

REVIEW PAPER

Body Donation and its Importance in Teaching of Anatomy

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ABSTRACT

Learning, teaching and research on human anatomy is mainly based on cadaveric dissection. In medical science, cadaveric dissection gives a better understanding and knowledge in the teaching and learning of human anatomy. There is an ever increasing demand and scarcity of bodies for anatomical dissections in medical institutions. Unclaimed bodies are no more the best source of cadavers. The bodies that are coming from the body donation programmes are a noble and novel source and should be encouraged by all. Body donation may be defined as act of giving one's body after death for medical education and research purpose. It is governed by Anatomy Act of different states in our country. A variety of factors including age, religion, culture, personality characteristics, views of death and mortality, body image and humanitarian concerns influence people's perception towards body donation. Since the donated bodies are used to study the normal structure of the whole human body, all donated bodies are not usually accepted. It is the supreme and ultimate to those who wish to be useful to the humankind.

Key words: Dissection, Cadaver, Anatomy Act

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INTRODUCTION

Anatomy is one of the basic branches in medical science and its proper knowledge is having immense importance in the proper diagnosis and treatment of diseases. Many advances in medicine and surgery can be directly linked to a better understanding of the structure and function of the human body. Our understanding of the structure of the human body has evolved over millennia from the earliest speculations to the beginning of the scientific era. Teaching and learning of human anatomy by medical students is indispensable in the beginning of their medical career. Learning and research on human anatomy is mainly based on cadaver dissection. The cadaveric dissection gives us a sound knowledge of both macroscopic and microscopic anatomy. However, there is an ever increasing demand and scarcity of bodies for anatomical dissections in medical institutions. The bodies that are coming from the body donation programmes are a noble source and should be encouraged by all. Body donation is defined as act of giving one's body after death for medical education and research and thus a person can give back to society and give a student a chance to learn something that can influence generations to come¹. The terms anatomical donation or body donation or body bequest is commonly used and synonymous. Delmas² stated that body donation is a clear will made by people free and informed.

We present a brief discussion on various aspects of the noble, generous and unselfish act of body donation.

ANATOMY ACT AND BODY DONATION

Body donation in the UK is governed by the Human Tissue Authority under the auspices of the Human Tissue

Act 2004. The Anatomy Act, ratified by various countries in the world provides for the supply of unclaimed bodies to medical and teaching institutions for the purpose of anatomical examination and dissection and other similar purposes³. The Anatomy Act, enacted by various states in our country provides for the supply of unclaimed bodies to medical and teaching institutions for the purpose of anatomical examination and dissection and other similar purposes. Cadavers used by these institutions are usually unclaimed bodies obtained by the police. Sometimes, bodies are also donated by relatives of the deceased to teaching institutions according to the dead person's wishes. An unclaimed cadaver can be obtained legally for the purpose of dissection.

Anatomy act is a State Act propagated by the legislature and published in the State Government Gazette⁴. The Act regulates the use of dead bodies for medical purposes. Almost everyone can donate for medical research and education. Age, disease, or state of health does not necessarily eliminate an individual from being a donor, but may affect tissues or organs which are actually used. All donors are screened for infectious diseases like AIDS, hepatitis B and C, active tuberculosis, syphilis, and spore bearing organisms like *C. Tetani*, etc. Donors who are known to be infected with any of these diseases are refused for donation due to the risk to medical investigators and procurement personnel.

In this situation of increased demand and expanding needs in medical education and research, issue of body donation remains critical. However, many individuals have recognized and understood these needs and have donated their bodies voluntarily. In response to public interest in making contributions to medical science, state legislatures have enacted laws to support such generosity. In an editorial, Patnaik⁵ suggested that in order to remove the discrepancies existing between any two or more such acts, a uniform draft act should be made applicable to all the states to use as model of guiding principles for amendment of Anatomy Acts.

ANATOMY ACTS IN INDIA

In India, the Anatomy act was enacted for the first time in 1949 and is also known as The Bombay Anatomy Act, 1949 and was published in Bombay Government Gazette, Part IV, on the 22nd April 1949⁴. Since then all the states of India enacted the Anatomy Act. The Anatomy

Acts of India generally provides legal clearance for the collection of a dead body for teaching purpose, only if death occurs in a state hospital or public place within the prescribed zone of a medical institution, provided the police have declared a lapse of 48 Hours that there are no claimants for the body and it could be used for medical purpose^{1,6}. The Mysore Anatomy Act 1957 later amended as the Karnataka Anatomy Act⁷ defines "unclaimed body" means the body of a person who dies in a hospital, prison or public place or a place to which members of the public have got access and which has not been claimed by any person interested within such time as may be prescribed. The Assam state Anatomy Act of 1972 states "if a dead body is not claimed within 24 Hours inspite of information to relatives by police in cases where the near relatives is a resident of the same district, the body shall be treated as an unclaimed body."

The Delhi Anatomy Act provides for supply of unclaimed bodies of deceased persons to teaching medical institutions for Anatomical examination and dissection. It also provides procedure for disposal of unclaimed bodies in hospitals, prisons and public places. The Punjab Anatomy Act of 1963, makes a provision for the supply of bodies of deceased persons to hospitals, medical teaching institutions for therapeutic purposes or of anatomical examination, dissection, surgical operation and research work. The said act of Punjab states about taking possession of the unclaimed dead bodies in hospitals, prisons, public places for the aforesaid purpose. The said act also provides that a person having no permanent place of residence in the areas where his death has taken place, dies in a public place in such area and his body is unclaimed, the authorized officer of that area shall take possession and should hand over to the authorities in charge of an approved institution for the purpose specified¹.

BODY DONATION AND SUITABILITY

Since the donated bodies are used to study the normal structure of the whole human body, all donated bodies are not usually accepted. The decision of acceptance or rejection of a donated body is taken by the authority of the medical institute at the time of donation. As per law, the institution has the right to reject a body donation for any reason. Some of the major reasons for rejection of a donated body are emaciation or obesity, extensive burns, mutilation, advanced decomposition or a history of

contagious diseases (i.e. hepatitis B & C, AIDS, active tuberculosis, syphilis, etc.), suicide or homicide, removal of organs (except for eyes), etc.³

IMPORTANCE OF BODY DONATION

Dissection of human body for learning anatomy can be traced back to the 3rd century BC where Greek physicians Herophilus of Chalcedon and Erasistratus of Chios performed human dissections in Alexandria, Egypt. Later on, of course, Roman law prohibited dissection and autopsy of the human body. No new dissection studies were done until the early 14th Century. Medical professionals to enhance their skills and learn them test new surgical techniques and new medical instruments on human bones, joints and tissue. It is better to learn on cadaver how to use instruments than to experiment on patients⁸. Dissection of the human body is the only method of direct observation and measurement of the structures, organs, bones, ligaments and tendons that allow the body to function. Direct dissection is a fundamental part of the training of physicians and other care providers. Physicians cannot treat disease or trauma without a complete knowledge of anatomy. There is no substitute for the human body in the teaching and learning of human anatomy. Prakash et.al⁹ mentioned that dissection of human cadavers provides an emotional as well as intellectual approach to medical education. The experience and education gained through dissection cannot be replaced by any artificial substitutes, simulations or textbooks. An old Chinese proverb says "I hear I forget, I see I remember and I do I understand". "Therefore, when someone donates his/her body after death; helps in training of next generation of doctors for the betterment of mankind as a whole". Bodies donated by patients themselves are the ultimate gift that needs continued appreciation by educators⁸.

FACTORS GOVERNING BODY DONATION

There is insufficient number of cadavers to do the dissection in medical institutions of our country. This may be on account of low number of unclaimed bodies in a small state of our country. Moreover, the number of medical institutions is also increasing in our country which is also one of the contributing factors in the scarcity of cadaver. Therefore increasing the number of body donation may be a probable solution. However body donation has been a critical issue so far in this part of the

world. Very few studies are available to determine the factors responsible for body donation. In a report, Fennel and Jones¹⁰ found that the most frequent reasons for making a body bequest were to aid medical science and gratitude to the medical profession. In another report by Boulware et al¹¹ demographic and attitude factors were found to be strongly related in willingness to consider whole body donation. In another study in United States, Chung and Lehman concluded that the existing consent procedures for cadaver donations at United States medical schools did not provide sufficient information to the potential donors to constitute a fully informed consent. In another study by Boulware et al.¹² found that demographic, cultural and clinical factors associated with willingness to donate cadavers, whereas it was different in case of living related organ donations. Golchet et al¹³ found a variety of factors including age, religion, culture, personality characteristics, views of death and mortality, body image and humanitarian concerns influencing people's perception towards body donation. Funnell and Jones in their case studies observed that, the most common reasons for making body donation were to help medical science and gratitude to the medical profession¹⁴.

BODY DONATION AND DONOR'S ATTITUDE

Bolt S. et.al mentioned in their studies that most donors are primarily driven by altruism and their desire to aid the advancement of medical knowledge and to be useful after death¹⁵. In a survey by Richardson and Hurwitz published in Lancet, on 218 donors to ascertain attitudes towards body donation reported the overwhelming rejection of the view of money incentives to promote donation. The study found that the anxiety of disrespectful behavior toward cadavers was one of the reasons for not donating bodies¹⁶. Sehirli et al.¹⁷ reported that although anatomists encourage cadaver donation, the attitudes of anatomists toward donating their own bodies for dissection is not well known.

In a monumental review article from Northeast India, Ajita R and Sing YI¹ commented that attitude of donors plays a crucial role in body donation. The review also commented that the most major religions support donation as an act of human kindness, but people are often unaware of their faith towards donation and may be misled by old superstitions or misreading of religious texts and ultimately leading to hesitation in giving consent for donation. Lagwinski M et.al¹⁸ had been observed that the

main obstacles for the body donation were based on diversities: legal, cultural, religious, sociological, educational and economical. Cantarovich¹⁹, in his study, observed about the lots of resistance towards body donation. According to him some of the major reasons are: lack of awareness, religious uncertainties, distrust of medicine, hostility to new ideas and misinformation. Gillman²⁰ analyzed the views of the major faith groups about donation and concluded that the large majority of faiths take a positive stance towards donation. Arraez-Aybar et al.²¹ observed in their study that Anatomy teachers are generally in favor of donation (86.5%), especially of organs alone (52.7%) and this aspect was not affected by their religious beliefs. Ballala et al.²² studied the knowledge, attitude, and practices regarding whole body donation among medical professionals in a hospital in India. Their results suggested that the knowledge, attitude, and practices regarding whole body donation were very poor among the medical profession and educating them regarding the altruistic act of body donation is as important as educating the general public which is very shocking.

ROLE OF MASS MEDIA

Conesa et al (2004) done a study to observe the impact of different sources of media such as television, hoardings and posters, campaign on donation and information by healthcare professionals on the awareness of body donation among the public. Television was found to be having the greatest impact towards body donation, followed by press and radio and the third is magazines and talk with friends and family. The fourth is hoardings and posters, and campaigns about organ donation; and last factor is information given by health professionals²³. Jadhav D.S and Zambre R. B.²⁴ mentioned in their review article that the media with the greatest impact on the population is television; the second factor is the press and radio; the third is magazines and talks with friends/family; the fourth is hoardings and posters, and campaigns about organ donation; and the last factor is information given by health professionals. It was concluded that opinion on donation is more favorable among subjects who have received information on an individual basis and at specialized meetings.

It was mentioned that individuals must be encouraged to donate their bodies and bodily material through advertising campaigns among people, while ensuring that

elements of trust, consent and confidentiality are strictly adhered to and also mentioned for offering financial incentives in the form of providing for the whole cost of funeral of that donor²⁵.

CONCLUSION

In our country, willed body donation programs are still in budding stages. Voluntary donation of body is not much different from donation of organs including eyes, kidney, liver, heart or simply blood; only a bent of mind is needed. It is seen that the decision of an individual to donate his/her body for anatomical examination is a vital contribution towards the understanding and advancement of medical science. A donated body can be used for a number of possible purposes including teaching of the structure and function of the human body to students or healthcare professionals (human anatomy); scientific studies which improve the understanding of the human body (research) and learning surgical techniques etc. The execution of body donation should be considered as a gift of life and the ultimate fulfilment of one's own life. It is the supreme and ultimate to those who wish to be useful to the humankind.

The medical students as well as the other medical professionals have to change their approaches towards the body donation. We have to actively involve in the body donation programmed by organizing different awareness campaigns among common people. One should start the campaign from his or her own only, which will encourage the other people. Moreover, we should pay proper respect to the cadaver as well as to their relatives, which will encourage people to come forward for donating their body.

The Government and medical institutions should encourage and promote voluntary donation of dead bodies. Body donation is a way to express gratitude to medical science and health care.

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"We declare that this work was done by the author (s) named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors".

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