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Original Research Article

Conceptual differences about willingness of body donation among southern, eastern, central and northern population of India: Single centered approach

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ABSTRACT

Background: Cadaveric dissection cannot be compensated by virtue table concepts or computerized learning aids. The present study was aimed to evaluate the conceptual differences and perceptual clarity about willingness of body donation relevant to regional practice among four inter-state population of India. The study objectives focused to assess the understanding level about general and special concepts and attitudes about body donation in Southern, Eastern, Central as well Northern parts of India and to compare differences about the concepts of understanding and willingness about body donation between four inter-state populations.

Materials and Methods: A cross-sectional single center study with a differential rating scale questionnaire was conducted. Four hundred participants equally divided among four medical colleges of Southern, Eastern, Central and Northern India were the samples. All ethical principles for human research were followed. Completing a special course of ethical training and non-willingness to participate in the study were regarded as the criteria of a subject to get excluded from the study.

Results and Conclusion: The given questionnaire was completed by various participants from different zones: eastern, western, central and southern. We found significant difference in the educational level of the participants across various zones. Unsurprisingly, most likely due to the literacy rate, participants from the south are much more familiar with 'body donation' for research and education compared to participants from other three zones. Provisions to improve the body donation should concentrate on multi-directional tasks.

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1. Introduction

The concept of body donation has evolved over centuries and it still bears the stigma among countries regarding the acquisition and the use of it for education and research.¹ Laws and ethical frameworks guide various countries to practice 'the act of body donation'.² Cadaveric dissection cannot be compensated by virtue table concepts

or computerized learning aids.¹ The inevitable need of cadavers for medical knowledge and for improved teaching of human anatomy resulted in well-established donation programs.³ In contrast, the use of cadavers for dissection is inconceivable due to various cultural or religious reasons in many countries. Countries without a frame work donation programs use unclaimed bodies or a few donated bodies for dissection purposes.⁴

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In India, we face shortage of bodies for dissection, combined with the lack of knowledge of the public concerning the possibility of voluntarily donating their own bodies. Central government follows strict norms and laws towards the body donation programs in India.⁵ Body donation is relatively rare in eastern, central as well northern parts of India when compared with many southern parts of India. Against this background, successful donation programs should be highlighted in the present status, emphasizing those aspects of the programs that make them successful. The lack of knowledge about body donation programs and firmly held cultural and religious burial traditions may explain the lack of bequests from backward communities. The approach and attitude of various religions towards body donation can be well understood by the present study assessments. The present study results can also suggest some important measure to overcome the scarcity of bodies in India.

To build a future generation with better anatomical concepts which aids for best medical practice should be given more emphasis than people getting motivated by personal benefit for body donation. The present study was aimed to evaluate the conceptual differences and perceptual clarity about willingness of body donation relevant to regional practice among four inter-state population of India. The study objectives focused to assess the understanding level about general and special concepts and attitudes about body donation in Southern, Eastern, Central as well Northern parts of India and to compare differences about the concepts of understanding and willingness about body donation between four inter-state populations.

2. Materials and Methods

A cross-sectional study was conducted for a year and convenience sampling method was adopted. A differential rating scale questionnaire study was conducted. In order to get the correct representation; a multi centre study was conducted for data collection in which centers were selected by randomization from the four different states of India. Approval of the Institutional ethics committee of parent University, as well as prior permission from the authorized college in-charges of the concerned medical college, identified for the study was obtained. Informed consent was taken from each participant and participant information was shared to the concerned participants. Confidentiality of the participants was maintained and they were assured that their participation and nonparticipation in the study will have no benefits. Based on information's and queries with faculties working at different medical colleges the researcher developed the tool for the study. By assuming awareness level prevalence in unknown population proportion as 50%, confidence level as 95% and margin of error as 5, and an considering an unlimited

population size we calculated the sample size as 384. The sample size was taken as 400 as the samples can be taken up to 8-10% more than that of the estimated sample size. This also helped for an equal allotment of samples among four regions. The estimated sample size was divided equally among four hospitals involved in the study. From each hospital one hundred (100) samples were collected.

Subjects selected by simple random selection study were involved for the study. Completing a special course of ethical training and non-willingness to participate in the study will be the regard as the criteria of a subject to get excluded from the study. We could collect back only 400 questionnaires from four medical colleges of Southern, Eastern, Central and Northern India. The 25-min survey questionnaire was designed to assess the degree to which respondents' socio-demographics as well as key variable for participants. Respondents were asked about their age, gender, education, race/ethnicity and source of information on the concepts of body donation. Information were also collected on their attitudes related to, general knowledge and ethical issues awareness related to body donation in key variable section. This can bridge up a willingness to consider whole body donation for scientific purposes. Questions were descriptive in nature. There were no negative statements. Data was collected by distributing questionnaire forms. Only 400 participants returned back the answered questionnaire. The tools were pretested among 10 participants of a selected institution. The reliability of the tool was measured by using Cronbach alpha formula. The calculated 'r' value is $0.8 > \alpha \geq 0.7$ and tool was found reliable and acceptable for assessment. Statistical analysis of the present study was done using the GraphPad Prism v9. This is to assess the feasibility and predictability of the tool by interpretation of data.

3. Results

The given questionnaire was completed by various participants from different zones: eastern, western, central and southern. We found significant difference in the educational level of the participants across various zones ($c^2 = 17.7$, P-value = 0.007), such that 85% of participants from the southern zone are literate and 53% can write and understand, compared to only 30% in the central zone. Further, only 3% participants from the southern zone belonged to a vulnerable tribal population, compared to 41% in north and 33% and 35% in east and central respectively ($c^2 = 43.1$, P-value < 0.0001). Interestingly, while the mass media and journals were found to be the major source of information regarding body donation for the participants from the south, the participants from the other zones rely on 'other', not specified sources ($c^2 = 34.7$, P-value < 0.0001).

Unsurprisingly, most likely due to the literacy rate, participants from the south are much more familiar with

'body donation' for research and education compared to participants from other three zones. While 47% participants from the south are aware of someone in his/her close relation and/or friend circle to have opted for the body donation, only ~20% participants from the other three zones are aware of the same. Strikingly, while 32% participants from the south think that one should do his/her body for medical studies, only ~11-13% participants from the other three zones believe the same. Further, while 49% and 44% participants from south and east respectively are aware that the bodies cannot be donated after postmortem, only 32% and 34% participants from the west and central are aware of the same. Notably, participants from all zones are unsure of where the preservation procedures of the donated body take place.

While 67% participants from the south are aware that for teaching purpose, bodies are preserved in a tank containing chemicals, only ~25% from the other three zones are aware of the same ($c^2 = 64.6$, $P\text{-value} < 0.0001$). More than 50% participants from the east and south are aware that the kith and kin cannot see the body once it has been donated, 33% participants from the south are aware of the same ($c^2 = 17.6$, $P\text{-value} = 0.0073$). Interestingly, more than 50% participants from all four zones believe that the donated body are handled with disrespect and the dissection table and not properly disposed. More than 65% participants across all four zones believe that people cite the fear that their body may not be treated with respect and dignity as the major reason for 'no body donation'. While people from south does not believe that socio-economical condition can be an important factor behind body donation, >75% participants from the other three zones firmly believe the same ($c^2 = 22.5$, $P\text{-value} = 0.001$).

Around 60% participants from the south are aware that free hospital services are not guaranteed upon signing body donation agreement. But only 37% participants from the central zone are aware of the same ($c^2 = 13.5$, $P\text{-value} = 0.0354$). ~80% participants across all zones believe that having no dependents or children can be major reason behind a person's body donation. While 76% participants from the south are aware of the legal aspects and formalities before body donation, only 21% participants from the central zone are aware of the same ($c^2 = 84.2$, $P\text{-value} < 0.0001$). Similarly, while 78% participants from the south zone are aware that the spouse of the deceased person has the legal authority to give consent for the body donation, only 36% participants from the north are aware of the same ($c^2 = 46.8$, $P\text{-value} < 0.0001$). Less than 80% participants across all four zones believe that females deny donating body more than males, likely due to the fear that the donated body would not be handled with respect and care. Regardless of the zones ~60% people are aware that the consent of the donor is the only requirement for the procurement of the body.

Strikingly, ~70% participants across all four zones are unaware of the full form of NGO. Participants are unsure about who can make a decision about donating unclaimed bodies and it reflected in their answers. Finally, while 52% participants from the south believe that body donation awareness programs can attract more people towards body donation, less people from the other three zones believe the same ($c^2 = 15.2$, $P\text{-value} = 0.0189$).

4. Discussion

Among Indian population the impacts of culture and religion on acceptance of body donation is very high as it is a secular democratic country. The practical measures to overcome the scarcity of bodies in India and the world were to effectively deal with the donors' attitude, approaches of various religions towards donation and factors preventing people from body donation. In the present study due to high literacy rate, participants from the south are much more familiar with 'body donation' for research and education compared to participants from other three zones and are aware of someone in his/her close relation and/or friend circle to have opted for the body donation, only ~20% participants from the other three zones are aware of the same. Author's reports in spite of mass awareness campaigns, the religious and humanitarian issues were the core elements for the public hesitation towards body donation.⁶ Authors pointed out that most of the reasons for unwillingness towards body donation among students and professionals from the medical, health, and non-health related disciplines of Nigeria were due to negative perceptions of the dissection room which resulted from poor and disrespectful management of the human cadavers.⁷ The degree to which anatomy is integrated into the surrounding culture can also emerge as a significant factor towards body donation.⁸

In the present study, people from south do not believe that socio-economical condition can be an important factor behind body donation, >75% participants from the other three zones firmly believe the same. The same has been reported from a South African study indicating cadaver population censuses were influenced by a change in political climate and socioeconomic status.^{9,10} In the present study, less than 80% participants across all four zones believe that females deny donating body more than males, likely due to the fear that the donated body would not be handled with respect and care. Different authors have also concluded that changes in sex and sample population group of the cadavers may have a future long-term effect on teaching and research.¹⁰ In our study, 78% participants from the south zone are aware that the spouse of the deceased person has the legal authority to give consent for the body donation, only 36% participants from the north are aware of the same. Regardless of the zones ~60% people are aware that the consent of the donor is the only requirement

for the procurement of the body. Assessments indicated a remarkable gap between the knowledge of donor and motivation of the family after death for body donation and proper guidance and education will help to overcome the existing barriers towards body donation.¹¹

Interestingly, the mass media and journals were found to be the major source of information regarding body donation for the participants from the south, the participants from the other zones relayed on not specified sources in the present study. Authors suggested mass media and other voluntary organisations to take an important step for awareness programs towards body donation.¹¹ In the present study, more than 50% participants from all four zones believe that the donated body are handled with disrespect and the dissection table and not properly disposed. More than 65% participants across all four zones believe that people cite the fear that their body may not be treated with respect and dignity as the major reason for 'no body donation'. Various authors' reviews the history and the details about the procedures and procurements of body donation followed in India. Social and religious concepts in India can be a cause for the lack of willingness of the public towards body donation. Authors impress self-perturb towards unclaimed bodies and suggests the need for more awareness campaigns including medical exhibitions to edify the orthodox population. Various conflicting factors such as extent of teaching experience and transcendental convictions effects the attitudes of anatomists' towards body donation.^{5,12} The cultural and religious impacts on body donation persist throughout all countries from east to west.^{13,14}

Few authors found that strong religious beliefs among the study population as the main cause of unwillingness to donate their bodies to medical science.^{15,16} Strong religious beliefs among the Greek study population as the main cause of unwillingness to donate their bodies to medical science.¹⁵ Further, important underlying beliefs can inform strategies to target prospective donors.¹⁶ Strikingly, from the present study reports, 32% participants from the south think that one should do his/her body for medical studies, only ~11-13% participants from the other three zones believe the same. Further, while 49% and 44% participants from south and east respectively are aware that the bodies cannot be donated after postmortem, only 32% and 34% participants from the west and central are aware of the same. Notably, participants from all zones are unsure of where the preservation procedures of the donated body take place. A study reports that there was absolutely no fundamental shift in donor attributes regarding religious and cultural aspects. Apart from that donors appear to be well aware of how their body will be utilised for medical purposes.¹⁷

Authors suggested that anatomists and educators should prepare students for cadaver-based instruction to exhibit sensitivity towards cultural differences when informing different communities about body donation programs, to

modify approaches while working with cadavers and in devising thanksgiving ceremonies. These ceremonies are mostly student-driven with no conflict of interest and secular in nature.^{18,19} In the present study, strikingly, ~70% participants across all four zones are unaware of the full form of NGO. Participants are unsure about who can make a decision about donating unclaimed bodies and it reflected in their answers. Finally, while 52% participants from the south believe that body donation awareness programs can attract more people towards body donation, less people from the other three zones believe the same. When authors collected information's about the behavioural patterns of the potential donors as well as organizations which included profit, non-profit and academic sectors who procure the dead bodies to endow it on demand.²⁰ Various authors observed that the limitations of the usage of unclaimed bodies and the drawbacks of the cadaveric dissection replacement to computer-based education techniques for medical studies.^{21,22} Focus oriented body donation awareness programs which even included the kith and kin of the donors who have already donated their bodies to spread the gracious and ideal act of body donation. This can help to meet the scarcity of cadavers for medical education in India.

5. Conclusion

Factors which influence body donations can therefore affect dissection-based anatomy teaching. Modified approaches towards body donation suitable for different geographical areas with varied heritage and cultural differences should be given primary priorities. Multi-focused awareness programs should be conducted after assessing the pitfalls of each program which has been already executed before. Provisions to improve the body donation should concentrate on multi-directional tasks. Proper medical education for promoting health literacy among the general public can aid to increase the number of donors.

6. Source of Funding

None.

7. Conflict of Interest


All authors have none to declare. We declare there is no conflict of interest and no financial supports or grants were received for conduction of the study.


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