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RESEARCH ARTICLE

EXCITEMENT OR APPREHENSION: EXPOSURE OF STUDENTS TO CADAVERIC DISSECTION IN 1ST MBBS

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ABSTRACT

Introduction: Dissection as a part of anatomy brings students to a close encounter with human mortality. They experience a variety of emotional reactions during their first exposure to cadavers. Dissection forming an integral part of knowledge helps in developing a tactile appreciation of the structure of human body unlike learning from prosected specimens and computerized teaching.
Methods: In order to assess the level of excitement or apprehension we prepared a questionnaire with 15 questions 14 were to be answered on a Likert's scale and 1 was open ended. These questionnaires were distributed to 600 students over the period of 4 years (2011 to 2014 admissions). Statistical analysis was done.
Results: Out of 522 students, 62% (324) were excited with dissection of cadavers and 20% (108) were apprehensive. 76% (393) students felt that dissection cannot be replaced by the computer assisted teaching. Student- teacher interaction helps them to understand better and cope with the varied reactions due to formalin odour.
Conclusion: Dissection is associated with a variety of emotional reactions like excitement, fear, odour and some physical symptoms. A better teacher student relationship with prior interaction helps in overcoming the said reactions.

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INTRODUCTION

The word anatomy is derived from the Greek term '*anatome*' that means cutting up. Dissection is globally considered as an essential part of medical training. Dissection has been considered as royal road and cadaver as a first patient (Dubhashi *et al*., 2011). The knowledge of anatomy is a keystone for any health courses. Dissection makes the students closer and stronger emotionally towards life and death. It also assists in acquiring in depth knowledge by feeling of human structures, which cannot be replaced by computer assisted learning (Agnihotri and Sagoo, 2010). It has been observed that the students who are already burdened with innumerable qualifying tests to secure a medical seat are very curious to know about the method of teaching/training during their first year of the medical course (Agnihotri and Sagoo, 2010) in the subject of Anatomy one of the training methods of cadaveric dissection. Though there are many recent, modern methods of teaching Anatomy, cadaveric dissection forms the most important part of the training. The very old and long lasting method of preserving the cadavers is by using formaldehyde, glycerin, carbolic acid, methanol among other ingredients to maintain the hydration level of cadavers and pH of the cadaver storing solution. The smell in the dissection hall is due to these chemicals and not of the cadaver (Khan and Mirza, 2013). The smell of the fat in case of obese cadavers, the color and the swollen body, dripping after removal from the cadaver tank, irritability to the eyes due to formalin vapor, the pungent smell of formalin which causes inability to breathe in properly, were other feelings. But first time exposure for the hands on experience to dissect and feel of the structures in the body is thrilling for many. Many of the students were thankful to the donors who have contributed their body to science after death to medical college for learning purpose (Abay and Desalegan, 2012).Aim of the study is to avert the apprehension, acquaint to the odour and learn to ignore the emotions associate by interacting with anatomist. To create a scientific temperament between death and life by understanding cadaver as a first patient and makes a strong doctor-patient relationship in future.

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METHODS

In this cross-sectional study which was conducted in the Department of Anatomy in Sri Devaraj Urs Medical College,

Tamaka, Kolar. 600 students of 1st MBBS over the period of four years (2011 -12, 2012-13, 2013-14 and 20014-15), were participants of the study. The students were informed about the study and their consent was duly taken. The participant bias has been eliminated by clearly explaining to all participants about objectives of the study. Institutional ethical clearance was obtained before commencement of the study. In order to assess the level of excitement or apprehension we prepared a questionnaire with 15 questions 14 were to be answered as per the Likert's scale, and one was open ended. The questionnaire was distributed to 600 students over the period of 4 years. Statistical analysis was done and tabulated in table no: 1 Students were given the questionnaire after spending 32 hours (8 hours per week) in dissection. The questionnaire was framed to assess the impact of anxiety, attitude and physical symptoms. A positive attitude towards these issues enhances both personal growth of individuals and professional behavior as future physicians.

RESULTS

As from table no: 1 the questionnaire, results were as follows

Q.1: Cadaveric dissection as part of the training: Out of the 600 students only 498 have answered. Of that 83% (414) students feel that cadaveric dissection is a must. 1.8% (9) students were not clear about the importance of dissection. About 15% (75) students felt that dissection of the cadavers need not be compulsory (feel they can manage with the software for virtual dissection).

Q.2: First visit to the dissection hall caused nausea/dizzy/scared/restless/ suffocated. Out of the 600 students, only 507 students have answered and 46% (237) have felt one of these sensations. About 17% (87) are neutral and 36% (183) of them did not feel anything.

Q. 3: Felt pleasant before entering dissection hall: Only 498 have answered out of 600. 40% (201) were comfortable with the smell, 22.8% (114) were neutral and 36.7% (183) did not feel comfortable and unpleasant when they entered into the dissection hall. This implies the students have got adjusted to odour.

Q.4: Felt stressed after entering the dissection hall: 555 students have answered out of 600. Only about 27.5% (153) of students felt stressed whereas 55% (306) of students did not have stress. About 17% (96) were neutral.

Q. 5: Afraid of seeing cadavers: Only 513 responded to this question. About 12% (63) of students were afraid but 71% (366) of students were not afraid of seeing the cadavers and about 16% students felt neutral.

Q. 6: Felt like leaving the dissection hall as they could not tolerate formalin Odour: Only 498 students responded out of 600 students, 40% (201) of them felt like leaving the dissection hall. About 37% (186) of students did not feel like leaving the dissection hall. About 22% (111) of students were neutral.

Q.7: Interacting with anatomy faculty before entering dissection hall reduces anxiety: For this question only 495 students responded, 71.5% (354) felt it is good to interact with the faculty in Anatomy before entering the dissection hall and that reduces anxiety. 19% (96) of them were neutral and about 9% (45) of students felt that there is no reduction in the anxiety level even after interacting with anatomy faculty.

Q. 8: Felt excited after dissection: 522 students responded to this question and about 62% (324) of students felt excited. About 17% (90) of them disagreed. Excitement made them more positive towards the dissection.

Table 1. Analysis of questionnaire

Sl.No	Questionnaire	n=600	SA	A	TSA & A	%	NE A/ Nor DA	%	DA	SDA	D & SDA	%
1	Cadaveric dissection is a part of training before joining the course	498	264	150	414	83	9	1.8	36	39	75	15
2	First visit of dissection hall felt nause/dizzy/Scared/Restless/Suffocated	507	66	171	237	46	87	17	126	57	183	36
3	Felt pleasant before entering dissection hall	498	48	153	201	40	114	22.8	135	48	183	36.7
4	Felt stressed after entering dissection hall	555	54	99	153	27.5	96	17	195	111	306	55
5	Afraid of seeing cadavers	513	30	33	63	12	84	16	195	171	366	71
6	Felt like leaving dissection hall for formalin odour	498	72	129	201	40	111	22	129	57	186	37
7	Interacting with anatomy faculty before entering dissection hall reduces the anxiety	495	120	234	354	71.5	96	19	30	15	45	9
8	Felt excited after dissecting cadaver	522	84	240	324	62	108	20.6	48	42	90	17
9	Conducting Orientation programme on Cadaveric dissection	510	147	195	342	67	87	17	60	21	81	15.8
10	Cadaver needs respect	495	321	138	459	92.7	30	6	0	6	6	1
11	Dissection helps in remembering anatomy	507	315	165	480	94.6	18	3.5	3	6	9	1.7
12	Dreams about cadavers in sleep	516	9	33	42	8	69	13	150	255	405	78
13	Cadaveric teaching replaced by computer assistant teaching	516	27	18	45	8.7	78	15	123	270	393	76
14	After leaving college , had thoughts of cadaver	492	18	111	129	26	78	15.8	174	111	285	57.9

n – Total number of students participated; SAG-Strongly Agree; A-Agree; T SA& A- Total number of Strongly Agree & Agree; % -Percentage; NE A/ Nor DA-Neither Agree/Nor Disagree; DA-Disagree; SDA-Strongly Disagree; T D & SDA- Total number of Disagree & Strongly Disagree

Q.9: Conducting Orientation programme on Cadaveric dissection: Out of the 600 students only 510 students responded for this question. 67% (342) of students felt it is necessary to have an orientation programme before starting the dissection. About 15.8% (81) students did not feel the need for orientation programme. As usual about 17% (87) students were not sure and neither agreed nor disagreed. Majority of students were excited to know the purpose of importance of dissection so as to apply the knowledge of anatomy in a better way.

Q. 10: Cadaver needs to be respected: for this question about 495 students have responded and 92.7% (459) have agreed strongly for respecting the cadavers as they are the source of knowledge and development of skills. About 1% (6) was neutral. About 6% (30) of them belonged to neither agree nor disagree.

Q.11: Dissection helps in remembering Anatomy: 507 have responded and 94.6% (480) students are of the opinion that they remember anatomy if they performed dissection. 1.7% (9) students are not in favor of the dissection of the cadavers. 3.5% (18) students neither agree nor disagree with this statement. The reason was visual picture will have more impact to retain in the brain.

Q.12: Dreams about cadavers in sleep: 516 students out of 600 have responded and only about 8% (42) have agreed about this statement where as 78% (405) have stated that they do not get any such dreams 13% (69) of them were neutral.

Q.13: Cadaveric teaching replaced computer assistant learning: Out of the 600, 516 students have responded. About 9% (45) students agree with the above. 76% (393) of students have disagreed for the replacement of cadaveric dissection by computer assisted learning. About 15% (78) were neutral.

Q. 14: After leaving college, had thoughts of cadaver: Out of the 600 students only 492 responded and 26% (129) have expressed that there was psychological impact of cadavers after working hours. But 58% (285) of students do not agree with this statement. About 16% (78) students were neutral.

Q. 15. It was an open ended question: The question was ' the dissection is the main source of learning anatomy and nothing can replace it'. Only 520 students have answered and out of that 427 have agreed. About 93 students out of 520 have expressed different opinions that two hours' time allotted for dissection is more and it should be reduced to one and half hour because it is boring and also suggested that there should be more of computer assisted learning in the form of three D animations, virtual dissection, or by conduct of quiz.

DISCUSSION

Cadaveric dissection is integrated with different emotional feelings. The Dissection is most integral part of learning anatomy for medical professionals. Cadaveric dissection is a skill which gives a three dimensional view, to feel depth of the structures from skin, and also chord like or tubular structures. The students were also exposed to chemicals which are not very pleasing for the nose, skin and eyes. This nastiness leads to many psychological disturbances for the students (Khan and Mirza, 2013). In spite of that, dissection is integral part of the training and many students have expressed that dissection which is actually a hands on training for medical students, which was more appreciated than prosection demonstrations. Majority of students (83.66%) agreed that cadaveric dissection is most important in developing skills and gave confidence to remember structures better (Agnihotri and Sagoo , 2010). In this present study it has been observed that 83.2% agreed for dissection and 53.1% of them strongly felt importance of dissection. This coincided with the values of Agnihotri *et al*. In another study, 80% felt that dissection is integral part of the training (Dubhashi *et al*., 2011). The remaining students would compromise with prosections and virtual dissections. In this study 49.9% of students felt dizzy, nauseated, and restless or scared. 13.2% of students strongly experienced one of these feelings where as 36.09% of them did not experience any of these feelings. Our observations almost coincided with the observations of (Arora and Sharma, 2011; Dubhashi *et al*., 2011) 40.34% of students felt excited and pleasant while entering dissection hall. Probably it is due to curiosity to learn by dissection as it will be first experience. In another study, by (Arora and Sharma, 2011) 39.18% were interested, 23.18% were excited, and 19.58% were curious about the dissection (Arora and Sharma, 2011). The next question was whether they felt stressed after entering the dissection hall. 55.13% of did not agree with this statement where as 27.53% of them felt stressed after entering the dissection hall. The remaining students (17.34%) were noncommittal. In another study conducted by Agnihotri G, students were not stressed (86.66%). This might be due to prior mental preparation for exposure to dissection as medical students (Agnihotri and Sagoo, 2010; Abay and Desalegan, 2012).

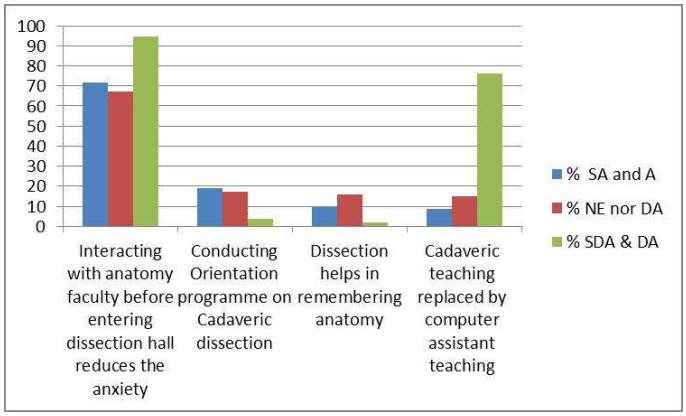

Figure 1. Percentage showing on opinions of cadaveric dissection

In this present study 12.28 % of students were apprehensive of seeing cadavers whereas 71.67% were not apprehensive of seeing cadavers. In another observation, 90% of students were not afraid of seeing cadavers (Agnihotri and Sagoo, 2010). Students were asked whether they felt like leaving dissection hall due to formalin odour. In the present study 39.36% did feel the pungent smell of formalin and felt like leaving dissection hall but, approximately the same number, 37.35 % did not feel like leaving the dissection theatre due to smell of formalin. The remaining students were non-committal as they neither agreed nor disagreed which was explained in figure no3. In a similar study, they were asked about smell of formalin after they left dissection hall. In the same study about 66.66% of the students did not feel the odour after leaving the dissection hall but 23.33% felt the odour and 10% of them were neutral (Agnihotri and Sagoo, 2010).Students were asked to opine on interaction with anatomy faculty before entering dissection hall reduces anxiety. 71.54% of the students have expressed that it is always beneficial to interact with Anatomy staff before entering

dissection hall. So they are well prepared to carry out dissection and aware of formalin effects so they came prepared with surgical gloves and mask to protect their hands and nose. In a similar study conducted by Agnihotri 82% of students felt that interaction with Anatomy staff before entering dissection theatre would reduce anxiety and apprehension about dissection. In another study, orientation about dissection to students before dissection helped in avoiding initial fear and aversion towards dissection (Agnihotri and Sagoo, 2010; Jayanthi, *et al*., 2014). The cadaver is like a book and every cadaver is a new book because each body is unique as there may be some kind of variation in some. Students were asked about respecting the cadavers and 92.75% of the students agreed that the cadavers are to be respected as they are the source of knowledge 6.1% were not aware of this. About 1.2 % of them were not agreeing regarding respecting cadavers. The remaining students either did not know or they did not accept fact about respecting the cadavers. In present study 94.63% of students have expressed that dissection helps to remember anatomy than just by reading or listening to the lecture. In another study, about 91.2% and 90% of students have felt same respectively (Jayanthi *et al*., 2014; Agnihotri and Sagoo, 2010; Arora and Sharma, 2011). The dissection also enhances the course of learning, provides true picture of human body and helps to know anomalies and variations (Berward, *et al*., 2012). Sometimes students do get dreams about cadavers. And when this question was put to them, 78.49% of students did not get any dreams about the cadaver in their sleep, however 8.14% did agree and had dreams about the cadaver. According to the study conducted by Agnihotri about 90% of the students expressed that they had recurrent thoughts about the cadaver after leaving the dissection hall (Agnihotri and Sagoo, 2010).

In our study about 26.2% of students had thoughts about the cadaver after leaving the dissection hall. Cadaveric teaching has been replaced by computer assistant teaching in most of the medical colleges due to non-availability of cadavers for dissection. When this question was put to students, 76.16% of students felt that there should not be a replacement for dissection by computer assisted teaching but 8.72% students felt the need to replace the dissection with computer assisted teaching. The remaining students were neither in favor nor against replacement of dissection by computer assisted teaching. This opinion might be because of their exposure to Anatomy classes only for four weeks. This also could be due to the religious feelings of some of the sects who believe in wholeness of the human body at the time of cremation (Notzer, *et al*., 2006; Ajao, *et al*., 2008). According to some, dissection becomes much more interesting with background music and 93% of students have expressed that listening to music while dissection eased their stress and helped them to learn faster (Anyanwu, 2015) which was explained in the Figure 1.

Conclusion

Despite of conducting an orientation programme the students are more comfortable to handle the emotions better after interacting with an anatomy teacher. Hence anatomy teacher play a pivot role in balancing the students emotions by bringing in a scientific temperament to make a better student and also improve their teacher-student relationship.

Conflict of interest

The authors do not declare any conflict of interest.

Inform consent

As humans blood sample, tissues and drugs are not used in the study. So there is no need of inform consent.

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