence, we decided to conduct a study to assess the impact of a module based training on respect for cadaver and code of conduct in the dissection room, on first phase undergraduate medical students.

Research Gap- most of the cadaver based studies have emphasised on the knowledge and attitude of the learners towards cadavers and other human remains (bones and viscera) while handling them. In this study we have in addition assessed the change in behaviour of the learners due to introduction of the module as it is rightly said that the 'assessment drives learning'.

Materials and methods –

An interventional study was conducted in the department of Anatomy in Burdwan medical college, West Bengal over a period of three months after receiving clearance from the college ethical and scientific committees [Memo. No: BMC/IEC/31 dated 9th Feb, 2023]. 181 first phase undergraduate medical students took part in the study.

The students who appeared in all the assessments, attended both the training sessions & the Cadaveric Oath taking ceremony and were willing to be the part of the study were included, those who did not attend any of the assessments, sessions or the ceremony were excluded.

The topics, number and timing of the training sessions were decided in the departmental meeting. Cadaveric Oath taking ceremony was included in the module for better impact. Two questionnaires, one for assessing the knowledge of code of conduct in the dissection room (K) and another for assessment of attitude of learners towards cadaver, related parts and the dissection (A), were used. For assessing the behaviour of the learners in the dissection room separate checklist was used. 'K' had 10 MCQ based questions (Table 1), 'A' had 9 questions (Table 2). The responses of attitude assessment were graded as 'yes' or 'no'. Checklist (B) had 15 points (Table 3). The questionnaires and checklists were prepared by the authors and validated by the senior faculty of the Dept of anatomy and MEU members. A pilot study was conducted on 20 first year BPT (Bachelor of Physical medicine) students who attend anatomy classes regularly.

For the actual study, participants (Phase I MBBS students) were explained about the module in details. Their Informed consent was collected as google forms. Before the teaching learning sessions, questionnaires to assess participants' knowledge and attitude were shared as google form with the students (K1 & A1).

During dissection of Inferior Extremity, behaviour of the students in the dissection room was noted with the help of the checklist (B1).

This was followed by two sessions of one hour each, conducted by the Anatomy faculty of our college, one on cadaver donation and another on the topic- 'Cadaver our first teacher' & how one should behave

in the dissection room. After that Cadaveric Oath Taking Ceremony was conducted, where students pledged to treat the cadaver with utmost respect and remember the sacrifice made by the deceased and their family members by not cremating the body and donating it to the department of Anatomy for the purpose of continuous medical education and research.

The same questionnaires were shared again afterwards to assess improvement in the knowledge & attitude of the learners (K2 & A2). Improvement in behaviour was assessed by marking the same checklist during abdomen dissection (B2).

Pre-test responses (K1, A1, B1) and post-test responses (K2, A2, B2) were collected, mean and standard deviation of the responses were calculated. Pre-test and Post- scores for knowledge, attitude and behaviour of the participants were compared respectively using Paired t-test. A five question feedback regarding the module was also collected from the students, the responses to which were graded on a 5 points Likert's scale of- strongly agree, agree, neutral, disagree and strongly disagree.

Results:

181 students consented and participated in the study. The assessment of change in knowledge of learners regarding the code of conduct in the dissection room was done with the help of pre-test (K1) and post-test (K2) questionnaires, each having the same 10 questions, the number of correct answers by participants for each question is shown in table 4. Pre-test mean score was 5.65 ± 2.58 , Post-test mean score was 9.69 ± 0.58 .

Assessment of change in attitude was done with the help of another set of pre (A1) and post-test (A2) questionnaires, each with 9 questions on the attitude of students towards cadavers, viscera, relatives of donors etc. (Table 5) Pre-test mean for attitude was 5.26 ± 1.95 and Post-test mean score was 8.69 ± 0.58 .

Behaviour of students was also assessed twice, once before the induction of module (Pre-module behaviour assessment/ B1) and again after its induction (Post-module behaviour assessment/ B2). Students' behaviour was assessed on 15 items as shown in table 3. Pre-module mean score was 7.19 ± 4.18 and Post-module mean score was 13.52 ± 4.15 (Table 6).

Paired t test was done to compare the results of assessments before and after the introduction of the module. Table 7 shows significant improvement in the knowledge, attitude and behaviour of the students after induction of the module. We found P value < 0.0001 , for all the three areas of assessment i.e. knowledge, attitude and behaviour.

Feedback responses are shown in figure 1.

Discussion:

Cadaver based anatomy learning is a prerequisite to understand all the subjects of medical sciences. It lays the foundation of all clinical subjects and helps in making an Indian Medical Graduate with comprehensive knowledge and understanding. Medical students enter college and have their first and lasting encounter with the cadaver. Students have always faced a plethora of emotions during the first few dissection classes with exposure to cadaver. Incidents of students vomiting or passing out are not uncommon. It takes time and counselling on part of the learners to accept the sight of the cadaver. Earlier the cadaver was justifiably considered as an essential 'learning tool'.

It is now realised that a dead person's body also has an intrinsic ethical value and requires a respectful attitude just like a living person. Hence, rules and regulations are formulated for moral and ethical handling of the cadavers. [5]

For a long period of time most of the bodies used for dissection and the learning process in medical colleges were unclaimed bodies. It is now considered that the best morally accepted cadaver source for dissection would be by voluntary donation of the person's body during lifetime so that the fundamental principle of autonomy is respected. [6] In the year 2012, The International Federation of Associations of Anatomists (IFAA) also recommended that only donated bodies be used for anatomy teaching and research. [7] Many times body donation is done by the next of kin as the last wish of the deceased. For all body donations a legalised document (declaration before a public notary, donation contract, will) which stipulates that the donation is done with an humanitarian, altruistic goal, without pursuing a material or other type of benefit, is submitted by the donors or their family members. One can say that the body donation is one of the greatest acts of human kindness and respect for the cadaver is the symbol of respecting the dead and his sacrifice for the continued medical learning. Recently, the emphasis on "humanising" the cadaver with respect as the first patient or first teacher has gained momentum. It is believed that the 'Respect for cadaver' as a teacher translates later into respect for human beings as teachers and a lifelong respect for learning. So, anatomy no longer remains a subject that imparts the knowledge of the human body to the young learners but also has the onus of teaching the virtues of life. [8]

With increasing unrest among the patients towards the attitude of doctors, the policy makers are forced to introduce innovative ways so that the medical students and future physicians learn and demonstrate sensitivity, respect, care, compassion, dignity, emotional support and empathy at all times to patients and their families. Hence, in AETCOM booklet module 1.5, 'The cadaver as our first teacher', NMC has provided the competency as: The student should be able to demonstrate respect and

follow the correct procedure when handling cadavers and other biologic tissues. [9]

Realising the need to spread this knowledge among the learners, our institution started conducting 'the Cadaveric Oath Taking Ceremony'. Phase I students are told that the cadavers are not mere 'learning tools' but the humans who were once alive and donated their bodies out of goodwill for continued medical education. Ballala K in his study also suggests that educating medical students and professionals regarding the altruistic act of body donation is as important as educating the general public. [10]

In our study we have assessed the knowledge of the learners about the respect of the cadaver and also of the proper code of conduct in the dissection room. It was found that before the ceremony most of them didn't know that the cadavers were donated. They had no clear idea about how to behave properly in the dissection room before the teaching-learning sessions. As is evident from table 4, their knowledge had increased significantly after the induction of the module.

Assessment of the learner's attitude revealed that they were not respectful towards the cadaver and the related parts in the beginning. Further questioning revealed that many of them were more busy in handling their own emotions when they had first seen the cadavers and the dissection during inferior extremity classes. For them the cadavers and their dissected parts were the essential learning tools to which they were trying to cope gradually. Only after the ceremony and the session on 'how to behave properly in the dissection room' did they realise that the cadavers were actual human beings who were once alive and who had chosen to donate their bodies rather than going for cremation which is considered very important in a country like ours. Their focus shifted from themselves to the cadavers which changed their attitude. They started to feel respectful and grateful for the ones who have donated their bodies. They realised the sacrifice made by the deceased and their families and started to feel the emotions of the family members of the donors, this also helped them in overcoming the inhibitions about the dissection that they had earlier. (Table 5) Many researchers have found the cadaveric oath-taking ceremony a good way to pay tribute to donors and acknowledge their generous contributions. [11,12] In a short communication, Gaikwad had mentioned that cadaveric oath recitation will help learners in developing empathy with the cadaver as a "SILENT TEACHER" and in the long run with the patients while serving humanity by way of medical practice. [13] Like our study, Keche HA et al concluded in their study that the Cadaveric oath taking ceremony helped learners to develop empathy towards their silent mentors. They emphasised on the potential of the ceremony to inculcate humanistic values among medical

students. [14] Narasipuram A also found that the students who had taken cadaveric oath started to show respect towards cadaver and there was a change in their attitude towards cadaver, they started treating Cadaver as their first silent teacher. [15] Students in the study by Dinesh Kumar V mentioned that the ceremony humanised the cadavers, it made students more appreciative towards the donors and validated their emotions. The study also mentions that some of the learning processes of the hidden curriculum which can serve as a foundation step for bioethics can be taught with the help of these ceremonies. [16] Sathvika SV says that the donor oath establishes the groundwork for future efforts to adapt existing frameworks for ethical decision-making and humanitarian values. [17]

In the study by Shakya S et al, the attitude of first year medical students towards cadaveric dissection was assessed. It was found that the students considered cadaveric dissection as the most effective way for learning and understanding human anatomy as is also found in some other studies across the globe. [18,19,20,21] However, more than half of students had a negative attitude towards cadaveric dissection. They concluded that pre-education session and interaction with anatomy faculties can help in mentally and emotionally preparing the learners and improving their attitude towards cadaveric dissection. [18,21] Students in Lalit M et al study further add that cadaveric dissection for learning anatomy is still considered indispensable and cannot be substituted by any other tool and technique. Most students in Lalit et al study were thrilled on the first exposure to the dissection hall. [22] Tseng WT and Adabala, Veerraju NVV, et al also found that different students feel differently in the initial phase of exposure to the cadaver and dissection. Tseng WT et al say that the learners gradually develop their own coping mechanisms to deal with it which ultimately leads to change in their attitude. [23,12] In our study, we found that the information shared by the faculty during the ceremony and discussions with students helped improve their attitude. Chang HJ et al have also emphasised on the role of memorial ceremonies and faculty on changing the attitude of the learners towards cadavers and dissection. [24] The study by Jones TW et al also discusses the role of memorial ceremonies for learning mortality, respect, altruism, and for personal growth of the learners. [25]

In the present study, we have created a module where not just the cadaveric oath taking ceremony was conducted, the emphasis was also put on learning the proper code of conduct in the dissection room including respect for human remains, their proper handling & disposal and related principles of bioethics as also mentioned in other studies. [26] Chang HC et al had further concluded that the ethical and humanistic values cultivated by the memorial ceremonies could be an important

building block to reinforce students' professional identity formation as medical professions. [24] In his review article, SK Ghosh has discussed in details the ethical behaviour to be followed by the students in the dissection room. According to him, knowledge about the practice of high standards at multiple levels in the context of human dissection would undoubtedly enhance the ethical outlook of the students. [27]

The aim of our study was not just to make the learners aware of the need of respect to cadaver and proper behaviour in the dissection room and while handling human remains but also to bring a change in their attitude and behaviour. With the induction of this assessment based module where assessment was done before and after the sessions, it was found that the learners' knowledge was improved and that has changed their attitude. Their behaviour in the dissection room changed (table 5), which will help in maintaining the proper decorum. It will protect them from diseases that can be transmitted through the human remains. They have learnt to respect the dead who were once alive and it will translate into the respect of living. They have learnt to follow the bioethical principles and lead a disciplined professional life right from the beginning of their career.

Students also agreed that the module helped them to learn to respect the cadaver and the related parts as well as the proper code of conduct to be followed in the dissection room. They agreed that it was also a good way to spread awareness about bioethical principles among the UG students. This module should also extend to the students of medical allied subjects e.g. dental, B Sc nursing, physiotherapy etc. as agreed by most of the study participants. [Fig.1]

Conclusion

The module could successfully improve the learner's knowledge. At the same time their behaviour in the dissection room while handling the cadaver or other human remains like bones and viscera has changed. Their attitude towards the dead (cadaver and other remains) also changed and they have become sensitive and respectful towards their first mentors who have willingly donated their bodies for continuing medical education. They became aware of the bioethical principles. These learnings will go a long way with them and help them in becoming humane medical care providers.

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The authors sincerely thank those who donated their bodies to science so that anatomical research could be performed. Results from such research can potentially increase mankind's overall knowledge which can then improve patient care. Therefore, these donors and their families deserve our highest gratitude.

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Table 1. Questionnaire for assessing knowledge of code of conduct in the dissection room (K)

Sl.	Questionnaire	Options
1	The cadavers in anatomy department are obtained from	a) Donation on self-will b) Unclaimed bodies c) Bodies of patients dying in our hospital d) Hired from other hospitals
2	The following are allowed in the dissection room	a) Eating b) Drinking c) Reading d) Chewing gums
3	The following behaviour is not allowed in the dissection room	a) Loud speech b) out-of-place jokes c) taking pictures with the cadaver and posting them on the social media d) all of the above
4	The purpose of wearing white coat in the dissection hall is	a) White coat represents purity, healing, ethical

		practices by a doctor b) to protect one's clothing from contacting the cadaver specimen c) to maintain the decorum of the dissection hall d) all of the above
5	When entering the dissection hall students must be wearing the following	a) White coats b) Close toed shoes & clothing covering the legs c) Gloves d) All of the above
6	Girls should keep their hair	a) Tied b) Open
7	Instruments to be carried by UG students in hall is/are	a) Tooth forceps b) Non-tooth forceps c) Needles d) scissors
8	Proper care of the following should be taken by the students in the dissection hall	a) furniture and equipment b) fire and work safety regulation c) cleanliness and order d) All of the above
9	The articulated skeletons, skulls and isolated bones are to be offered the same respect as cadavers	a) True b) False
10	All cadaver waste tissues are to be disposed of	a) Green trash bins

	in	b) Blue bins c) Yellow trash bins d) Red trash bins
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Table 2. Questionnaire for assessing attitude towards cadaver, related parts and the dissection (A)

Sl.	Questionnaire	Options
1	I am respectful towards viscera and bones while handling them.	Yes / No
2	I can feel the emotions of family members and kin of the dead.	Yes / No
3	I felt grateful to the deceased and his family for body donation.	Yes / No
4	I respect cadaver as I feel that the cadaver is the 1st teacher in medical sciences.	Yes / No
5	The cadaver should be treated with utmost respect and dignity.	Yes / No
6	I have inhibitions about the cadaver dissection.	Yes / No
7	I would encourage people to donate their bodies after death for the purpose of continuous medical education.	Yes / No
8	I feel that the body donation for the purpose of continued medical education is one of the highest acts of human kindness.	Yes / No
9	The module based teaching once again made me realise the importance of life over death.	Yes / No

Table 3. Checklist for assessing behaviour of the students in the dissection room (B)

Sl.	Checklist	Options
1	The student comes to the dissection class in time	Yes / No
2	Wears clean lab coat in the dissection hall	Yes / No
3	Wears long pants and closed footwear	Yes / No
4	Carries non-tooth forceps with them	Yes / No
5	Wears gloves while handling cadaver and related tissues	Yes / No
6	Does not throw paper, gloves or other wastes around them, keep the surrounding clean	Yes / No
7	He/she throws the gloves in the dustbin	Yes / No
8	Does not touch the black boards and view boxes with hands soiled from dissecting and handling specimens.	Yes / No

9	Does not eat in the hall	Yes / No
10	Does not shout or laugh in the hall	Yes / No
14	Student is careful while handling sharp instruments (scalpel etc.) and dissected body	Yes / No
11	Student does not play with the bones/ cadaveric tissues	Yes / No
12	Does not make fun of the body parts of the cadaver	Yes / No
13	Does not take pictures of the cadaver or other tissues	Yes / No
15	Cover the dissected parts with moist gauze after the dissection class is over.	Yes / No

Table 4. Pre-test and post-test scores of the assessments for assessing knowledge of code of conduct in the dissection room

Knowledge								
	PRE TEST SCORE				POST TEST SCORE			
	SUM	%	MEAN	STDEV	SUM	%	MEAN	STDEV
Q1	115	63.54	0.64	0.48	171	94.48	0.95	0.23
Q2	79	43.65	0.44	0.50	177	97.79	0.98	0.15
Q3	86	47.51	0.48	0.50	181	100.00	1.00	0.00
Q4	83	45.85	0.46	0.50	170	93.92	0.94	0.24
Q5	115	63.54	0.64	0.48	180	100.00	1.00	0.00
Q6	124	68.51	0.68	0.47	180	100.00	1.00	0.00
Q7	102	56.34	0.56	0.50	186	92.82	0.93	0.26
Q8	119	65.75	0.65	0.48	174	96.13	0.96	0.14
Q9	115	63.54	0.64	0.47	181	100.00	1.00	0.00

Q1	84	46.41	0.46	0.50	169	93.37	0.93	0.25
TO	102	56.44	5.65	2.58	153	96.51	9.69	0.58

Table 5. Pre-test and post-test scores of the assessments for assessing of change in attitude towards cadaver, related parts and the dissection

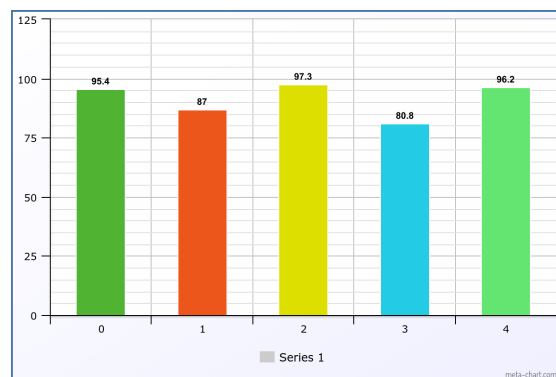
Attitude								
	PRE TEST SCORE				POST TEST SCORE			
	SUM	%	MEAN	STDEV	SUM	%	MEAN	STDEV
Q1	113	62.43	0.62	0.49	180	99.45	0.99	0.07
Q2	100	55.25	0.55	0.50	175	96.68	0.97	0.18
Q3	77	42.54	0.42	0.49	173	95.58	0.96	0.21
Q4	121	66.85	0.67	0.47	188	98.34	0.98	0.13
Q5	117	64.47	0.65	0.48	180	99.45	0.99	0.07
Q6	124	68.51	0.68	0.47	173	95.58	0.96	0.21
Q7	93	51.38	0.51	0.50	160	88.00	0.88	0.32
Q8	77	42.54	0.42	0.49	177	97.79	0.98	0.15
Q9	131	72.38	0.72	0.45	188	98.34	0.98	0.13
TO	95	52.65	5.26	1.95	154	86.96	8.69	0.58

Table 6. Pre-module and Post-module behaviour assessment scores for assessing change in behaviour of the students in the dissection room

Behaviour								
	PRE-MODULE SCORE				POST-MODULE SCORE			
	SUM	%	MEAN	STDEV	SUM	%	MEAN	STDEV

Impact of induction of a module on cadaver respect and dissection room code of conduct on knowledge, attitude and behaviour of first phase MBBS students in a medical college in West Bengal

Q1	98	54.14	0.54	0.50	170	93.92	0.94	0.24
Q2	87	48.07	0.48	0.50	160	88.40	0.88	0.32
Q3	120	66.30	0.66	0.47	171	94.47	0.94	0.23
Q4	70	38.67	0.38	0.49	170	93.92	0.94	0.24
Q5	120	66.30	0.66	0.47	181	100	1	0
Q6	56	30.94	0.31	0.46	162	89.50	0.89	0.31
Q7	98	54.14	0.54	0.50	154	85.08	0.85	0.36
Q8	68	37.57	0.38	0.49	166	91.71	0.92	0.28
Q9	110	60.77	0.61	0.49	170	93.92	0.94	0.24
Q10	70	38.67	0.38	0.49	163	90.05	0.90	0.30
Q11	68	37.57	0.38	0.49	158	87.29	0.87	0.33
Q12	112	61.88	0.62	0.49	162	89.50	0.89	0.31
Q13	68	37.57	0.38	0.48	168	92.82	0.92	0.26
Q14	138	76.24	0.76	0.43	167	92.26	0.92	0.27
Q15	20	11.05	0.11	0.31	126	69.61	0.70	0.46
TO TA L	1303	719.89	7.19	4.18	2448	1352.49	13.52	4.15



The module was effective in learning about the dissection room conduct.

I have learnt about the do's and don'ts related to the dissection room code of conduct

The Cadaveric Oath ceremony and teaching the code of conduct in the dissection room should continue to be held in this manner.

This module should also extend to the students of medical allied subjects e.g. dental, B Sc nursing, physiotherapy etc.

This module is a good way of spreading awareness about bioethical principles among undergraduate students.

Table 7. Paired t test results

	t	standard error of difference	two-tailed P value	extremely statistically significant
Knowledge	20.61	0.196	< 0.0001	yes
Attitude	23.27	0.147	< 0.0001	yes
Behaviour	29.29	0.216	< 0.0001	yes

Figure 1. Students' Feedback