

## To Study the Demographic Data of the Body Donation in a Tertiary Care Hospital

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### Abstract

**Background:** Body Donation is an act of giving one's body after death for medical research and education. Dissection of human cadavers is mandatory for learning Anatomy. Whole body donation is vital for advancement of medical research and education but it is statistically under reported. To better understand the composite of donors for medical research and education this study will examine body donation demography. **Aims and Objectives:** To examine and characterize the number of body donation registrations and whole body donations in a tertiary care hospital viz. age, gender, religion and occupation of donors. **Materials & Methods:** The data of body donation and its registration is studied from a tertiary health care hospital accepting body donation since 1986. The records of body donations accepted during the period 1986 to 1997 and 2005 to 2016 and registrations for body donation done during the period 1986 to 1994 and 2003 to 2016 were available and analysed. **Results:** The present study shows that the number of body donation registrations and body donations per year remained more or less same over the years. After doing promotion of body donation there was increase in awareness of body donation among population which reflected in terms of increase in registrations for body donation. Donation of male bodies is comparatively more than female bodies. Majority of the body donations were from older age group. **Conclusion:** Present trend of voluntary body donation is adequate for teaching undergraduate students. Efforts must be made to motivate more people to bequeath their bodies to meet increasing demands of cadavers.

**Keywords:** Body Donation; Body Donation Registration; Body Donation Awareness.

### Introduction

The study of Anatomy requires cadaver dissection as an indispensable part. Anatomy subject is foremost in the curriculum of most of the medical and paramedical courses. Medical education in India is strictly regulated by the Medical Council of India (MCI) [15] and mandates 650 hours for teaching Anatomy at the undergraduate first MBBS level and this requires a steady supply of cadavers to facilitate

Anatomy teaching as per MCI norms. Now a days with the advancement of new techniques in medical field, most of the clinical professionals want to practice these techniques on cadavers to enhance their skills, thus concepts of cadaveric laboratory [14] and cadaveric workshops have emerged in medical education. With increase in the number of new medical institutions in the country every year the demand for cadavers is rapidly increasing. There is Bombay Anatomy Act [21] under which unclaimed dead bodies are provided to medical and teaching institutes. But due to rapid increase in demand for cadavers, unclaimed bodies no longer can be only source of procurement of cadavers and eliciting cadavers through body donation is required [19]. The present study attempts to investigate the trends in body donation in this institution which is so very important to fulfil the above mentioned requirements. Lack of data pertaining to body donation in this region of India also prompted us to undertake the

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study. The present study attempts to assess the adequacy & profile of cadavers donated to this institution for the purpose of medical education.

### Material and Methods

The records of whole body donation during the period 1986 to 1997 and 2005 to 2016 were studied. Analysis of the body donations accepted during 2005 to 2016 is done pertaining to number of donations per year, age, gender, religion and occupation of donors. During the period 1986 to 1997 the data available gave the number of body donations per year and the gender of the donors.

The body donation registrations during the period 1986 to 1994 and 2003 to 2016 were analysed. Number of body donation registrations per year and analysis of number of registered people who have donated their body in the institution is done.

### Results

During the period 1986 to 1997, 146 body donations were accepted. Maximum body donations were accepted in the year 1992(26) and minimum in 1997(3) (Table 1). Male body donations (92, 63.01%) outnumbered female body donations (54, 36.98 %) (Table 1). Record of age, religion, occupation and residence was not available of these donors.

**Table 1:** Table depicting number of body donations per year and gender of donors during 1986 to 1997

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
No. of body donations	2	4	10	14	18	16	26	20	17	07	09	03
No. of male body donations	2	3	5	9	10	12	13	13	9	6	8	2
No. of female body donations	0	1	5	5	8	4	13	7	8	1	1	1

Profiles of body donations accepted from the year 2005 to 2016 were evaluated and following results were derived. During the period 2005 to 2016, 140 body donations were accepted. Maximum body donations were accepted in the year 2007(16) and minimum were in the year 2009(4) (Table 2). Male body donations (91, 65.00%) outnumbered female (49, 35.00%) except in year 2010 female donations were more than males (Table 2). The youngest donor is of

male gender and the oldest donor is a female. The common age group of body donations is 81-91 years (Table 3) and the average age of body donation is 78.22 years. Majority of the whole body donations were from Hindu faith (118, 84.28%) followed by Jain (19, 13.57%) and Christian (3, 2.14%). It was observed that body donations were done by people having varied professions.

During the period 1986 to 1994, 911 registrations

**Table 2:** Table depicting number of body donations per year, gender and age of donors during 2005-2016

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
No. of body donations	11	11	16	09	04	15	11	11	15	11	11	15
No. of male body donations	8	7	12	5	3	7	6	8	8	8	9	10
No. of female body donations	3	4	4	4	1	8	5	3	7	3	2	5
Lowest age with gender	54yr M	47yr M	51yr M	64yr F	73yr M	57yr F	73yr M	65yr F	53yr F	51yr M	73yr M	58yr M
Highest age with gender	91yr M	93yr F	90yr F	89yr M	84yr M	91yr M	96yr M	92yr M	93yr M	90yr F	97yr F	93yr M
Average age in years	76.54	69.27	78.5	76.77	80.25	76.06	85.54	80.09	79.2	76.18	84	76.26

(yr – year, M – Male, F – Female)

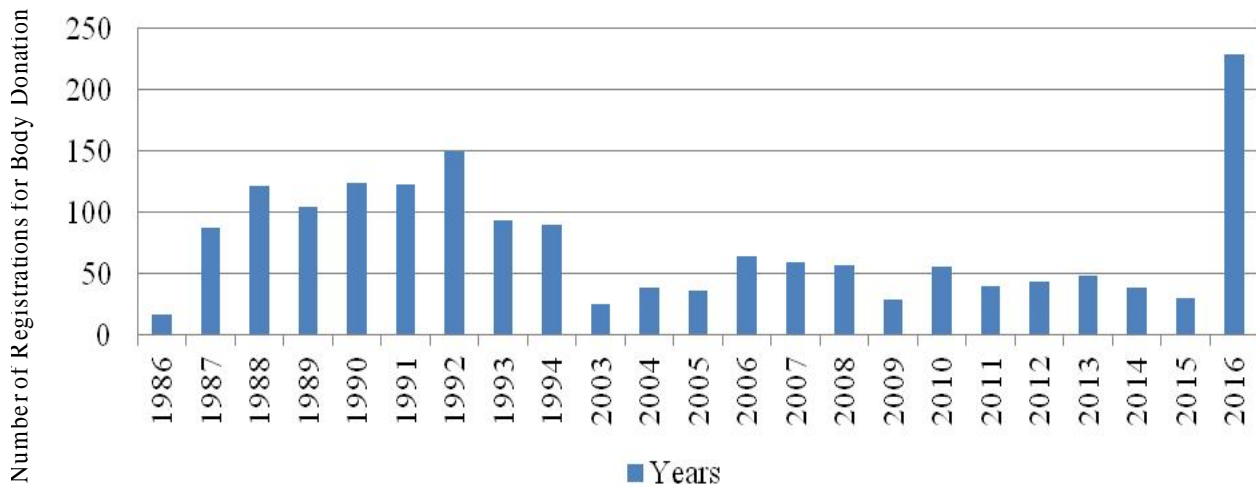
**Table 3:** Table depicting common age group of body donations during 2005 to 2016

Age (years)	41-50	51-60	61-70	71-80	81-90	91-100
No. of Donors	1	10	16	50	53	10

for body donations were done and during 2003 to 2016, 795 registrations were done. A total of 1706 registrations for body donations were done. A sudden increase in the number of body donation registrations was observed in year 2016 (228) (Graph 1).

body had registered their body for donation (50, 35.46%) (Table 4). Of the 50 donors, 9 donors (0.98%) had registered for body donation during the years 1986 to 1994, and 41 donors (5.15%) had registered during 2003 to 2016.

A significant number of people who donated their



**Graph 1:** Graph depicting number of Registrations for Body Donation per year

**Table 4:** Table depicting number of people who have donated their body and had registered their body for donation in the institute.

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
No. of donors who had registered	4	1	10	06	02	06	05	04	03	01	03	05

### Discussion

There are very few researchers who have studied the factors affecting the willingness to donate the body. These are race, ethnicity, demographic factors, awareness about body donation, age, sex, education, occupation, income, attitude about religion, spirituality, marital status, number of descendents [4, 6, 13]. Boulware LE et al has concluded that demographic and attitudinal factors were found to be strongly related to willingness to consider whole body donation [6]. Golchet G et al reported factors such as age, religion, culture, personality characteristic, views on death and mortality, body image and humanitarian concerns influence people's opinion towards body donation [11].

According to Cantarovich F some of main reasons for unwillingness to donate the body are lack of awareness, religious uncertainties, distrust of medicine and hostility to new ideas, misinformation and disrespectful behaviour towards cadavers [8]. Boulware LE et al has observed that African-

Americans older age, lower education, lack of insurance, unemployment, co morbid conditions and religion/spirituality were associated with less willingness to donate cadaveric organs [7].

Shirli US et al, Boulware LE et al, Ajita R and Singh I have stated that although whole body donation is extremely important for medical education, the number of persons who choose to donate body remains low. Hence scarcity of bodies is felt all over the world [20, 6, 1]. In a survey carried out by Rokade SA and Bahetee BH in some of the medical colleges in Maharashtra, India showed gross insufficiency of cadavers in 90.90% of medical colleges [17].

A study done in Kolkata by Sadhu A et al in a time span between 2001 to 2010 total cadaver donations accepted were 225, highest number of cadavers were donated in 2010 (55) and lowest in 2004(7) . In their study an increase in number of body donations was observed from 2004 to 2010. They have attributed this increase in donations to these reasons- 1) a voluntary organisation responsible for spreading awareness and motivating common person for donating their

bodies, 2) avoiding economic burden of performing last rites of the deceased, 3) rich dividend of gaining reputation by contributing oneself to the noble cause of advancement of medical science [3].

Bhusari PA et al have stated that in their study done in Nashik total donated bodies from 1991 to 2010 were 108. They observed that during 1991-2000, 18 dead bodies were donated. A body donation awareness programme was started in their institute from 2000. It was observed that from 2001 to 2010, total number of body donations increased to 90. They attributed this threefold increase to the body donation awareness programme [5].

In our study it is observed that body donations accepted in the two sets of twelve years –1986 to 1997 and 2005 to 2016 were 146 and 140 respectively and they are fairly similar. In spite of scarcity of body donation in parts of Maharashtra the institute where this study was done received cadavers enough for teaching and evaluation of first MBBS as per MCI Regulations [15].

Diuzen DE et al, Boulware LE et al, Alashek W et al observed that donors were predominantly males [2, 6,9]. The gender males are more inclined towards body donation than females and it has significant association with the willingness to donate the body [2,6,9,18].

In study done by Sadhu A et al in Kolkata of the 225 donations male cadavers were 161 (71.56%) and female cadavers were 64 (28.44%). Female cadavers aged 8 years and 103 years were the youngest and eldest respectively. This difference in sex distribution can be attributed to the fact that our male dominated society discourages spread of awareness among the women folk [3]. Bhusari PA et al have observed in their study that out of 108 donated dead bodies, 81 were male dead bodies and 27 were female dead bodies [5]. In our study male donations outnumbered female except in the year 2010 female donations were more than male donations.

Rokade SA and Bahetee BH have stated that age is associated with willingness to donate one's body [17]. Various researchers have shown that the people from young age are more willing to donate body than those from old age [2,4,7,18]. In study done by Sadhu A. et al in Kolkata the average age was 68.57 years. According to his study 74.67 % of the bodies were of the age group 61 to 90 years [3]. In a study done by Goyal PK and Gupta M from Punjab India, 63.04% bodies were of the age group 61-90 years [12]. Bhusari PA et al have observed in their study that the most common age group of donated dead bodies is 71-80 years of age [5]. In our study observations common

age group for donation was older age group. This reversal of trend in India compared to other nations can be explained by attitude of altruisms by donors which may become prominent in elderly people [1].

Religion has significant association with body donation. Almost all religions in the world support and encourage the act of donation. However the decision is left to personal conscience [16]. Gillman J reviewed the positions of the major groups about donation and concluded that the large majority of faiths take a positive stance towards donation [10]. Boulware LE et al recorded that the donors concerns regarding their religious beliefs and spirituality is responsible for low cadaveric donation rates [7]. Data of religion of people who donated their bodies from Sassoon General Hospital Pune showed that 91% of them were Hindus [18]. In our study majority were from Hindu faith followed by Jain. The tertiary health care centre where this study is done has in its vicinity residential areas of Jain community and this explains the number of Jain body donations. It was observed that body donations were done by people having varied professions.

Bhusari PA et al have stated in their study that because of the body donation awareness programme, there was an increase in registrations of body donations [5]. In our study a sudden increase in the number of body donation registrations was observed in year 2016 (228). This increase is attributed to a voluntary organisation which was instrumental in spreading awareness and motivating people for donating their bodies.

In our study an important observation is a significant number of people who donated their body had registered their body for donation in the tertiary health care centre.

## Conclusion

The demographic study of the Body Donation in a tertiary care hospital was conducted for period over two decades and the scenario of body donation since 1986 is evaluated. It can be concluded that the number of body donations is fairly same over the years in the tertiary care centre where this study was done. Cadavers received were sufficient for teaching and evaluation of first MBBS as per MCI Regulations. Because of body donation awareness programme conducted in the year 2016 by an organisation, an increase in awareness of body donation among population was noticed in the form of increase in number of registrations. As the demand for cadavers is increasing day by day to meet the future needs of

body donation the body donation awareness programme is required.

This institute received mostly male cadavers however female cadavers were significant in number. Body donations were mostly by elderly people. Majority donations were from Hindu community followed by Jain community. The occupation of the people who donated their bodies were varied.

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