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Attitudes and Myths regarding Posthumous whole Body Bequest and Organ Donation among Medical Professionals and Health Care Personnel of Tribal Chhattisgarh – A Broad Questionnaire Based Review

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Abstract **Original Research Article**

Introduction: Medical institutions and hospitals worldwide and India in specific are typically facing an acute shortage of donated human body and organ. Among the bouquet of reasons, awareness, attitude, legal and medical knowledge are undoubtedly the prime factorials. A better understanding will enhance this noble strategy. With the objective to interpret the dismal behavior of Indian community related to body / organ donation, we try to access the mental makeup of a cohort of urban population of tribal city of Raigarh of Chhattisgarh (India) with Undergraduate MBBS students and paramedical staff of late Shri Lakhiram Agrawal Memorial Government Medical College as the study sample. ***Materials and methods:*** A pretested self-structured questionnaire distributed to 630 (181 MBBS students and 449 Paramedical staff) participants who consented to participate followed by an awareness session with the researchers. Data obtained was statistically analyzed. ***Results:*** Among 181 MBBS students and 449 paramedics who filled consent forms, the overall awareness was found to be 90.42% with 66.03% gathering information from medical faculty of the College, followed by media (33.97%). 81.75% supported body / organ donation as need of the hour. 72.37% Medico's and 27.64% paramedics were aware about "brain dead". 45.30% and 31.63% were registered donors and 66.55% giving positive response to donate organs for their relatives or friends. Appropriate legal view on donation was known by 26.51% individuals only. Simultaneously, due to organ mutilation 21.55% of MBBS students and 11.59% paramedics showed unwillingness towards donation programme. Religious attitudes were also one of the causes of displeasure towards the donation programme for 22.18% respondents. ***Conclusion:*** Medical professionals are the critical in eradicating doubts regarding body / organ donation programme. A specially designed teaching intervention can be proposed in Medical teaching curriculum along with mass level public awareness to peak up the donation process.

Key words: Body donation, organ donation, awareness, attitude, medical professionals, donor, Tribal

INTRODUCTION

Anatomy is one of the fundamental and toughest subjects of medical curriculum bestowing treasure of knowledge of body structures. Theoretical knowledge accompanied by practical implications is always helpful to improve the fundamental concepts in medicine [1]. Thorough practical understanding of "Anatomical basis of disease" is of utmost importance for a clinician for differential and provisional diagnosis and treatment. Knowledge of Anatomy is incomplete and can be dangerous without the principal tool of "real dissection" of human body. Training in practical human dissections starts in first year for a medical student which provides the medico a guiding stick to be a successful and competent future medical professional [2].

"Fortunately or unfortunately", now – a –days advanced technological features like LCD, CD, DVD, Power point projectors, assisted models, mannequins, simulations and even virtual dissection software [3] is trying its best to override the time tested teaching method of chalk and blackboard. But the urge of an Anatomist is never satisfied without real dissection with all its topographical Anatomical layers supplemented by its fascia, muscle, viscera and neurovascular structures intact [1]. Dissection is the unseen guiding force in developing a spatial and tactile appreciation for the fabric of the human body that can never be achieved by new computerized learning aids [3]. Cadavers in Anatomy are also used for gaining surgical skills and developing new surgical techniques in medicine before applying the same therapeutically with confidence over

patients. This has been seen as the gaining popularity of Cadaver based clinical workshops.

Attitude among students developed during dissection may influence their interactions and rapport with future patients and families. Hence dissection on cadavers is a landmark to recognize emotional issues that students may confront to guide them towards becoming good human physicians [4]. Cadaveric dissection has been labeled as "royal road" and the cadaver as the "first teacher/ patient" in medical profession [6]. Hence researchers since time immemorial have always predicted as no substitute to dissection of true cadaver [6] and cannot be compromised with new teaching aids [4, 5, 9]. But with day to day revamp in medical curriculum, the shine in Anatomy is been gradually abraded and aided by unavailability of human cadavers. Anatomy without cadaveric dissection is similar to a body without a soul.

- **History [3, 6, 7, 12, 37]**

The use of cadavers for medical education and training started in 500 B.C. "Shankaracharya" firmly believed "Iddham Sharirum paropkarum" with true meaning that the body is for the use of others in which death is not the end; it is the beginning. In ancient days, "Sushruta" dissected a number of human bodies in about 500BC. His famous work is known as "Susruta Samhita"."Herophilius" (350-280 BC), a Greek physician, was one of the earliest to have opened the human body after death and have claimed to have dissected about 600 human bodies. According to Indian mythology the first instance of Body Donation was that of "Rishi Dadhichi". He donated his living body (during his life time) to "Devraj Indra", for preparation of auspicious weapon named "Vajra" out of his bones. These pious weapons defeated the enemy "Daitya Vritasur". The first known legal human dissection dates back to 1238 AD and 1300 AD from Salerno and Bologna cities of Ancient Italy. Although such legal dissection occurred in special cases, the increasing demand of human cadavers for Anatomy teaching lead to "grave robbing" and "body snatches".

The first known "body snatching scandal" occurred in "Mondino, Italy" in 1319 with four students being arrested for body snatching. "Andreas Vesalius" (1514-1564) was the first medical student to dissect the cadaver and also continued with it even as a professor. In late 18 and 19th century, when demand of cadavers exceeded supply in United States medical education allowed dissection on slaves and thieves wherein the bodies were obtained from grave robbers and anatomists would even dissect their own family members. In those days, dissection was considered a punishment given to the criminals after hanging them. In the 16th century, Leonardo da Vinci found it necessary to pursue his study of human anatomy at night in newly constructed tombs. Absence of legal endorsement to such studies compelled him to hide his notebooks in such a way that they were not discovered for almost 300 years.

"William Harvey", who was famous for discovering 'circulatory system', dissected even the body of his own father and sister. In United Kingdome, the "Murder Act" 1752 permitted the use of corpses of executed criminals for dissection with a quota of 6 cadavers each year. However, due to increased demand for cadavers for medical science, the Anatomy Act was passed in Massachusetts of America in 1831. In 1831, there were about 900 students in London studying anatomy and only as much as 11 cadavers were legally available for dissection. Obviously, the demand for cadavers manifested in to illegal grave robbing. The name "resurrectionists" was given to such illegal grave-robbers. They used to take advantage of a loophole in the law, which did not consider the dead body as a "property". The grave robbers used to take the body out of the coffin before the grave was covered, which meant that it was not the act of desecration of the grave, and the act of "resurrection" would not be considered illegal as long as the shroud or any jewellery on the body was not stolen. Due to the increasing demand of cadavers, the surgeons and anatomists used to be unfortunately dependent on the "the resurrectionists".

One step ahead of grave-robbing was murdering the innocent so as to procure the dead body for sale. In 1827 and 1828, two unemployed Irish labourers William Burke and William Hare went on a murderous rampage, killing more than 20 individuals. The fact was revealed only when some of the medical students recognized the dead body of a young woman as Mary (a 'known' prostitute in the area), and those who knew her felt she was quite healthy and they did not see any obvious reason as to why she died. This shocking incident in Edinburgh led to a public uproar and brought in an urgent need for legal intervention. The Royal Commission that followed resulted in creation of the long discussed and long-awaited "Anatomy Act in 1832", which thereafter popularly came to be known as "original" anatomy act. This Anatomy Act passed in United Kingdom (U.K.), permitted the donation of the body of the deceased by his kin, also permitting the use of unclaimed bodies for dissection. Thus donation of body to science was unheard till 1832 when British utilitarian philosopher Jeremy Bentham's body was donated. The act was repealed by Anatomy Act 1924, which was in turn was repealed by Human Tissue Act 2004. In India, the Anatomy Act was passed in 13th April 1948 (to be uniformly adopted by all its states) to provide unclaimed bodies of deceased persons for the purpose of anatomical examination and research. The Anatomy Act describes "Unclaimed Body" as a dead body only if death occurs in a state hospital or in a public place within the prescribed zone of medical institution, provided the police have declared a lapse of 48 hours that there are no claimants for the body. The Anatomy

Act was further amended in 2000 to allow donation before death of one's body or any part thereof, after death by a person to a hospital and medical teaching institution for therapeutic purpose, medical education and research. India first experienced of body donation in the year 1956, when the body of Pandurang Sridhar Apte was donated to B. J. Medical College Pune. Previous chief minister of West Bengal state and a senior political leader Shri Jyoti Basu had donated his body to Medical College Kolkata.

Anatomy Act was passed in New Zealand in 1875 and in Australia in 1930. In 1974 "Human Tissue Act" was passed in Malaysia, In 1990 "Trillium gift of life network Act" came into existence in Canada.

Philosopher Jeremy Bentham's body was donated in 6th June 1832 to Royal College of London according to his will at the age of 84. It is worth mentioning that Jeremy Bentham had thought of donating his body 63 years before (1769) the "Anatomy Act" came in force in the United Kingdom. Bentham also had given guidelines to donate his body for dissection and its preservation as an "auto-icon". The paper detailing this was attached to his last will of 30 May 1832. Bentham passed away on 6 June of 1832 and the "Anatomy Act" came in force in England on 1st August of the same year. In 1943, the first body bequest in New Zealand was recorded.

The craze for human dissection is tremendous for the newly admitted MBBS students admitted to medical school. Following the recommendations of medical curriculum by Medical Council of India, first year medical undergraduate education programme includes allocation of about 675 hours (220 hours of lectures, 415 hours of small group teaching/tutorials/integrated learning/practical hours and 40 hours of self-directed learning) of Anatomy teaching in addition to 30 hours of early clinical exposure and 34 hours of attitude, ethics and communication module (AETCOM) [9, 10]. But the mushrooming medical institutes in India (the second most populated country) [2] with the admitted MBBS students studying Anatomy in a short stipulated time frame are facing extreme disappointment and obstacles in understanding Anatomy due to dire shortage of essential human cadavers [2]. The question is still haunting as to why there is scarcity in the availability of cadavers [2] inspite of the fact that research in Anatomy is constantly increasing.

The increasing trend of hands-on cadaver workshops conducted to impart soft training skills to the surgeons regarding certain complicated procedures makes the cadavers indispensable [11].

Donation means something given for charity purpose to benefit a cause [12]. Donation is a clear will made by people free and informed [12]. Organ donation is defined as the removal of tissues from the human body, from a living or dead person, for the purpose of transplantation as a treatment [15]. Similarly, the same challenge is being faced by the large number of wait listed patients who may die due to scarcity of essential donated human organs. Even though we know that human organs can be replaced by human organ only rather than the prosthesis, in India the concept of the body or organ donation for a novel cause is still not so much popularized [2].

- **Statistics and mathematical values [12, 14, 15]**

Australia has 26 organ donors per million, Britain has 27, Canada has 14, Croatia 36.5, Spain has 35.1 donors and USA has 26 donors per million whereas India has only 0.26 donors per million population. On an average about 106 people are added to an organ waiting list every day and 18 people die each day for an organ. In India nearly 5 lakh people die every year because of non-availability of organs. Around 1.5 lakh people await a kidney transplant of which only 5000 get it. About 2 lakh people have liver diseases and 20000 of them are in need of liver transplants but only 500 are fortunate to get transplanted. While annually around 4000 - 5000 patients in India require a heart transplant but so for only 100 heart transplants have been conducted across the country. In 2012-13, India collected only 4417 corneas against a whopping requirement of 80000 to 100000 per year. In India every year about 500000 people die because of non-availability of organs, 200000 people die due to liver disease, and 50,000 people die because of heart disease.

The general propensity now a day is to procure more cadavers through Anatomy departments "where death delights to serve the living" and body donation is slowly becoming the principal means of procuring the body for the institute [17]. Similarly, organ transplantation (in cases of end stage organ disease and organ failure) in modern medicine has helped many patients getting a new life. But, organ donation program in India has been slow causing inadequate supply of donated organs [17]. Organs such as "part of liver" or "a kidney" can be donated by healthy living individuals and almost 30 or more organs can be donated by medically declared "brain dead" individual. Fewer organs can be also being donated following cardiac death [17].

However [14, 18] the natural barriers in the acute shortage in body and organ supply are lack of awareness among public, misconceptions, superstitions [12], religious and cultural myths and beliefs, a variety of personal (age, sex, caste & socio-economic) factors [6] including psychological, educational and economic issues. Awareness and legality regarding organ donation after "brain death" in India is very poor necessitating immense importance for organ donation [19, 20]. An enquiry into these factors has resulted in an increase of donated cadavers in some countries, while

other countries still lack a steady stream. Therefore, it becomes important for each country to determine the factors and attitudes influencing public for organ and body donation required for the upliftment of Anatomy and medical research.

- **Anatomy Act of India [3, 11, 12, 13]**

In India, "the Anatomy Act" was enacted in 1948 to provide unclaimed bodies of deceased persons to hospitals and medical and teaching institutions for the purpose of anatomical examination and dissection. It has been uniformly adopted in all its states. In Maharashtra (old Bombay State) the Anatomy Act was adopted as "Bombay Anatomy Act" 1949. According to section 5(1) and (2) of this act, "Where a person under treatment in a hospital whether established by or vesting in, or maintained by the State Government or any local authority, dies in such hospital or a person in a prison and his body is unclaimed, the authorities in charge of such hospital or prison shall with the least practicable delay report the fact to the authorized officer and such officer shall then hand over the "unclaimed body" to the authorities in charge of an approved institution for any therapeutic purpose or for the purposes of medical education or research including anatomical examination and dissection". The section 5(3) of the law states that "Where a person having no permanent place of residence in the area where his death has taken place dies in any public place in such area and his body is unclaimed, the authorized officer shall take possession of the body and shall hand it over to the authorities in charge of an approved institution for the purpose specified in sub-section (1)". The act was further amended by the state legislative council in 2000 to permit donation before death of one's body or any part thereof, after death by a person, to a hospital, and medical & teaching institution for therapeutic purpose, medical education and research.

The MP Anatomy act was established in 1954. "The Mysore Anatomy Act" came into existence in 1957 later amended as Karnataka Anatomy Act 1998 by Karnataka state defines 'unclaimed body as the body of a person who dies in a hospital, prison or public place or a place to which members of the public have access, and which has not been claimed by any person interested within such time as may prescribed. "The Punjab Anatomy Act" was deployed in 1963 makes provision for supply of bodies of deceased person to hospitals medical teaching institutes for therapeutic purposes or of anatomical dissections, surgical operations and research work. Likewise Body donation law came into existence in Japan in 1983.

- **Rules of body donation and accepting a human body or organ [3, 12]**

The Act does not prevent person of any age, sex, caste or socioeconomic status from body donation and also allows any Medical college, teaching / research institution approved by state or central Government to accept human body or organs for medical education, research or treatment.

According to Bombay Anatomy act section 5 B (1) 'If any person either in writing at any time or orally in the presence of two or more witnesses during his last illness whereof he died has expressed a request that his body or any part of his body be given to authorities in charge of an approved institution for being used after his death for therapeutic purposes or for the purpose of medical education or research including anatomical examination and dissection, the person lawfully in possession of his body after his death may, unless he has reason to believe that the request was subsequently withdrawn, authorize the removal of the dead body or such part thereof to any approved institution for use in accordance with the request'.

Section 5B(2) further states that ' Without prejudice to the provisions of sub-section (1), the persons lawfully in possession of the body of a deceased person may authorize the removal of the whole body or any part from the body for use for the purposes specified in, sub-section (1) unless such person has reason to believe-

(a) that the deceased had expressed an objection to his body or any part thereof being so dealt with after his death, and had not withdrawn such objection; or

(b) That any near relative of the deceased objects to the body being so dealt with

- **Body donation procedures [3, 7, 12]**

Registration for body donation

(a) Fill the body donation form, signed by 2 witnesses, (Willingness form/ Body donation will form) obtained from state/central Government institutions (As said previously) (Body can be donated even if the form is not filled).
(b) Person of 18 years or above.
(c) Close relatives should be made aware of the body donation will.
(d) Body should be brought to the nearest approved institution (within 4-6 hours) by the close relatives.

Unregistered donors

- If it were known that the deceased had wanted to make a bequeathal of their body, but never got around to filing the paperwork during their lifetime, the gift (donation) could be made by their relatives after their death.

Documents check list at the time of donation

a. Signed and filled natural death certificate, without any ambiguity. (Mentioning the cause of death) from a registered medical practitioner of hospital (Mandatory) (For claimed body), with body disposal pass from local Municipality or Corporation or local police station.
b. No objection certificate from district administration (For unclaimed body)

c. Application from the close relatives (For claimed body)
d. Photo copy of Aadhar card or any Government identity card (For claimed body)

But, even though the will form has been filled by a donor; the act of donation cannot be fulfilled until the relative wish to do so.

- **Can a body be rejected at the time donation? [3, 7, 12].**

As the prime role of donated body is medical education, research, hence sometimes a body might not be accepted by the institution due varied reasons like medico-legal issue (Suicide, homicide or accidental death), post mortem body, body having a known contagious disease (HIV, AIIDS, Hepatitis B & C, Tuberculosis) or a known case of Gangrene, Jaundice, hemophilia, advanced malignancies, some kind of dementia not diagnosed as senile dementia, Creutzfeldt Jacob disease), decomposed body, extreme obese or emaciated body, body with organ removed (except eyes), body with Psoriasis or bed sores. Even a recent history of major surgery causing amputation of limbs may be a cause for rejection of a donated body by a medical institute.

Medical students and healthcare professionals may act as potential donors [20] and a critical link in the body and organ procurement process. Hence, education of future doctors and healthcare professionals in various aspects of organ and body donation will serve as vital instrument for propagation of this knowledge among general public [16, 21]. Educators should understand the role of health professionals over body and organ donation for assessing the degree of knowledge and attitudes of medical graduates regarding organ donation. Evidence has suggested that health care professional's knowledge, attitudes and behaviors are essential factors in the creation and promotion of an environment that has a positive influence on organ donation rates [12]. The results of this study will emphasize to improve the knowledge of future health care professionals about body and organ donation.

- **Body donation and Indian mythology [1, 38, 39, 40]**

The word donation now days, actually has an important mythological correlation. Literary speaking, donation means "Dana" meaning to give. Indian mythology has always documented that anything which is in excess or of no use to you should be given to others. Documentation of "Dana" in multiple forms can be read from mythological texts such as annadana, bhoomidana, godana, jaladana, etc. Vedas and Puranas has also cited about "Dana". Padmapurana in Krutayuga states that practice of penace is the best karma of life, in Dwaparayuga, oblation is the best karma of life and in Kalayuga, donation is the best karma of life. Studies from Mythology admits that donation gives us a sense of charity, makes us become selfless and brings divinity closer to us as human being. "Deha" means body and "Dana" means donate, forming the unselfish word body donation. The great Hindu saint "Shankaracharya" quoted "idam shariram porapkaram" death is not the end but the beginning and your body is for use of others. Cursed demon Gajasura donated his elephant head to lord "Ganesha"

Global status of availability of cadavers and a broad review of literature

A wide variety of studies could be obtained from literature review to access the global status on availability of cadavers.

A Turkish study of 2004 [3, 22] highlighted the insufficiency of cadavers in Anatomy education, as body donations had been very few.

A study from India in 2012 [10, 23] shows the inadequate supply of cadavers in almost 90% of Medical Colleges in Maharashtra state. Another study in the same year reached the conclusion of 96 medical and dental colleges all over India showed that 63.8% cadaveric shortage for anatomical dissection during the first year of medical degree curriculum. The study highlights that instead of an ideal "Student Cadaver Ratio" of 10:1, the existing average ratio was in the range between 8:1 and 50:1 (average 20:1).

Only 49% of the institutions had an ideal student cadaver ratio. A study conducted in Nigeria [24] among 26 universities and 12 state Government hospitals between May 2009 and November 2010 revealed gross inadequacy of human cadavers for Anatomy dissection.

Surprisingly, Singapore [25] received only 6 cadavers in 2012 to serve the educational purpose of 282 medical students at The Yong Loo Lin School of Medicine.

Scarcity of cadavers was also reported in Illinois City of the United States [7] where 600-800 cadavers per year has been documented to have been received between the years 1997 to 2002 but slowly declined during the subsequent 10 years. In the year 2012 as much as only 530 cadavers were received, which was barely enough to meet the demands of Illinois medical schools.

Similar aggravated condition has been noticed in Medical schools of Japan after 1970 [7]. Searching more documents [18] gave us the proof about organ donation among researchers in India who found awareness regarding organ donation was found to be 98.7-100%. Their 69.4% participants claimed television as their source of information regarding organ donation and 46.7% stated that it is possible for patient to recover from brain death. The study claimed awareness

regarding eye, liver, heart and kidney donations was found to be 92.4%, 87%, 87% and 97.8%, respectively. They further stated that 87% of medical students were aware of need for legal supervision, and awareness regarding the existing laws was found to be 57.6%. Vaishaly K Bharambe *et al*. [44] in their research in an Indian Medical College hospital setting found that about 41.5%, 31.7%, 12.2% and 12.2% had obtained knowledge regarding organ donation from newspaper, television, family members and internet respectively. 26.8% claimed that they were imparted knowledge by health care professionals. 78%, 53.7% and 19.5% were aware about eye, kidney and liver donations respectively.

Knowledge, attitude, and practices of medical doctors towards body donation were studied in a study in 2012 [26], revealing that 8% of them were unaware about body donation, 85% believed that donated bodies were misused, 22% expressed willingness for body donation, 7% had already registered for body donation. The authors of this study concluded that educating medical students and medical professionals concerning the Anatomy Act was as important as educating the general public [26].

A study among 83 Turkish anatomists [22] revealed that only 15% of them were ready for body donation. A survey in America [27], states that 49% individuals would consider whole body donation, taking aside the factors of age, African-American ethnicity, education and religious faiths.

A study done in Greece [28] encouraged discussions about whole body donation as low income and presence of co-morbid conditions were noted to be associated with unwillingness for cadaveric donation.

Published review of the literature from various parts of the world demonstrated interesting facts and results reflecting attitudes towards body donation. Perry & Ettarh [29] said that one-third of the students supporting whole body self-donation in Ireland had influence of age on the attitudes of medical students towards body donation.

Study of Alexander *et al*. [30] in Australia on cadaver-based anatomy teaching and support for body donation, investigated influence of religion and ethnicity on body donation including the role played by health professionals in maintaining body donation programmes. Indian based study by Saha *et al*. [31] reflected the mentality and awareness towards body donation.

Attitudes of medical students towards body donation had also been investigated in African continent of Nigeria and Kenya by Ebeye *et al*., [32] Mwachaka *et al*. [33].

The relationship between body donation, cultural acceptability and personal willingness has been researched by Abbasi Asl *et al*., [34] of Iran.

South African study of Kramer & Hutchinson [35] and Riederer [36] proved that human bodies for anatomical education and medical research are acquired through unclaimed bodies and whole body donations.

Alghanim [41] found that the urban populations were more informative about organ donation, reported willingness to be donors and have knowledge regarding "brain-death" in a community based study to compare the knowledge and attitude towards organ donation between urban and rural populations. The author stated that information about misconceptions to the general public would increase the individuals' willingness to donate organs.

Recently, voluntary body donation has attained momentum worldwide. Speaking within India, BJ Medical College and Sassoon Hospital, Pune in Maharashtra State in 2012 has been reported to have received about 25 to 30 human cadavers through pledged body donation. The same institution has received 523 "will forms" between 2010 and 2012, and presently has been documented to be receiving about 200 "will forms" every year [42]. Voluntary body donation program has been established as routine departmental activity of Anatomy as spoken by a survey of 96 Indian Medical and Dental colleges in India [23]. Cadavers for anatomical dissection and research come from the voluntary body donation programs established in year 1953 and not from the source of unclaimed bodies [14].

The body donation roster of Germany has almost 7,000 living donors. Various provinces of The United States has about 70,000 donors, and receives 1,500 human bodies each year, which are being increasingly utilized for the benefit of mankind in the form of multiple cadaver-based courses and research works by philosophers in human Anatomy [10]. The demand of these medical courses has been expanding because most professional schools have been listed with such courses as an admission requirement. The University of Massachusetts Medical School donor program started by late Dr. Sandy Marks in 1971 has 4,500 living donors on the waiting list. Furthermore, about 140 medical schools in the United States receive 10,000-15,000 bodies in a year [7].

Literature review has repeatedly focused about creation of body donation law around the world which has resolved the possibilities of disputes among family members regarding the decision of body donation. The Crown Prince and Princess of Japan in 1995 participated in the Ceremony of "the Centenary of the Japanese Association of Anatomists" with the noble intention of formally supporting the body donation

movement as the unseen driving force for development and education of modern medical curriculum [7]. The body donation act has paved the path for non-scarcity of human cadavers due to which presently Japanese medical schools do not face any scarcity of human cadavers for human dissection, as mentioned in the official journal of the Japan Union of Voluntary Body Donation, "Tokushi Kentai" (means "Voluntary Body Donation") [43].

We can safely document that an encouraging, wonderful, noble and appreciable gesture among diverse communities around the globe have made society realize about the priceless gift of human body donation for the benefit of human mankind as a whole.

Table-1: Standard measures for Anatomists to be vigilant, proactive and safe [45, 46, 47]

Standard precautions during body donation procedure

Hand washing: After all procedures
No smoking/Eating within work area
Specific protective embalming and dissection clothing.
Skin care-covering cuts/avoiding false nails
Spillages-Use appropriate spillage management kit.
First aid box with eye wash station
Immunization against Hepatitis B
Sharps Injury-Wash area with soap and running water.

Extracted from HPSC's Management of Deceased Persons Harboring Infectious (Available at www.hpsc.ie) [46]

Table-2: Precautions for handling and disposal of human cadavers

Risk category	**Bagging**	**Viewing in funeral parlour** ***	**Embalming procedure**	**Hygienic preparation in funeral parlour** ****	**Disposal of Cadaver**
Category 1 Items not included in category 2 & 3	Not required	Allowed	Allowed with PPE *	Allowed with PPE *	Coffin burial / Cremation
Category 2 HIV, Hepatitis C, Creutzfeldt-Jacob disease without necropsy, Severe Acute Respiratory Syndrome, Avian influenza, Middle East Respiratory Syndrome. Others**:	Must	allowed	Not allowed	Allowed with PPE	Cremation is advisable
Category 3 Anthrax, Plague, Rabies, Viral hemorrhagic fevers, Creutzfeldt-Jacob disease with necropsy. Others**:	Must	Not allowed	Not allowed	Not allowed	Cremation is strongly advisable

Extracted from Precautions for handling and disposal of dead bodies
(Available at www.chp.gov.hk/files/pdf/grp-guideline-hp-ic- precautions for handling and disposal of dead bodies en.pdf.)

PPE: Personal Protective Equipment for category 1 and 2 includes gloves, water repellent gown and surgical mask. Use goggles or face shield to protect eyes, if there may be splashes. For category 3 use standard PPE and eye protection (goggles or face shield), double gloves, shoe covers / boots.

** Including other infectious diseases as advised by the physician i/c, the infection control officer or microbiologist.

***Viewing in funeral parlour: allowing the bereaved to see, and spend time with the dead before disposal.

**** Hygienic preparation in funeral parlour: cleaning and tidying the body so that it presents a sui Table appearance for viewing. Applying makeup may be included.

- **Non-government organizations (NGO) helping body and organ donation in Chhattisgarh**

These NGO's are always active to create awareness among masses to spread the light and message concerning whole body donation and eye donation within the state of Chhattisgarh. They regularly organize camps and attempt to fill "will forms" from public who so ever is interested for body or eye donation. Subsequently they take the task to submit the forms in Medical Colleges of the state.

In Raigarh, our Medical College registers the names of the donors, sends them a signed (of Head of department of Anatomy) copy of "will form" along with a certificate of appreciation duly signed by Dean and Head of the Department of Anatomy. The letter also accompanies certain instructions to be followed by the donors' family at the time of body donation in future. The known NGO's in Chhattisgarh are:

1. Devaki Ramdhari Foundation, Raigarh (CG) 496001
2. Badhte Kadam, Devendra Nagar Raipur 492001

AIMS AND OBJECTIVES

Medical professionals probably cannot accept the concept of dissection of their own body [6]. Justifying the facts documented in review of literature, it becomes important to understand the attitudes of the health professionals of central India towards body and organ donation, as, internet search engines gives not much evidence of any detailed report. The aim of the study was to investigate the willingness to become whole body donors and the religious and cultural attitudes of health professionals towards whole-body donation in multicultural society of India. Simultaneously the scientific knowledge including practices concerning organ donation (and the decision for organ donation if need arises) was also accessed from the medical students.

We also sincerely attempted to discuss the topic of necessity of organ and body donation in an Indian context and tried to provide an information sheet related to the same subject to the respondents to be discussed with their family members.

MATERIALS AND METHODS

A cross sectional study (study type) was conducted among first to final year undergraduate MBBS students (each batch 50 students) and all para medical staff and technicians (all graduates) including nursing staff (study sample) (all 18 years and above with Aadhar card displaying address of state of Chhattisgarh) for a duration of 6 months from July - December 2018 at Late Shri Lakhiram Agrawal Memorial Government Medical College and hospital in tribal Raigarh district (CG) of Chhattisgarh. Prior intimation for conducting the study was obtained from concerned ethical authorities and respected Dean of the College (ethical considerations). A total of 630 respondents (consented to participate) were taken as sample size (181 MBBS students and 449 paramedical staff).

Respondents were explained about the purpose and methodology of the study and data was collected in a pretested and structured questionnaire (study tool) (framed both in English and regional language) after taking an informed consent. The respondents were assured about the confidentiality of the filled questionnaire and ethical means regarding the study.

Study measures [20] included in our study was dependent and independent variables. The only dependent variable was body donation (defined as an act of giving one's whole body after death for medical education and research), investigating the extent to which the respondents were willing to donate their own body. The independent variables were religion (defined by Koenig (2009:284) as comprising beliefs, practices and rituals that are related to the sacred, to God, to the mystical or supernatural) and culture (defined as an internalized and shared framework that is used by a group of members as a refracted lens to "see" reality in which both individuals and the collective experience the world). The study visualized whether the latter two variables permitted for body donation.

The questionnaire has two parts. Part A (with demographic details) for all respondents (MBBS students and paramedical staff, judging the knowledge, religious and cultural beliefs, attitude, opinion and willingness to donate regarding organ and body donation) and part B for only MBBS students (for medical knowledge regarding organ donation).

The study was conducted anonymously and unwilling respondents or students of any year found to be absent on the day of data collection were excluded.

The study was initiated (following inclusion and exclusion criteria, as explained) with pilot testing (or pretesting) the preformed questionnaire randomly among 15 each MBBS students and paramedical staff giving them a time span of 30 minutes for filling the questionnaire (in privacy with any discussion). Thus we tested the framed questionnaire for clarity and the optimum time required for completing the response with necessary modifications (if required). Subsequently the questionnaire was distributed among the said respondents with presence of at least 1 researcher (to sort out any difficulty in filling the questionnaire but without any sort of external influence).

The respondents were allowed to discuss with the researcher(s) regarding any doubt concerning organ and body donation after submitting the filled

questionnaire with the aim of spreading the knowledge among their family members.(as said under aims and objectives).

Data thus obtained was entered and analyzed using descriptive statistics on Microsoft excel. Results have been published in percentage.

RESULTS AND OBSERVATIONS

The present study has put up a sincere attempt to dissect out the knowledge, attitude, beliefs, faiths, practices including myths of the respondents and simultaneously tried to bundle out whether any correlations exists between the above parameters and religion. Socioeconomic strata of the MBBS students can be said to be middle to high and the paramedical staff can be said to be as low to middle. The demographic data of the participants has been shown on Table 3.

1. We approached 189 MBBS students (excluding the absent students) and 467 paramedical staff, (forming a total of 656)
2. But, as per methodology, the questionnaire was completed (consented to participate) by 181 MBBS students (95.77%) and 449 paramedical staff (96.14%), making the total sample size to be 630. Thus 96.04% of the total Medical College participants (both MBBS students and paramedical staff) gave consent for taking part in the questionnaire review. (Table 3).
3. Among 181 MBBS students, 48 (26.52%) were of 1st MBBS, 44 (24.31%) of 2nd MBBS, 47 (25.97%) and 42 (23.20%) belong to final 1st and final 2nd MBBS respectively. Thus MBBS students form 28.73% and paramedical staff was 71.27% of the total sample size. (Table 3).
4. Mean age of MBBS was calculated to be 21.12±0.71 years and that of paramedical staff as 28.75±75**.** (Table 3).
5. 95 (52.49%) MBBS students were male and 86 (47.51%) female gender. The male and female gender for paramedical staff was found to be 253 (56.35%) and 196 (43.65%) respectively. (Table 3).
6. Finally, the religion of 86.74% medical students was found to be Hinduism, 3.87% as Christianity, 2.21% Islam and finally 4.42% followed other religions including local religions among a total of 181 MBBS students. Similarly among the paramedical staff the same was found to be 84.40%, 9.70%, 1.50% and 4.22% respectively. Hence in general taking the total sample size of 630 participants the religion was found to be 85.09%, 8.4%, 1.85% and 4.66% respectively. (Table 3).

Part A of the obtained results have been grouped as Basic knowledge / Awareness regarding body / organ donation / Organ transplantation (Table 4), Attitudes / Willingness / Unwillingness for body / organ donation (Table 5), Legal issues and body / organ donation (Table 6), Measures to increase body / organ donation (Table 7) and finally Medical knowledge and body / organ donation (For MBBS students, as said under materials and methods) (Part B) (Table 8).

Table 4, 5, 6, and 7 were the results obtained from all respondents but Table 8 was meant for MBBS students only. (As above)

The results from the questionnaire sum up various aspects of body / organ donation including knowledge, attitude, willingness reasons for unwillingness, sources from where the knowledge was obtained, the various organs that can be donated, legal issues, decision of the family members of the deceased person to decide whether to donate organs in case the donor himself had not signed the donor card and religious and or myths / superstitious beliefs.

In general, the medical students were found to be more aware regarding the questionnaire as compared to paramedical staff and within MBBS students, the final year students were more confident in answering the questionnaire than the newly admitted students.

The results of each Table have been highlighted with the corresponding Table.

Table-3: Demographic data

Demographic data	Medical students				Paramedical Staff (As on 2018) (All graduates)			
	1st MBBS (2018 batch)	2nd MBBS (2017 batch)	Final MBBS (Part I) (2016 batch)	Final MBBS (Part II) (2015 batch)				
Age	17-22	18-23	19-24	20-25	24-32			
Mean age ± SD	19.64±0.56	20.55±0.86	21.67±0.77	22.83±0.64	28.75±0.75			
	21.12±0.71 Mean age ± SD (MBBS Students)							
Number approached (Excluding absentees / Leaves)	48	46	49	46	467			
	189 (Total Number Medical Students approached for participation)							
Number of respondents consented to participate	48 (100%)	44 (95.66%)	47 (95.92%)	42 (91.30%)	449 (96.14%)			
	181 (95.77%) (Total Number Medical Students Participated)							
Male respondents	25 (52.1%)	25 (56.82%)	25 (53.19%)	20 (47.62%)	253 (56.35%)			
	95 (52.49%)							
Female respondents	23 (47.92%)	19 (43.18%)	22 (46.81%)	22 (52.38%)	196 (43.65%)			
	86 (47.51%)							
Religion (Individual)	Hindu 44 (91.67%)	Hindu 37 (84.09%)	Hindu 36 (85.71%)	Hindu 40 (95.24%)	Hindu	Christian	Muslim	Others
	Christian 2 (4.17%)	Christian 2 (4.55%)	Christian 2 (4.26%)	Christian 1 (2.38%)	379 (84.40%)	44 (9.7%)	7 (1.5%)	19 (4.22%)
	Muslim 1 (2.08%)	Muslim 2 (4.55%)	Muslim 1 (2.38%)	Muslim 00 (0%)				
	Others 1 (2.08%)	Others 3 (6.82%)	Others 3 (7.14%)	Others 1 (2.38%)				
Religion (Students) (n=181)	Hindu 86.74%	Christian 3.87%	Muslim (Islam) 2.21%	Others 4.42%				
Religion (Overall) (n=630)	Hindu 536 (85.09%)		Christian (8.40%)		Muslim (1.85%)		Others (4.66%)	

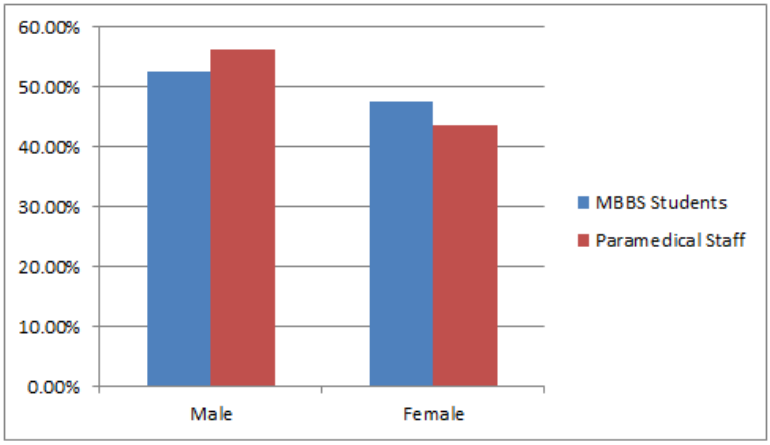

Chart-1: Male and Female respondents

Table-4: Basic knowledge / Awareness regarding body / organ donation / Organ transplantation

Question studied	Medical Students				Paramedical staff (n=449)
	1st MBBS (n=48)	2nd MBBS (n=44)	Final MBBS (Part I) (n=47)	Final MBBS (Part II) (n=42)	
Do you have any knowledge regarding organ / body donation / organ transplantation? Yes No	39 (81.25%) 09 (18.75%)	40 (90.90%) 04 (9.09%)	44 (93.62%) 03 (6.38%)	42 (100%) 00 (0%)	389 (86.63%) 60 (!#.36%)
OVERALL AWARENESS (From above)	90.42%				
Where do you come to know regarding organ or body donation? Faculty of Medical College Television Newspaper (Print media) Social media Family and friends	20 (41.67%) 05 (10.42%) 02 (4.16%) 09 (18.75%) 04 (8.33%)	29 (65.91%) 04 (9.1%) 02 (4.5%) 7 (15.91%) 02 (4.5%)	30 (63.83%) 02 (4.26%) 02 (4.26%%) 03 (6.82%) 05 (11.36%)	30 (71.43%) 01 (2.38%) 01 (2.38%) 06 (14.28%) 06 (14.28%)	307 (68.37%) 65 (14.48) 34 (7.57%) 17 (3.79%) 26 (5.8%)
SOURCE OF AWARENESS (From above)	Doctors (66.03%)	Media (Print and electronic) and friends (33.97%)			
Are you in support of organ / body donation campaign? (ethically correct) Yes and will always support No	36 (75%) 12 (25%)	42 (95.46) 02 (4.54%)	45 (95.74%) 02 (4.26%)	42 (100%) 00 (0%)	350 (77.95%) 99 (22.05%)
Will motivate family members for donation (If need arises) (From above)	81.75%				
Will you participate in promotional activities for body/organ donation? Yes No	36 (75%) 12 (25%)	42 (95.46) 02 (4.54%)	45 (95.74%) 02 (4.26%)	42 (100%) 00 (0%)	350 (77.95%) 99 (22.05%)
Positivity towards promotional activity (From above)	81.74%				
Is body / Organ donation need of the hour Yes, I will personally donate No, not sure.	32 (66.67%) 16 (33.33%)	40 (90.90%) 04 (9.09%)	43 (91.46%) 04 (8.54%)	40 (95.23%) 02 (4.77%)	361 (80.41%) 88 (19.59%)
Will personally donate (If need arises) (From above)	84.93%				
What do you think is organ donation? Removal of organ from dead person Removal of organ from living subjects	38 (79.16%) 10 (20.84%)	15 (34.09%) 29 (65.91%)	35 (74.46%) 12 (25.54%)	20 (47.61%) 22 (52.39%)	423 (94.20%) 26 (5.80%)
Donated organs are used for (Cause of donation): Save life (of known / unknown) by Organ transplantation (Treatment option) Medical research Both of the above People donate organs for money	20 (41.67%) 08 (16.67%) 10 (20.83%) 10 (20.83%)	25 (56.81%) 06 (13.63%) 10 (24.39%) 03 (6.81%)	20 (42.55%) 10 (21.27%) 15 (31.91%) 02 (4.25%)	24 (57.14%) 11 (26.19%) 05 (11.90%) 02 (4.76%)	242 (53.89%) 87 (19.37%) 109 (24.27%) 11 (2.44%)
Are you aware of Govt. Institutions / Registered Hospitals / Registered NGO who work in favor of body / organ donation (in Chhattisgarh)? Yes	25 (52.08%) 23	31 (70.45) 13	40 (85.10%) 07	41 (97.61%) 01	289 64.36%) 160

No	(47.92%)	(29.55%)	(14.89%)	(2.39%)	(35.64%)
Do you know that Organ donation can save multiple lives: True No, not sure	 19 (39.58%) 29 (60.42%)	 21 (47.72%) 23 (52.28%)	 32 (68.08%) 15 (31.92%)	 38 (90.47%0 04 (9.53%0	 257 (57.23%) 192 (42.77%)
Do you understand the word "brain dead"? Yes No	15 (31.25%) 33 (68.75%)	35 (81.25%) 09 (20.45%)	42 (89.36%) 00 (0%)	39 (92.86%) 00 (0%)	188 (41.87%) 261 (58.13%)
Brain dead awareness (From above)	72.37% medicos knew, 27.635% not aware				

a. Knowledge regarding body/organ donation gradually gained momentum as the study of MBBS curriculum progressed from 1st year 81.25% to 100% in final year. Among the paramedical staff knowledge regarding the same was found to be 86.63%, as their service pertains to medical environment and a large percentage 50.77% said to have gained knowledge from the faculty within our Medical College.
b. Similarly, the MBBS students (53.6%) have gained access to information on body/organ donation from the faculty whom they come across in departments and in clinics and also less from television or print media (12.71%) as compared to social media (16.57%) where they are more in touch with. Hence truly, the medical fraternity is already in the service of spreading the encouragement regarding organ/body donation.
c. Body/Organ donation has been frankly supported and considered the need of the present time by both medical (86.07%) and paramedical staff (80.41%).
d. A large percentage of student respondents (49.17%) turned in favor of donating organs for someone known or unknown for treatment of diseases and for medical research. Additionally the non-medical participants were about 53.89% for the same.
e. The necessary steps for donation and NGO working to support the noble cause was known by 75.7% and 64.36 percent of medical students and paramedical staff respectively.
f. The word "brain dead" was also within the known vocabulary of 72.37% medical students and 41.87% of paramedical staff.

Table-5: Attitudes / Willingness / Unwillingness for body / organ donation

Question studied	**Medical Students**				**Paramedical staff**
	1st MBBS	**2nd MBBS**	**Final MBBS (Part I)**	**Final MBBS (Part II)**	
Are you a registered donor? Yes No Want to become registered donor	00 (0%) 35 (72.92%) 13 (27.08%)	00 (0%) 25 (56.81%) 19 (43.18%)	01 (2.11%) 17 (36.17%) 30 (63.82%)	04 (9.52%) 23 (54.76%) 15 (35.71%)	27 (6.01%) 307 (68.37%) 115 (25.62%)
I am a registered donor or would consider to register myself (From above)	45.30%				31.63%
Do you know any registered donor? Yes No	01 (2.08%) 47 (97.91%)	07 (15.90) 37 (84.09%)	19 (40.42%) 28 (59.58%)	29 (69.04%) 13 30.95%)	167 (37.19%) 282 (62.80%)
Will you accept your family member to be a registered donor? Yes No	11 (22.91%) 37 (77.09%)	20 (45.45%) 24 (5.55%)	35 (74.46%) 12 (25.54%)	39 (92.85%) 03 (7.15%)	259 957.68%) 190 (42.32%)
Whom will you consider for organ donation? Family member / Blood relative Friend Stranger Anyone Young individuals	21 (43.75%) 10 (20.83%) 02 (4.16%) 08 (16.67%) 01 (2.08%)	25 (56.81%) 06 (13.63%) 03 (6.81%) 04 (9.09%) 01 (2.27%)	17 (36.17%) 7 (14.89%) 00 (0%) 00 (0%) 02 (4.25%)	23 54.76%) 15 (35.71%) 01 (2.38%) 00 (0%) 00 (0%)	207 (46.10%) 83 (18.48%) 33 (7.34%) 19 (4.23%) 39 (8.68%)

Middle aged individuals	01 (2.08%)	00 (0%)	04 (8.51%)	00 (0%)	17 (3.78%)
Elderly persons	02 (4.16)	00 (0%)	09 (19.14%)	01 (2.38%)	26 (5.79%)
Mentally retarded	03 (6.25%)	05 (11.36%)	08 (17.02%)	02 (4.76%)	25 (5.56%)
Donation for family members, relatives and friends (From above)	68.51%				64.59%
Do you consider donated organs do not reach the right individual (organ donation misuse / Donated organs not reach poor individuals)	30 (62.50%)	36 (81.81%)	39 (82.97%)	37 (88.09%)	397 (88.41%)
Yes	18 (37.50%)	08 (18.19%)	08 (17.03%)	05 (11.90%)	52 (11.59%)
No					
Donation mutilation (Organs / Body may be wasted) (From above)	21.55%				11.59%
Mention the possible cause(s) of shortage or hesitancy / unwillingness of individuals for body / organ donation in India:	24 (50%)	25 (56.82%)	32 (68.09%)	25 (59.52%)	247 (55.01%)
Unawareness / Inadequate information	07 (14.58%)	13 (29.55%)	13 (27.66%)	15 (35.71%)	98 (21.83%)
Religious beliefs / Customs / Superstitions	04 (8.33%)	01 (2.27%)	00 (0%)	00 (0%)	13 (2.9%)
Lack of trust among medical professionals / Health care system	13 (27.08%)	05 (11.36%)	02 (4.26%)	02 (4.76%)	91 (20.27%)
Lack of Government / NGO initiative					
Merging Causes of Unwillingness for donation:					
Unawareness	58.56%				5.01%
Religion & superstition	26.52%				98%
Mistrust in medical profession	2.76%				13%
Organ mutilation					
Lack of Govt. initiative	21.55%				20.27%
(From above)	12.15%				11.59%
Certain religion do not allow funeral services after organ donation / Indian society / culture have strong negative implications against body / organ donation:	19 (39.58%)	27 (61.36%)	34 972.24%)	37 (88.09%)	394 (87.75%)
Yes	29 (60.41%)	17 (38.63%)	13 927.65%)	05 (11.90)	55 (12.24%)
No, not sure					
Do you consider it ethical for body / organ donation as a social commitment / responsibility for Indian citizens?	21 (43.75%)	30 (68.18%)	37 (78.72%)	41 97.61%)	111 (24.72%)
Yes	27 *56.25%)	14 (31.81%)	10 (21.27%)	01 (2.39%)	338 (75.28%)
No					
There should be national online portal of organ/body donation in India: (Donors card not mandatory)	13 927.08%)	27 (61.36%)	36 (76.59%)	33 (78.57%)	128 (28.50%)
Yes	35 (72.92%)	17 (28.64%)	11 (23.40%)	09 (21.42%)	321 (71.49%)
No					
Should a registered donor be officially linked in Govt. issued cards like PAN, AADHAR, DRIVING LICENCE, etc?	15 (31.25%)	30 (68.18%)	37 (78.72%)	40 (95.23%)	168 (37.41%)
Yes	33 (68.75%)	14 931.81%)	10 (21.27%)	02 (4.77%)	281 (62.58%)
No					

1. No registered donors were found among 1st and 2nd MBBS students but with enrichment of knowledge and gathering information related to body /organ donation 9.52% medical students had registered themselves by the time they final year. Similarly 42.54% of the MBBS students opted for registering themselves as voluntary donors as they very much appreciated with the topic of body/organ donation. Quite knowingly, about 6.01% and 25.62% paramedics were either registered donors or would be pleased to be registered donors in future if need arises. Simultaneously, with the unknown doubts related to donation getting cleared with the discussion of questionnaire session, many 58.01% and 57.68% respondents respectively agreed to have no interference of even registering their family members towards the noble platform.
2. As human nature speaks out, about 68.51% of medical subject participants and 64.59% of paramedics said positively for donating organs for their family members or known friends instead of

donating for strangers of aged or mentally retarded individuals.

3. As to be common with us, due to the doubts that donate organs may be misused 78.45% and 88.41% respondents respectively said donated organs due to unethical misuse do not reach the rightful person.
4. Among the various causes that the Indian subcontinent is facing for acute shortage of donated organs, these prime multifold causes may be categorized as 20.42% /19.82% due to unawareness, 17.47%/17.14% due to religious sentiments, 6.05%/4.67% due to superstitious beliefs etc for medical/paramedical respondents. Ugly superstitions, unruly cultural and or social dilemma and implications and even unjustified unethical religious practices prevent many willing persons from donation. The truth prevailing in Indian society was navigated among MBBS students and paramedical staff respectively.
5. The scarcity of organ / body donation can be eased out with certain simple procedures as making citizens rethink about their social commitments - 71.27% (Medical students), 24.72% (Paramedical staff), adding a national body/organ donation online platform – 60.22% (Medical students), 28.50% (Paramedical staff) and even adding the donor's name in authenticate Government Identity cards like PAN, Aadhar, etc. – 67.40% (Medicos) and 37.41% (paramedics).

Table-6: Legal issues and body / organ donation

Question studied	Medical Students				Paramedical staff
	1st MBBS	2nd MBBS	Final MBBS (Part I)	Final MBBS (Part II)	
Are you aware of the current rules and regulations (Laws and steps) of organ or tissue or body donation in our country or state? Yes No	07 (14.58%) 41 (85.42%)	25 (56.81%) 19 (43.19%)	35 (74.46%) 12 (25.53%)	39 (92.85%) 03 (7.15%)	93 20.71%) 356 (79.28%)
Can donation be possible for a person with active legal case? Yes Not sure	9 (18.75%) 39 (81.25%)	17 (38.64) 27 (61.36%)	15 (31.91%) 32 (68.09%)	17 (40.48%) 25 (59.52%)	109 (24.28%) 340 (75.72%)
Can relatives pledge donation for "brain" dead donor? Yes Not sure	9 (18.75%) 39 (81.25%)	17 (38.64) 27 (61.36%)	15 (31.91%) 32 (68.09%)	17 (40.48%) 25 (59.52%)	109 (24.28%) 340 (75.72%)
Can relatives pledge donation for "brain" dead donor? (From above)	26.51% said yes and 73.49% said not sure				
What do you think is correct legal view? For transplantation consent of donor is must For transplantation consent of donor is not necessary Selling of organs is a not criminal offence Donors must receive payments for the same Consent from close or blood relatives is a must for donation	11 (22.91%) 07 (14.58) 16 (33.33%) 10 (20.83%) 04 (8.33%)	22 (50.00%) 01 (2.27%) 12 (27.27%) 02 (4.54%) 07 (15.90%)	29 (61.70%) 00 00 00 18 (38.29%)	35 (83.33%) 00 00 00 07 (16.66%)	105 (23.38%) 85 (18.93%) 26 (5.79%) 163 (36.30%) 70 (15.59%)
Can body / organ donation be stepped up by Govt. facilitated benefits to the donor like tax, pension, mediclaim, etc? Yes No	15 (31.25%) 33 (68.75%)	29 965.90%) 15 (34.09%)	33 (70.21%) 14 (29.78%)	37 (88.09%) 05 (11.90%)	204 (45.43%) 245 (54.57%)
Do you support broadcasting donation related advertisements on Indian television or on radio? Yes No	10 (20.83%) 38 (79.16%)	19 (43.18%) 25 (56.81%)	30 (63.82%) 17 (36.17%)	36 (85.71%) 06 (14.28%)	323 (71.93%) 126 (32.57%)

1. The legal issues were very nicely answered from the MBBS students and paramedical staff. 58.56% MBBS students and only 20.71% paramedical fraternity were aware of the legal issues concerning body/organ. Rightly pointed out by 53.59% students and only 36.30% paramedical staff regarding consent to be taken from the respective donor or even the family member of the donor. But yes, monetary benefits were not taken into consideration by 20.44% and 23.38% Students and paramedics. To prevent from unethical donation, Government facilitated measures like income tax benefits or even pension benefits for the donors might solve the purpose of our study. This step has been pointed by 62.98% medical students and 45.43% staff.
2. Broadcasting over television or radio is also a welcome source for information regarding body donation was said by 52.49% and 71.93% students and paramedical staff respectively.

Table-7: Measures to increase body / organ donation

Question studied	Medical Students				Paramedical staff
	1st MBBS	2nd MBBS	Final MBBS (Part I)	Final MBBS (Part II)	
Which of the following methods can promote Organ or body donation?	09 (18.75%)	16 (36.36%)	08 (18.18%)	11 (26.19%)	99 (22.04%)
Motivating people	10 (20.83%)	19 (43.18%)	26 (55.39%)	26 (61.90%)	255 (56.79%)
Through electronic mass communication (Awareness)	10 (20.83%)	05 (11.36%)	09 (19.14%)	03 (7.14%)	47 (10.46%)
Though online form filling in national portal or national register	19 (39.58%)	04 (9.09%)	04 (8.51%)	02 (4.76%)	48 (10.69%)
Setting up multiple Government guided NGO's					

The awareness to promote organ or body donation can be successfully achieved by electronic media, online national online body or organ donation register and even through motivating people, as has been supported by 83.43% medicos and 89.30% paramedics respectively.

Table-8: Medical knowledge and body / organ donation (For MBBS students, as said under materials and methods)

Question studied	Medical Students			
	1st MBBS	2nd MBBS	Final MBBS (Part I)	Final MBBS (Part II)
Which of the following organs can be donated by a live / brain dead donor?				
Eye (Cornea)	37 (77.08%)	38 (86.36%)	40 (85.12%)	39 (92.86%)
Liver	30 (62.5)	32 (72.72%)	33 (70.21%)	33 (78.57%)
Lungs	28 (58.33%)	31 (70.45%)	33 (70.21%)	30 (63.83%)
Heart	35 (72.92%)	38 (86.36%)	37 (78.72%)	38 (90.48%)
Kidney	32 (66.66%)	39 (88.64%)	37 (78.72%)	38 (90.48%)
Pancreas	19 (39.58%)	25 (56.82%)	31 (65.96%)	32 (68.09%)
Bone	22 (45.83%)	30 (68.18%)	33 (70.21%)	35 (83.33%)
Skin	28 (58.33%)	32 (72.73%)	35 (74.46%)	35 (83.33%)
(Answer each organ individually)				
Average improvement of awareness from 1st to final year (From above)	22.62%			
Correlation between disease, age and organ donation:				
Yes	13 (27.08%)	28 (63.63%)	23 (48.93%)	35 (83.33%)
No	35 (72.92%)	16 (36.36%)	24 (51.07%)	07 (16.67%)

Correlation exists regarding time of donation and transplantation: Yes No	09 918.75%) 39 (81.25%)	20 (45.45%) 24 (54.54%)	34 (72.34%) 13 (27.66%)	40 (95.23%) 02 (4.77%)
Knowledge regarding who can donate body: Anyone Adults with or without any known disease Consent from blood relatives required Brain dead individuals	 17 (35.41%) 10 (20.83%) 09 (16.75%) 12 (25.%)	 20 (45.45%) 16 (36.36%) 06 (13.63%) 02 (4.54%)	 05 (10.63%) 19 (40.42%) 20 (42.55%) 04 (8.51%)	 03 (7.14%) 11 (26.19%) 23 (54.76%) 05 (11.90%)
Do you want to aid Anatomy teaching curriculum by pledging to donate? Yes No	18 (37.5%) 30 962.5%)	25 (56.81%) 19 (43.18%)	31 (65.95%) 16 (34.04%)	30 (71.42%) 12 (28.57%)
Willing to donate to aid Anatomy teaching. (From above)	57.46%			

Finally the knowledge of MBBS students was judged regarding organ or body donation. The medical knowledge was seen to be in the improvement trend as the percentage of right answers gradually improved from 1st MBBS to final MBBS.

1. The awareness of organs which can be donated was found to be increasing by about 22.62% from 1st to final year MBBS.
2. There is definitely a correlation between organ donation and age, which was rightly answered by 54.70% students.
3. Time also is an important factor to be kept in mind when donation of human organs has been considered. This was appreciated by 56.91% students.
4. Lastly, the person who can be considered as the rightful donor was represented by 79% MBBS students.

DISCUSSION

Medical science has seen a dramatic worldwide enhancement in patient diagnosis and diagnostic/prognostic kits, treatment care, maternity benefits, surgical expertise, medical education (technology) and survival rates of chronically ill patients. Simultaneously, a wide array of knowledge and research has been published with reference to improvement of transplantation of human organs which have drastically aided to surge the life of patients who would have never expected to stay alive.

But a simultaneous expected parallel increase of organ / body donation has not been appreciated. This has resulted in a huge shortage of human organs by acting as the limiting factor [18] needed for transplantation programmes all over the world [44]. Body donation is a voluntary act which can certainly save life of multiple persons and or augment medical research. One of the main rear gear contributing is social awareness. Medical personnel in particular and the general public should be sensitized about body/ organ donation so that the hesitancy (or refusal towards donation) and dubious doubts, if any within the minds can be eradicated. A successful organ/body donation programme depends on the healthy knowledge and broadminded social attitude keeping aside religious, superstitious stigma and taboo. A health care provider is the very first person to take all the burden of declaring an open session for discussion and spread the enlightened encouragement for a family related to decision about organ/body donation in a positive atmosphere. To be very frank, medical students sub serves the rightful purpose of acting as gap junctions so that the wide lacunae present in society concerning to donation programmes can easily be bridged. In a broad sense, health care providers serve the purpose of critical link to establish relationship with the potential donors' family. Hence medical awareness in the formation of "team organ donation" is therefore a must as they are the future to propagate this knowledge at the community level.

As said under introduction, organ donation rate in India is about 0.16 donor per million population, which strikingly low as compared to countries like Spain where the rate is about 35 per million [18]. Ageing population and rising cases of type 2 diabetes may further potentiate to this shortage in donor pool in near future [48].

We undertook this study to provide important insights related to the attitude and knowledge of medical students and paramedical staff for organ/body donation within tribal belt of central India. The social

stigma of the tribal participants residing in Chhattisgarh was also attempted to evaluate. The socio demographic representation of our sample was slightly different from those of many other studies like Phalguni Srimani *et al*. [6], Prakash, Prabhu *et al*. [10], Bathija GV *et al*. [15], Payghan BS *et al*. [16], Vaishaly K Bharambe *et al*. [18], among Indian authors and Bapat U et. al. [19], De Gama *et al*. [20], Perry *et al*. [29], in international level, wherein medical students were taken into consideration as compared to ours where we have included even the paramedical staff for a broad scenario. The mean age of respondents of tribal Raigarh city of Chhattisgarh calculated to be 21.12±0.71 years, for medical students and that of paramedical staff as 28.75±0.75 (Table 3). The most frequent mother tongue here is Chhattisgarhi and Hinduism being the most frequent religion (85.09%) approximately similar to the study conducted by Bathija GV *et al*. [15], with reference to Hindu population.

The awareness level of MBBS students has been recorded to be 81.25% for 1st year and gradually increased to 100% in final year as the knowledge of medicine progressed (Table 4). This finding is quite similar to studies conducted by Vaishaly K Bharambe *et al*. [18], Bapat *et al*. [19] (Table 9). Thus Medical College students had high level of awareness within Chhattisgarh. The positive point has been documented that a high percentage 90.42% (Table 4) of total participants had heard about organ/body donation.

Table-9: Correlation between awareness towards body/organ donation

Research papers (Author & year)	Place of study	Type of respondents	Results (Sample size)
Vaishaly K Bharambe *et al*. [18]	Pune, Maharashtra, India.	Medical students	98.7% to 100% (1st to final year) (394)
Bapat U, Kedlaya PG *et al*. [19]	South India	PG Medical students	97% (123)
Ali FN, Qureshi A, *et al*. [56]	Karachi, Pakistan	Medical students	97.5% (158)
Present study	Raigarh, CG, India	Medical students & Paramedical staff	81.25% to 100% (1st to final year) & 86.63% for paramedical staff (630)

Multiple research publications of Schaeffner *et al*. [58], Edwin AR *et al*. [59], Sawhney C [60], and Rykhoff ME *et al*. [61] have stated that adequate prior knowledge regarding organ donation, concept of brain death, related legalities and awareness of various organs that can be donated will be of benefit of health care professionals in organ and tissue donation and lead to better procurement rates for donor organs.

The main source of information for the participants has been medical faculty of the Medical College itself (66.03%) who has acted as a readymade source of information and awareness followed by media (television newspaper), and friends (33.97%) (Table 4). A similar result was also obtained by Bathija GV [15], Vaishaly K Bharambe *et al*. [18], Bapat *et al*. [19], Alghanim SA [41], Rathod H [44], Vijay Kumar Mane *et al*. [49], Sucharita ST *et al*. [50], Saleem T *et al*. [51]. (Table 10)

Table 10: Correlation between source of information and body/organ donation

Research papers (Author & year)	Place of study	Type of respondents	Results (Sample size)
Vaishaly K Bharambe *et al*. [18]	Pune, Maharashtra, India.	Medical students	41.3% (Medical College) & 51.1% - 57.6% (Media) (394)
Bapat U, Kedlaya PG *et al*. [19]	South India	PG Medical students	51% - 61%% (media) (123)
Bathija GV *et al*. [15]	Hubli, Karnataka, India	Interns & PG Medical students	4.66% - 60.66% (Media) (300)
		Rural & urban population	6% - 73.6% (Media) (1000)
Alghanim SA *et al*. [41]	Riyadh, Saudi Arabia		31.7% - 41.5% (media) (65)
V K. Bharambe, Rathod H *et al*. [44]	Pune, India	OPD of Medical College	
Present study	Raigarh, CG, India	Medical students & Paramedical staff	33.97% (Media) – 66.03% (Medical College) (630)

More than 80% of our study participants (81.90%) accepted that they would donate their organs if need comes and more than 60% even agreed to donate organs from their family members if they were declared brain dead (81.75%) (Table 4). Our study findings were comparable to many other studies

Alghanim SA [41], Vijay Kumar Mane *et al*. [49], Sucharita ST *et al*. [50] both within and outside the country. This response points towards the positivity that the questionnaire of the present study and subsequent discussion with the respondents has brought forward.

The legal responsibilities of family members before and after body/organ donation were known by 14.58% medical participants as can be seen to be in an upturn end as the students reach final year (92.85%), as compared to 20.71% for their non-medical counterparts (Table 6). A similar result has been published by Vaishaly K Bharambe *et al*. [18], Bardell *et al*. [52], Pradnyesh N *et al*. [57] (Table 11). Literature review [53] strictly directs that the legal laws and proceedings for organ/body donation probably is the most authorized factor contributing to the shortage of donor organs today not only among non-medical professionals but also for the torch bearers of medical profession. Hence the curriculum in forensic medical science might be molded slightly to accommodate the chapter giving insights to medical students about body/organ donation laws. About 40.48% of the final year medical students were aware that organ donation cannot be carried out if there is an active legal case regarding death of the donor as compared to 24.28% of their counterparts (Table 6).

Table 11: Correlation between legal awareness towards body/organ donation

Research papers (Author & year)	Place of study	Type of respondents	Results (Sample size)
Vaishaly K Bharambe *et al*. [18]	Pune, MH State, India.	Medical students	72.6%% to 87%% (1st to final year) (394)
Bardell *et al*. [52]	Canada	Medical students	
Pradnyesh N [57]	Solapur, MH State, India	Medical faculty, PG & intern medical students	32% - 84% (260) 63.36% - 83.97% (131)
Present study	Raigarh, CG, India	Medical students & Paramedical staff	14.58%% to 92.85% (1st to final year) & 20.71% for paramedical staff (630)

The Transplantation of Human Organs Act in India states that grandparents, mother, father, brothers, sisters, son, daughter, and spouse can be live donors without any legal formalities after providing proof of their relationship by genetic testing and/or by legal documents [53]. In case of any other live donor, the recipient and donor must seek special permission from the government appointed authorization committee to prove that the motive of donation is purely altruism or affection for the recipient. In case of "brain-death" if there is no reason to believe that the potential donor did not want to donate his/her organ(s) after his/her death, then a registered medical practitioner should make the patient's relatives aware of the option to authorize the donation of organs or tissues or both. Many of the potential donors are cases that fall within the medico legal case category. The act prohibits the recovery of organs in cases where inquest has to be conducted. In such a case the organ donation can be carried out by making a request to the inspector/sub-inspector of the area to agree for recovery of organs from the donor. It has to be ensured that, by retrieving organs, the determination of the cause of death is not jeopardized [54, 55]. Dogra *et al*. [55] have discussed certain guidelines to carry out organ recovery in medico legal cases after observing the procedure prescribed under the law without interfering with the functioning of the investigating agencies, autopsy surgeons, the courts of law and serving the objective of Transplantation of human organs act [54].

In our study, though the word "brain dead" was not alien to 72.37% medical students and 41.87% (Table 4) of paramedical staff, but the legal formalities for a "brain dead" individual were within the knowledge of 26.51% respondents (both students and staff) who said yes and 73.49% said not sure (Table 6). These results can be compared with the results of Vaishaly K Bharambe *et al*. [18], V K. Bharambe, Rathod H *et al*. [44], Pradnyesh N *et al*. [57] (Table 12).

Table 12: Correlation between "Brain dead" and body/organ donation

Research papers (Author & year)	Place of study	Type of respondents	Results (Sample size)
Vaishaly K Bharambe *et al*. [18]	Pune, MH State, India.	Medical students	33.1%% to 48.9%% (1st to final year) (394)
V K. Bharambe, Rathod H *et al*. [44]	Pune, MH State, India	Medical students	7.3% - 29.3% (65)
Pradnyesh N *et al*. [57]	Solapur, MH State	Medical faculty, PG & intern medical students	54.7% - 84.85% (131)
Present study	Raigarh, CG, India	Medical students & Paramedical staff	72.37% medical students & 41.87% of paramedical staff (630)

Organ / body donation of "brain dead" individuals take place following sudden accidental injury of the donor, wherein family members take the decision of donation on behalf of the donor. Only about

26.51% of the entire respondents were aware that close family members of the deceased person can pledge the donor's organs even if he/she died without signing the donor card (Table 6). The medical fraternity in particular and society in general should be made aware of this legal responsibility for effective promotion of organ/body donation in "brain-death" patients.

The study of Wig *et al*. [21] regarding awareness of brain death among people in a metro city revealed extreme poor awareness inspite "brain dead" being legal in India, but donation of organs among them is very low. Similarly, V K. Bharambe, Rathod H *et al*. [44] opined that only 7.3% in their study knew that in India a "brain dead" person is legally acceptable as dead, 14.6% as organ donation following brain-death, but 39% stated that they had no idea about brain-death. We obtained results quite close approximate to above as 27.635% of medicos and 58.13% para medics (Table 4) not aware regarding "brain dead" and or its legal formalities.

Furthermore, we also enquired about the legal steps those relatives of 'brain dead" individuals must know and found that 26.51% said yes and 73.49% said not sure (Table 6). Wig *et al*. [21] state that discussion with grieving relatives regarding organ donation following brain-death, is very challenging, for relatives who are not familiar with the concept of organ donation following brain death. Thus improving awareness, training sessions among relatives about the process of brain death and related organ donation and or transplantation will surely improve their attitude and knowledge and fast forward the desired process.

Research published by Tontus *et al*. [53] states that 85.3% of medical students in Turkey believed that body/organ is a noble act for service to the human society. In our study 45.30% MBBS students and 31.63% paramedics were either registered donors or willing to be registered in future (Table 5). Further, about 81.74% (Table 4) were in favor of participating in promotional activities related to organ/body donation. Simultaneously 68.51% of students and 64.59% paramedical staff thought of donating organs to relatives, friends, etc (Table 5). A correlative response between various published data has been depicted in Table 13.

Additionally, a desire to aid the subject Anatomy for enriching its teaching and research was procured as one of the causes to donate among medical students (Table 8). A similar result of 54.9% has been recorded by De Gama *et al*. [20]. Much literature review could not be gathered in favor of this finding.

Table-13: Respondents willingness for organ / body donation

Research papers (Author & year)	Place of study	Type of respondents	Results (Sample size)
Bathija GV *et al*. [15]	Hubli, Karnataka, India	Interns & PG Medical students	71.3% - 73.6% (300)
Vaishaly K Bharambe *et al*. [18]	Pune, MH State, India	Medical students	70.7% - 79.6% (394)
Bapat U, Kedlaya PG *et al*. [19]	South india	PG Medical students	89% (123)
Saha, A.; Sarkar, A *et al*. [31]	Kolkata, WB State, India	Medical & Engineering students & Doctors	67.33% (100)
Perry, G. F *et al*. [29]	Ireland, Europe	Medical students	35.1% (40)
Ebeye, A *et al*. [32]	Nigeria, Africa	Medical & basic medical science students	4.1% (707)
Present study (2020)	Raigarh, CG, India	Medical students & Paramedical staff	45.30% medical students & 31.63% of paramedical staff (630)

A few studies were found correlating religious sentiments which might affect mentality of people. Decrease percentage in our study for voluntary willingness towards body / organ donation may be due to religious and cultural belief, traditional superstition and faith including myths as has been put forward by responses of participants. Our study revealed 2.76% (medical students) and 13.76% (Paramedical staff) (Table 5) who considered religious sentiments including superstitious beliefs to be one of the causes for unwillingness for body / organ donation. Vaishaly K Bharambe *et al*. [18] in India observed 5% of participant's unwillingness to donate organs following religious sentiments. 42.7% of respondents in a similar study by Tontus *et al*. [53] stated that their religion restricts organ donation. In the present study the religion of 86.74% medical students was found to be Hinduism, 3.87% as Christianity, 2.21% Islam and finally 4.42% followed other religions including local religions among a total of 181 MBBS students. Similarly among the paramedical staff the same was found to be 84.40%, 9.70%, 1.50% and 4.22% respectively. Hence in general taking the total sample size of 630 participants the religion was found to be

85.09%, 8.4%, 1.85% and 4.66% respectively (Table 3) who stated religious beliefs as the reason for declining to donate organs. Studies of Ebeye *et al*. [32], Mwachaka *et al*. [33] and Abbasi Asl *et al*. [34] have also brought out thoughts concerning religion and body / organ donation. The respondents were unwilling to donate due to causes of "cultural barriers", "disrespecting the corpse", "not acceptable to God", "lineage continuity may be endangered"," religion not permitting", "act of altruism", "ancestor's not permitting", "against tradition", "it disturbs the spirit" etc. The responded also said that although major religions encourage donation, custodians of the religious laws such as religious leaders may not permit donation.

The knowledge of medical students regarding individual organ donation, as they progressed in their study curriculum from 1st to final year had also been accessed. It was found that knowledge regarding eye, liver, heart and kidney improved from 77.08% - 92.86%, 62.5% - 78.57%, 72.92 – 90.48% and 66.66% - 90.48% respectively (Table 8). Similarly, awareness for organs like bone and skin showed an improvement of 45.83% - 83.33% and 58.33 – 83.33% respectively (Table 8). Similar findings were approved by Bathija GV *et al*. [15], Vaishaly K Bharambe *et al*. [18], Bardell T *et al*. [52] and Ali FN *et al*. [56]. Our findings show that awareness for organs improved by an average of 22.62% (Table 8), Though knowledge regarding appropriate organ donation was found to be appreciable in our study, but disparity was shown in respect to age of the donor, time of organ donation, transplantation after "brain dead", time interval between harvesting and transplanting, health condition of the donor, who can donate etc indicating the increased of awareness programmes.

Speaking about corneal transplantation, annually there are about 45,000 to 50,000 eyes are being collected by honorable efforts of Government and Non-Government organizations. But the actual need is for 0.12 million corneas can only be met by creating mass awareness in community to come forward and pledge for eye donation [44].

As we reach on the verge of closure of discussion session, a typical type of medical mistrust may be elicited. Stated previously, we approached 189 MMBS students and 467 paramedical staff, (forming a total of 656). But, 181 MBBS students and 449 paramedical staff consented to participate making the total sample size to be 630. The refusal to participate being of the belief that consenting means signing the consent form regarding body/ organ donation in future (inspite of thorough explanation regarding the questionnaire) which prevented 26 participants from refusing to be a part of the study. This mistrust may be compared with the observation of Vaishaly K. Bharambe, Rathod H [44]. Finally, among the causes which lead to unwilling expression for body / organ donation lack of faith in medical profession and mutilation of organs (as they do not reach the rightful recipient) were also marked. An average of 20.91% respondents showed their displeasure with medical profession dealing with donation and 21.55% (medical students) and 11.59% (Paramedical staff) supported donation misuse (Table 5). This fear of commercialization and lack of commitment and confidence in health care system had also been documented by Bathija GV *et al*. [15], Bapat *et al*. [19] and Vaishaly K. Bharambe *et al*. [4] who have defined medical mistrust as an unknown "fear that doctors might declare death prematurely to procure organs and doubts regarding equity in organ allocation system [44]".

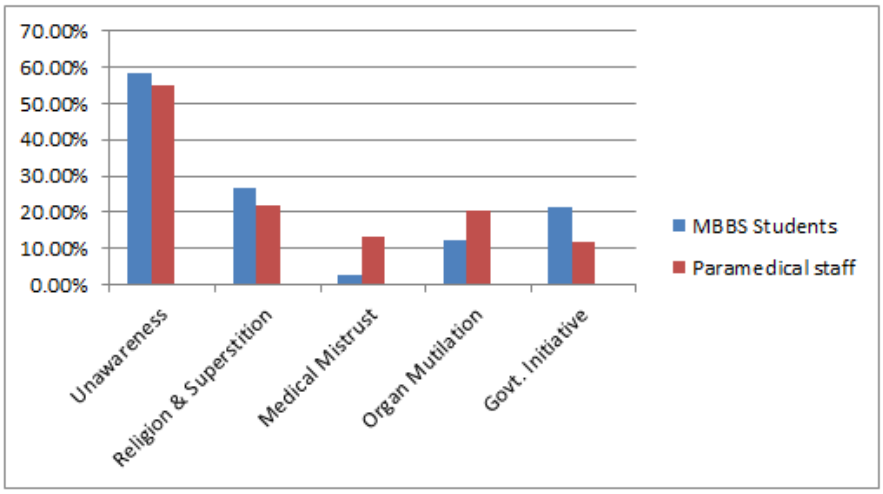

Chart-2: Causes of shortage in body / organ donation

Inspite of the fact that our study setting has been Medical College, but the level of awareness was not much satisfactory among the medical and paramedical staff (for certain responses), though can be considered reasonably acceptable, keeping in mind the Indian scenario. This could be safely explained due to

differences in study settings, educational profiles, job scenario, experiences of the study participants and even study tools for our study (Chart 2).

CONCLUSION

The selfless decision of body donation has been in practice since time immemorial. But the attitude, willingness and awareness regarding the precious gift of donation, was probably not known from the population of tribal Raigarh region (Chhattisgarh). This study attempts to plunge deep into the minds of the tribal people of this region (representing Chhattisgarh as a whole) to gather information concerning the noble act. Though the awareness and willingness to donate in our study was not very poor as compared to studies of other region of India (as discussed), but we as investigators felt some lacunae in this cohort of population with reference to knowledge about who can donate, when to donate, legal correlations and even decisions to be taken by willing family members about brain dead individuals or persons who do not have registered donor's card. This discrepancy was noticed especially among medical professionals raising definite doubts about donation related "psychological query" which can be surely unearthed from potential donors within general community. Our study do support the hypothetical question about correlation between religion and superstition which might alter thought process of people and lead to shortage of donation programmes but do not put forward the thesis that cultural and religious faith is the prime cause of shortage of donated organs in the region we investigated.

This necessitates the urgent need of intensified multi-disciplinary discussion among medical professionals to prepare them as a team who will be confident soldiers to sensitize the sensitive light of body / organ donation "by the people, of the people and for the people".

We as a part of medical fraternity will always have high regards with folded hands and a deep sense of adorable appreciation towards the donors for the gracious act of body donation, which will definitely help a future doctor move a step forward in medical profession.

Limitations and future scope

The probable strength of our study is inclusion of both medical and non-medical sectors of a Medical College who together may succeed in answering the barriers and ethical dilemma prevalent in society related to donation. This manuscript reads the minds of literate tribal sectors of Indian society but fails to study the tender minds of rural India from the limitless patients attending regular OPD in our Medical College Hospital. This would be of benefit to compare the conscience of rural and urban India. The sample size of Medical students and paramedical staff may not be a full representation of other undergraduate medical students and staff from other provinces of the country India. We did not take into consideration the highlighting attitudes of medical faculty and post graduate students concerning the topic. The above considerations and results of this research to add to the literature will help to publish a comprehensive and complete national representation from India. A broad consensus among other tribal regions of India is probably also needed.

RECOMMENDATIONS

We may sincerely put forth certain proposals to concerned authoritative bodies which might help in ruling out the poverty in body / organ needs in medicine.

1. Dissection of human cadavers to be made compulsory in medical teaching curriculum.
2. Promotion from Anatomists and medical professionals to pledge to donate their own body / organ.
3. Attitudes of medical students towards cadavers to be monitored and moderated to hail the dignity of cadaver.
4. To ban irresponsible use of smart phones posting photos of medical students along with cadavers.
5. Incorporating a few compulsory specified hours in medical teaching curriculum (educational sessions in health sciences curriculum / orientation sessions for newly admitted medical students and interns) to improve and increase awareness of organ and tissue donation among medical students to raise their knowledge and awareness levels to make them confidant in approaching the potential donors in community.
6. Make medical students and professionals role model in body / organ donation programme to address the issue of scarcity to the society.
7. Designing and developing voluntary body donation programme unit in every Medical institute.
8. Approval of body donation cells in every Medical Colleges.
9. Approving the role of mass media: (a) Television (b) Press and radio (c) Magazines (Medical and general) and talks with family and friends (d) Hoardings and posters to broadcast and campaign awareness.
10. Increasing the awareness of the topic among non-government organizations.
11. Providing utmost respect and honor to the donor's body in presence of relatives and friends and completing all formalities of accepting the body at the earliest.
12. Collaborative or conjoint cadaver pooling concept in every district within a state by combined effort of government and non-government organizations.
13. Providing public recognition to the organizations working in favor of body / organ donation.

14. Removal of fear of organ misuse by formation of strict government guidelines and open allotment organ system.
15. Construction of "green corridors" in various parts of India to facilitate easy and fast transport of organs to recipients.
16. Appreciation from the government to the donors by approval of railway concessions, medical benefits and even recognition of their good act during republic or Independence Day celebrations.
17. Creation of national online body / organ donor registry platform having independent procurement team to contact each new registration with easy downloadable organ / body donation card.
18. Consent of donation emblem on driving licenses to facilitate easy harvesting and transplantation.

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