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CADAVER AS OUR FIRST TEACHER – "A GLORIOUS TRIBUTE TO SILENT MENTOR AMIDST COVID-19 PANDEMIC BY VIRTUAL IMPLEMENTATION OF EDUCATIONAL MODULE

Anatomy

SK Vathsalya

KS Tadepalli

I Anusha

Divya Pothati

KE Geddam

ABSTRACT

BACKGROUND: The honoured ideals of the medical profession and the responsibilities of the physician not only to individuals but also to society should be inculcated during First academic year during cadaveric dissection which focus on the emotional and psychological aspect of the tender minds of students. The ethical and humanistic values of cadaveric dissection must be made aware to all the undergraduate medical students and Cadavers deserve much respect as a live teacher since it teaches the students the basics of medicine. This study therefore designed, implemented, and evaluated the impact of the module 'Cadaver as a Teacher' (CrAFT) that examines the ethical values of cadaveric dissection as a part of Curriculum Based Medical Education (CBME).The objective of the current study was to discern the gratitude for cadaver and to recognize the importance of cadaveric dissection from the reflection of students having experience of cadaveric dissections and virtual anatomy learning. **MATERIALS & METHODS:** This crucial and multitude study involved 150 first-year undergraduate medical students of 2020-2021 Batch in Mamata Academy of Medical Sciences, Bachupally, Hyderabad. We have organized "cadaver as our first teacher" (CrAFT) AETCOM Module 1.5 by utilizing Cisco Webex platform to emphasize the importance of dissection. Among 150 First MBBS Students 55 students presented their way of gratitude to the cadaver, a total of 16 poems, 18 sketches, 4 paintings, 1quiz, 5 expressed their feelings, 7 power point presentations and 2 enacted videos. After the presentation, feed- back via Google forms with a questionnaire has been taken. **RESULTS:** 95.6% of students stated that they strongly agree that the module promoted empathy and feeling, it was creative and enjoyable, increased thinking capacity, helped in respectful handling of cadavers and sensitized the students for future professional life and 1.3% felt otherwise and rest are neutral. **CONCLUSION:** To inculcate the basic bioethics for future patient handling in newly joined medical students we believed that sensitising them early with CrAFT module helps them establish a practice grounded in professionalism, human values, and empathy.

KEYWORDS

CrAFT, AETCOM Module, Professionalism

INTRODUCTION

According to Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002, A physician with qualification of MBBS and Post-graduation shall uphold the dignity and honour of his profession. The prime object of the medical profession is to render service to humanity; reward or financial gain is a subordinate consideration. Who- so-ever chooses his profession, assumes the obligation to conduct himself in accordance with its ideals. A physician should be an upright man, instructed in the art of healings. He shall keep himself pure in character and be diligent in caring for the sick; he should be modest, sober, patient, prompt in discharging his duty without anxiety; conducting himself with propriety in his profession and in all the actions of his life[(1)]. Physicians should merit the confidence of patients entrusted to their care, rendering to each a full measure of service and devotion and these qualities should be inculcated during First MBBS onwards during Dissection hours.

The cadaveric dissection is an irreplaceable experience in a stress free environment to comprehend the three dimensional gross structure of the human body. To develop not only surgical skills, but better physical examination of patients, diagnosis of disease and reliable interpretation of radiographs that helps the undergraduate students. During COVID-19 pandemic, the lockdowns came into existence and they were institutional closures, stuck the cadaveric dissections to hold due to world-wide health crisis. However, during the pandemic, it forced them to recognize the true importance of dissection during the virtual anatomy classes. Cadaveric dissection helped them to understand the subject very nicely and easily, students started appreciating this learning tool mutely. Student's acknowledged that new generation digital learning technique can never compete with the hands on experience.[(2)]

Anatomy is the cornerstone of medical education from which clinicians develop their clinical skills. Virtual classes is the only option at present for the anatomists. Theory lectures may be delivered effectively by online classes, however learning of Anatomy exclusively by this mode is challenging. Cadaveric dissection is considered the "gold standard" in the anatomy education [(3,4,5)]

The pandemic Covid-19 is responsible for a major education crisis globally and has a drastic impact on medical training as well. The virtual education is the only mode of teaching in current scenario. Every anatomist is unlocking technology to deliver best education however understanding of the subject without dissections or other practical teaching aids like bones, specimens, embryology models, microscopic slides etc. is challenging.[(6)]

For the context of medical training, human cadavers have multiples roles. To know the feel of human tissues and organs, a hands-on experience by medical students is a must to know the concept of innumerable variations within the body. To master a surgical skill or procedure without harming anyone, aspiring surgeons can practice on patients who don't feel pain enabling them. Cadavers are much more helpful than specimens or dummy patients. A cadaver in the anatomy laboratory is accorded the revered status of 'ajarn yai' or 'great teacher' in Thailand. For their highly esteemed teacher, there is an attitude of reverence by the students as they attribute a social role and position to him/her. He/she is and not merely an object rather treated as a person. [(7)]

Study of regional anatomy through cadaveric dissection is considered to be a unique feature of medical courses in India. The benefits of meticulous dissection mostly fall into three domains: knowledge acquisition and integration, skills, and attitudes. Anatomical dissection is a time-honoured part of medical education. Bodies donated by patients themselves, for students to learn anatomy by dissection, is the ultimate gift, which needs continued appreciation by educators. Cadavers are assigned to first-year medical students who will spend nine months of anatomy class dissecting and studying them. (8)

The cadaveric oath is administered to pledge to honour the dignity and integrity of the human remains that they are about to work on for first year medical undergraduates in state of Telangana and Andhra Pradesh as well as maintain etiquette in the dissection hall and autopsy rooms with the same dignity and respect bestowed in life. Maintenance of dress code, use of personal protective equipment's such as aprons, masks, gloves etc and cautious while handling sharp instruments, exposure of cadaveric parts, entry to the dissection halls are shown with decorum and good conduct. On the other hand, in St. John's

Medical College, Bengaluru, students thank the almighty for giving them a body before dissection. In USA, anatomy memorial services are held to enable students to reflect on the life of the departed souls who facilitated their education in Mayo Medical College, Rochester.[7]

For the first year medical student's, cadavers facilitate a exposure to the complexities of the human body. To build up lucid anatomical concepts and relations, cadaveric dissection is an essential technique. A direct encounter with the harsh realities of life and death can be learned in dissection hall which provides budding doctors who will inevitably face in their future careers. Hence, how to strike a balance between empathy and detachment in a particular situation was taught by dissection hall, it is an ideal place to overcome fears and learn. At the end of the day, the right attitude to practice one's profession with conscience and dignity was learned by a physician, who not only needs sound knowledge and competent skills. [7]

MATERIALS AND METHODS:

This crucial and multitude study involved 150 first-year undergraduate medical students of 2020-2021 batch in Mamata Academy of Medical Sciences, Bachupally, Hyderabad. During this pandemic outbreak, we organized "cadaver as our first teacher" (CrAFT) AETCOM Module 1.5 by utilizing Cisco Webex platform. We priorly instructed the students and took the consent for their participation in the study regarding the format of the module and emphasized the importance of their contribution, as students can avail this opportunity by presentations, paintings, Sketching, Poetry, Poster, collage, paragraph writing or any other creative ideas which can be presented in PPT or video format via online platform. We divided the students into 6 groups and each group consisting of 25 students according to their Roll numbers and allotted a faculty to each group.

Table 1- Group allocation

Group numbers	Roll numbers
Group-1	1- 25
Group-2	26-50
Group-3	51-75
Group-4	76-100
Group-5	101-125
Group-6	126-150

In this activity, total of 55 students participated individually as well as in groups. We deliberately planned the activity by making a list of students and their activities respectively in each group by concerned faculty.

Table 2-Groups and Activities performed

Group numbers	Activities performed
Group-1	Quiz & Painting
Group-2	Conversation & poetry
Group-3	Short story, PPT& Sketch
Group-4	Painting, Poetry, PPT & Short video
Group-5	PPT, Poetry& Poster
Group-6	Painting, PPT& Poetry

On the day of activity, we commenced the module with the presentations of students, accordance with their respective groups. Subsequently, we awarded the certificates to the participants via G-mail, in addition we appealed them to answer the questionnaire of feedback forms via Google forms. We asked them to rate from strongly disagree(1) to strongly agree(5) for the following questions which was quoted from the reference article[9]

- The module promoted empathy and feelings
- The activities were creative & enjoyable
- The activities increased thinking capacity
- The activities provided opportunities to share ideas with others (i.e group members)
- The module sensitized the students towards their future professional life
- The module highlighted the importance of respectful handling of cadavers
- The activities improved imagination
- The module was a refreshing break from routine classes
- The activities promoted lateral thinking
- Do you like the activity as a whole

Each response was sorted according to language and type i.e. either poem, paragraph, collage, poster or drawing and analysed thoroughly.

RESULTS

The total of 145 students participated out of 150 first year medical students in this module and 55 students presented their way of gratitude to the cadaver, a total of 16 poems, 18 sketches, 4 paintings, 1quiz, 5 expressed their feelings, 7 power point presentations and 2 enacted videos. We also conducted a questionnaire regarding feedback and the results are:

Q n.o	strongly disagree	neutral	strongly agree
1	0.6%	3.8%	95.6%
2	0.6%	2.5%	96.9%
3	2.5%	14.5%	83%
4	1.3%	6.3%	92.4%
5	3.2%	8.8%	88%
6	0.6%	1.9%	97.5%
7	0.6%	11.3	88.1%
8	2.6%	5%	92.4%
9	1.3%	13.8%	84.9%
10	1.3%	3.8%	94.9%

In this survey, 95.6% of students stated that they strongly agreed that the module promoted empathy and feeling and 3.8% had neutral feelings and 0.6% students disagreed for it. 96.9 students strongly felt that this activity is creative and enjoyable, neutral by 2.5% and strongly disagreed by 0.6%. This activity increased thinking capacity, concurred by 83%, alongside, neutral by 14.5% and 2.5 % of students strongly disagreed. The activity provided opportunity to share ideas with others, uttered strongly by 92.5%, neutral by 6.3% and strenuously objected by 1.3%. By this module, 88% students entirely agreed that, it sensitized the students towards their future professional life and 8.8% students were neutral regarding it and 3.2% of students strongly disagreed it. However, 97.5% students said that this module highlighted the importance of the respectful handling of cadavers and 1.9% students have neutral feelings and 0.6% of students denied it. These activities improved imagination, stayed strongly by 88.1%, 11.3% students has unbiased feelings and strongly disagreed by 0.6% of students. 92.4% students strongly acknowledged regarding the module was a refreshing break from routine classes and 5% students were neutral and 2.6% students strongly denied it. 84.9% students strongly agreed in such a way that these activities promoted lateral thinking, 13.8% students had neutral opinion and 1.3% of them strongly disagreed it. 94.9% students abide that they liked the activity as a whole, 3.8 % students were even handed about it and 1.3% firmly opposed it.

DISCUSSION

Doctors with qualification of MBBS or MBBS with post graduate degree/ diploma or with equivalent qualification in any medical discipline shall uphold the dignity and honour of his profession. 1.1.2 The prime object of the medical profession is to render service to humanity; reward or financial gain is a subordinate consideration. Who- so-ever chooses his profession, assumes the obligation to conduct himself in accordance with its ideals. A physician should be an upright man, instructed in the art of healings. He shall keep himself pure in character and be diligent in caring for the sick; he should be modest, sober, patient, prompt in discharging his duty without anxiety; conducting himself with propriety in his profession and in all the actions of his life[1].

Medical education has come to a cross-road where there is increased stress in acquiring knowledge with the lack of good modules for the teaching of humanistic values of this noble profession. After the formal medical education, junior doctors are exposed to the commercial influence and the pressure for better financial return. With increasing medico-legal litigation, many doctors resort to the practice of defensive medicine. In the long run, the patients will be the losers. Training modules that promote a sense of compassion and empathy among medical students and junior doctors so that they will respect their patients and continue to uphold the noble spirit of our esteemed profession are important. The various silent mentor programmes have the potential to contribute towards this objective [10]

Medical education, in general, can then be further improved to produce not only knowledgeable and skilful doctors, but also those who are compassionate and empathetic towards patients and the society as a whole. [11]

The Department of Anatomy at Tel Aviv University's Sackler Faculty of Medicine has sought to bridge the gap between science and Jewish religious-cultural values. The Department allowed the students to conduct laboratory dissections on cadavers in an ethical and respectful manner. [12]

At Mount Sinai School of Medicine, New York, the anatomy course combines classic dissection with the tools that the physicians and surgeons use. Students are introduced to the newest technologies available for viewing the body with hands-on experience in the laboratory. This requires an interdisciplinary approach with surgeons, physicians, and core anatomy faculty. Some authors have suggested that classic dissection on cadavers may be replaced by the cyber cadaver. If students use only models, images, audio visuals or computers, they will not develop the requisite reasoning that comes from investigative dissection of real tissue in acquiring knowledge of the living. A well-known saying is: "You will remember some of what you hear, much of what you read, more of what you see, and almost all of what you experience". Dissection on cadavers is that precious experience which cannot afford to be missed even in this era of the medical reforms according to Prakash, Prabhu [8]. According to Shaffer K the usage of human cadavers for teaching purpose is surrounded by ethical uncertainties. [13]

Jones et al have challenged anatomists to gather hard evidence to support assertions on the importance of dissection; notwithstanding it has survived the most rigorous test of pedagological fitness – the test of time. [14]. According to Green NA An internationally-acclaimed surgeon from the Mayo Clinic, and the first President of the American Association of Clinical Anatomists puts this more bluntly – "... today's residents in surgery are learning their anatomy on sick patients for the first time in the middle of the night; operating without a firm knowledge of anatomy leads to increased mortality and morbidity". [15]

Lempp focused on a number of important learning outcomes that were reported by year 1–5 medical students in a British medical school, during the dissection sessions in the first two years of their training, as part of a wider qualitative research project in undergraduate medical education. His study highlighted the fact that dissection can impart anatomical knowledge as well as offer other relevant, positive learning opportunities to enhance the skills and attitudes of future doctors.[16]

In Singapore, 75% of medical students in all five years of their course found gross anatomy clinically relevant and 89% considered dissection helpful or very helpful in their understanding of gross anatomy. When asked whether dissection should be replaced by demonstrations in prosecuted specimens, 87% gave a resounding "no" according to Leong SK [17]. A recent study by Prakash,Prabhu comparing personal dissection versus peer teaching of upper and lower extremities in Virginia, USA, has shown that although peer teaching was generally successful, first-year medical students preferred to dissect for themselves. The results are consistent with the contention that hands-on dissections enhance learning and confidence in the subject matter. [8]

At a university in Taiwan by DS Sheriff, students are informed of the identity of the cadavers they are going to dissect – as well as the identities of the family members of the person whose cadaver it is. The students visit the family members to thank them, as well as to pay their respects, along with the family members, to the cadaver which allowed them to learn anatomy. [18]

According to Dr.Carol Scott Conner, president of the American Association of Clinical Anatomists "When students dissect, they are in an explanatory mode and they are likely to remember human anatomy better that way." It's also a rite of passage. In this process, their manual dexterity and bonding by team work may develop and improve. The students can have verification of facts from the primary source, will enjoy the art of discovery and check the interpretation of others. They may gain a three-dimensional understanding of the body, its variation and pathology. They acquire communication skills. This gives them confidence and enriches their clinical competence. [8]

In our study, students quoted that "seeing the cadaver for the first time made him realized a social responsibility and had a fascinating intricacy with human body and helped him understanding the arduous task of becoming a surgeon. At first they felt hesitant to touch the cadaver at first sight and later they prepared themselves for the worst, unbearable with the strength of formalin smell and afraid she was messed up in a wrong place. Finally felt accomplished, can't imagine anatomy without cadaver. Some students felt when they were in the dissection hall for the first time they were curious to know what's inside, felt amazing, great like a surgeon. Before dissection a lot of chaos in their minds, during dissection they felt no one around, only cadaver and themselves with scalpel. For the first time in dissection hall some of the students felt clueless, surreal and curious but empowered and had an unforgettable experience.

Some students described their experience in a poetic way "Lots of questions rose before entering the hall, Finding the median nerve made us crawl, Three feet away is a cadaver, A dead body, An isolated soul in the world of the living, We look at it, our hearts beating, Slightly anxious but also curious, When it was my turn to dissect, I didn't know what to expect, My hands were shaking, Scared of the mistakes I would be making, We get hands on experience, Which makes a huge difference, It wasn't easy to visualize through books, But in the cadaver.. we guessed it just by looks, And when it comes to food?, Oh, well I stopped eating, But at times there was a glimpse of sadness, Thinking about how the cadaver had a life filled with happiness, Who used to be a living person with feelings, Surrounded by loved ones, In a life full of failure and success, We are Grateful for their donation, We promise our full preparation, For learning anatomy, we will strive, To become good doctors, to save lives

Time flew by as dissection became the most awaited part of the day. Our cadavers were no more strangers to us, we enjoyed each part of it as we dug deeper to find the underlying structures such as nerves, vessels, deep muscles and more. These few months helped me learn why a cadaver is called as our first teacher … I was able to visualize the structures we saw in the dissection while going through the same topic in theory, appreciate the difference each cadaver held, and the most important part … learnt how to respect a cadaver. I was eagerly waiting for my turn each time we entered the dissection hall as to know whose turn it would be to dissect and engulf the learning they provided us.

CONCLUSION

Anatomy is the true essence of basic subjects which gives the medical students their very first exposure to human body and helps them overcome their inhibitions. Just as dissection remains an essential technique to teach three-dimensional concepts, the dissection hall is an ideal place to introduce concepts of humanistic care .The dissection hall evokes the students' memories, speculations, and fears about serious illness in themselves, their families, and loved ones.The sensation of touch between physician and patient is essential. This is best learned early in the dissecting room. Apart from learning to cope with the overt "emotional confrontation" with the cadavers which assist anatomical learning, additional covert learning outcomes like teamwork, respect for the body, familiarisation of the body, application of practical skills, integration of theory and practice, preparation for clinical work, and appreciation of the status of dissection within the history of medicine.

The module promoted empathy and feelings. The activities were creative & enjoyable, increased thinking capacity and provided opportunities to share ideas with others. It sensitized the students towards their future professional life .It highlighted the importance of respectful handling of cadavers. The participants also described their negative emotional experiences during cadaver dissection. Many students mentioned their shock, apprehension, and anxiety when facing cadavers for the first time. The medical students' emotional experiences at the beginning of the dissection were a mixture of primary emotions such as shock and apprehension and refined emotions like gratitude and responsibility. Most of the negative emotions were instant and reactive, and spontaneously diminished. They liked the activity as a whole was a refreshing break from routine classes.

Cadaver dissection was a unique and intense experience that stimulated various emotions. Almost all students mentioned a sense of responsibility and purpose when entering the dissection room. They expressed their gratitude for the opportunity to perform invasive procedures on human bodies.

The implementation of an educational module about cadavers is a novel approach towards sensitising medical students. The reputation of a doctor is determined by his professionalism, attitude towards patient, total commitment and competence. The medical profession implies spacious mind, intellectual capacity, continuous training, implementation of best practices. A distinguished doctor is described by the trust relationship with his patients, his psychological skills and

techniques, the presence of personal qualities: kindness, humanity, compassion, sensitivity, patience, and emotional responsiveness. The doctor meets a man at birth and sees him till the end of his life. The intolerance and anger of doctors mistakes led to the urge to sue, deprive of the license, or penalize in any other way physicians who are responsible for the death or disability of their patients. To master a surgical skill or procedure without harming anyone, aspiring surgeons can practice on patients who don't feel pain enabling them –A Silent Mentor.

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