**Title: Ethical Concerns in Anatomy Teaching in India : suggestions for the road ahead**

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**Ethical Concerns in Anatomy Teaching in India : suggestions for the road ahead**

Study of Human Anatomy predominantly requires the use of the remains of the dead. This article asks certain pertinent questions about the ethical implications of existing practices in the anatomy departments in India . The article also explores the available legal safeguards in India . We also attempt to provide solutions for the same.

The word ethics is derived from the Greek word “Ethikos” which means arising out of habit. In simple terms it means norms for conduct. In the research setting it implies respect for the subject. The Nuremberg code 1947, Belmont Report 1979, and Helsinki Declaration 1964 amended last in Oct 2013, form the basis of Medical Ethics.

This article discusses :

1) The ethical dilemma pertaining to the use of unclaimed bodies in the teaching of anatomy and the psychosocial barriers to a body donation program.

2) It also covers ethical concerns and responsibilities in storing of cadavers and body parts .

3) The national shame of dry bone trade and its ethical implications

**Ethical considerations pertaining to cadavers**:

Consent for dissection and preparation of museum specimens cannot be obtained in the case of unclaimed bodies. This violates one of the basic principles of ethics as per the Belmont report – autonomy. There is increasing awareness worldwide about body donation to Anatomy departments. There are guidelines to go about the process drafted by the International Federation of Associations of Anatomists (IFAA) 2012 [1]. In a study on trends in body donation worldwide, data was obtained from 68 countries. Only 32% of these countries (22) exclusively use bodies that are bequeathed to them by voluntary donors, while 31% (21) exclusively use unclaimed bodies. It is disheartening that even in the twenty first century, approximately 66% of countries that responded (45), use unclaimed bodies for anatomy dissections and research [2]. In India, anatomy departments use cadavers from both sources; the majority of them being unclaimed bodies [3,4 ]. It would be worth our while to introspect as to the reasons why body donation “a noble concept “has not translated into action in our country. The reasons are manifold and therefore the solutions also need to be multipronged.

1. Use of unclaimed bodies for dissection is acceptable in India, as per the law. In the states of Maharashtra, Goa, Himachal Pradesh, Punjab, Sikkim, Madhya Pradesh and Assam, there is no provision in the State Act for a (state owned) medical institution to refuse an unclaimed or a donated body[5]. If an institute already has unclaimed bodies far in excess of its need, there is no incentive for it, to promote body donation.
2. The setting up of body donation cells by medical colleges is a voluntary decision. Many new colleges have neither the manpower nor the infrastructure to set up a body donation program. Currently, there is neither a compulsion nor an incentive for them to do so.
3. Not all body bequeathals fructify into a donation. The reasons for this being unwillingness or inability of the relatives to fulfil the wish of the deceased as a result of a conflicting belief. Also in most body donation programmes, the responsibility and cost of the transport of the mortal remains to the Anatomy Department is borne by the relatives.
4. Not Finding sufficient number of Donors : the possible concerns of potential donors could be :
5. Will the body be treated with respect?
6. What will be the logistics of transport of body to institution?
7. How will the mortal remains be utilised by the anatomy department?
8. What will happen to the remains after dissection? Will they be treated with dignity?

**a. Will the body be treated with respect**?

To ensure a successful body donation program we need to promote the dignity of the donated body. The first block we need to overcome is the attitude of the medical profession towards donating their own bodies for medical education and research. When the medical community is convinced about the dignity accorded to the cadavers, they are more likely to donate their bodies. This will have a huge ripple effect in boosting body donations by the general public.

A study in Manipal, India showed that only 22% of physicians were willing to donate their bodies for medical education, while 68% expected the public to donate[6]. Even anatomists were hesitant to donate their bodies. In two separate studies only 15.7% of Turkish and 25% of Dutch anatomists expressed willingness to donate their bodies for medical teaching[7,8]. In a study conducted by Philip Mashege in Nairobi, only 22.2% of undergraduate and 19.5% postgraduate medical students were willing to donate their own bodies for Anatomy dissection[9]. The introduction of the Attitude Ethics and Communication AETCOM modules in the undergraduate curriculum of MBBS students by the National Medical Commission, India is a step in the right direction. In module 1.5, four hours are dedicated to introducing students to the concept that the cadaver is our first teacher[10]. Students are administered a cadaveric oath in a ceremony. Administering the oath to the students in its true spirit and explaining the contribution of the deceased (body donor) to their learning process is of utmost importance. Some institutions involve students in the activities of the body donation programme. This will help sensitise them and ensure that they treat cadavers with utmost respect.

In Malaysia, they tried to increase enrolment to the body donation programme by taking potential donors on a conducted tour to show the existing protocol , facility and processes in handling the body in the Anatomy Department [3]. A video demonstration of the same could also be used.

Thus it is important to win the trust of the community, and seek their co-operation to ensure a successful body donation program

**b. Logistics of transport of mortal remains to Institution**

Arrangement for the transport of the dead body to the institution over a reasonable radius, and having a dedicated hearse for this purpose would give a dignity to the process. The relatives of the deceased should be given importance by honouring them .The faculty member present at the time of receipt of the body, can present a eulogy in a body donation ceremony. Such a model has made the body donation program in Northern Thailand a great success and has caused a fourfold increase in the number of registrations for body donation and a six fold increase in the number of body donations made in twenty years from 1998 to 2018[11].

**c. Lack of clarity to the donor as to how his mortal remains will be utilised** **by the anatomy department.**

The possible uses of the cadaver for teaching and research should be clearly spelt out in the consent form. Some donors are likely to feel more altruistic if they know how exactly their body will be handled and to what use it will be put to, once in our custody. Consent for transport to another institution, display of body parts as a museum specimen or a plastinated specimen, and dissemination of data pertaining to the donor for educational and/or research purposes, must be obtained. Permission to access antemortem medical records of the donor by the institution for research purposes may be obtained. Any access to personal ante-mortem medical records would be restricted in its use as a research tool and utmost care to maintain confidentiality should be ensured. The potential body donor and his/her relatives need to be reassured about the same.

**d.Lack of transparency about the process of disposal of the mortal remains** (after dissection).

Some body donation centres in India, state the method of disposal (usually incineration ) in the consent form. A city like Mumbai for instance, has 10 medical colleges and only 2 incinerators; one in Govandi and the other at Taloja, Navi Mumbai. In effect, the mortal remains after dissection are cut into manageable pieces and collected for disposal as biomedical waste. Considering the amount of biomedical waste that a city like Mumbai generates; more than 10,000 kg/day as on 2011, it is doubtful if material collected from Anatomy departments is segregated prior to incineration [12]. The Bombay Anatomy Act 1949 as modified on 13th January 2014 is applicable to both unclaimed bodies and donated cadavers received by an institution in Maharashtra[13] . It clearly states that , “ the body after being dealt with for any of the purposes of this act be decently cremated, or interred in a consecrated ground, or in some public cremation or burial ground, in use for persons of that religious persuasion, to which the person whose body was so removed belonged, and that a certificate of cremation, interment or burial of such body shall be transmitted to the Executive Magistrate , or any officer appointed by the State Government for such purposes, **within 6 weeks after the day on which such body was received** aforesaid . “ The normal course of teaching Anatomy by dissection to students spans at least a duration of 12-18 months. Quite obviously, the donor cadaver cannot be cremated within 6 weeks of receipt. For a law to be followed, it needs to be practical. For a solution, stakeholders and the state will need to brainstorm , and make necessary changes at the ground level .

Northern Thailand has a Royal Cremation Ceremony for body donors. The University of California organises memorial services to honour those who donated their bodies for research and education. The relatives of the deceased are often invited to be a part of these ceremonies. Institutions should be encouraged to have services for thanksgiving or commemoration for those who have donated their bodies for medical education or research. Relatives of the deceased, along with staff and students may be invited to the same.

**Ethical concerns pertaining to storage of cadavers and body parts:**

1. Facilities where cadavers are stored must be secured from entry by unauthorised personnel. We may consider CCTV surveillance of these areas and authorized access under the know of a responsible officer .
2. Efficient tracking procedures for identity and location of all body parts from an individual donor must be ensured. This will safeguard against foul play and will improve the quality of research.
3. Need for periodic audit by peer team, to check for documentation of source and account of all cadavers and body parts.

**Ethical concerns pertaining to the transport of cadavers and body parts:**

In India, the Anatomy Act is a state act. There are discrepancies between the different state acts, thereby making national guidelines necessary, to ensure uniformity in the Anatomy acts of different states. A law governing transport and transfer of cadavers and body parts is missing in all these acts[5]. It is an established fact that medical colleges without an existing body donation programme are dependent on transfer of cadavers from institutes with such a programme. The absence of a law governing transfer and transport, allows for loopholes in the system and the possibility of profiteering by unscrupulous officials. The guidelines prescribed by the IFAA clearly state that, in case of supply of cadavers / body parts/ plastinated specimens to another institution, there should be no commercial gain. However, charging for real costs incurred, including the cost of maintaining a body donation programme is acceptable.

Medical colleges in many countries in the Middle East, Africa, and South East Asia rely solely on imported cadavers for Anatomy education and research. The main suppliers of these cadavers are the United States of America (mostly donated bodies), and India (mostly unclaimed bodies) [2]. Needless to say, there is a commercial transaction taking place. The IFAA guidelines 2012, mention an immediate need to establish guidelines regulating the transport of body parts and cadavers within and between countries.

**Ethical Considerations pertaining to dry bones:**

The study of osteology is integral to the understanding of Anatomy. Students of the subject are expected to possess a bone set. Anatomy departments are expected to have a minimum number of bone sets for the purpose of education and research.

India, had the dubious distinction of being the human bone factory, that exported human skeletons to medical institutions across the world. These bones were procured by dubious means, usually by employing grave diggers who scrubbed and treated them to obtain a pristine white colour and also fitted them with wire to make assembled skeletons. In the year 1984, India had exported about 60,000 skeletons. In 1985, the Indian Government banned the export of bones and other body parts[14].

Currently, there are only a handful of dealers in India who trade in original bone sets. These are sold only to medical institutions and medical students in the country (on producing valid identity card). Their stock is limited and the price prohibitive. Students therefore procure an artificial bone set made of material like polyvinyl chloride (PVC). The artificial bones, though an acceptable substitute may not have all the features found in original bones for the discerning student. Medical students end up purchasing original bone sets of dubious antecedents from their seniors and from the grey market. Most of these are incomplete sets or mixed sets (sourced from different cadavers) and are very often damaged.

If all medical colleges with an established body donation programme, were to harvest the skeleton of the body donor on completion of dissection (with prior consent) , we will have a continuous supply of material for osteology studies with the advantage of labelling each bone as sourced from a particular donor. This will also obviate the need for students to procure bone sets from dubious sources. A provision may be made in the law, to share these indigenously manufactured bone sets with newly set up medical colleges until such time that they become self sufficient. This will also ensure maximum utilisation of the donation made by the body donor.

**Suggestions for the Road Ahead**:

1. Encourage and incentivise setting up of Body Donation Programs by all medical colleges.
2. Gradually phase out the use of unclaimed bodies for dissection.
3. Establish guidelines for transport and transfer of cadavers to Dental, Physiotherapy Colleges and newly established medical colleges.
4. Establish uniform guidelines for dignified cremation of the mortal remains after completion of dissection.
5. Ensure restricted access to cadaver rooms with continuous CCTV surveillance.
6. Ensure tagging of all prosected specimens and bones.
7. Encourage harvesting bones from donated cadavers on completion of dissection (with prior consent).

Anatomy is a basic science subject and the foundation of Surgery. As anatomists we catch our students young and are instrumental in moulding them as future medical professionals. Ethics, like communication and attitude is largely learnt by observation. It is therefore important that we, as teachers and researchers of this speciality follow the highest ethical standards and demonstrate the same in the way we treat fellow human beings in life and in death.

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**Abstract**

It is legally permissible, though ethically undesirable for medical colleges in India to use unclaimed bodies for dissection. The easy availability of unclaimed bodies, coupled with lack of guidelines governing their transport and exchange, is probably a reason why we have not made the transition to using dead bodies obtained exclusively by voluntary body donation for dissection and research. Encouraging medical colleges to set up body donation programmes, coupled with streamlining the process of donation, storage and subsequent interment of the donated bodies is a suggestion for the road ahead. Harvesting dry bones from the donated cadavers with prior consent, will ensure a continuous and ethical supply of the same for students of human anatomy.