Original Research Paper

Knowledge, Attitude and Practice Among the Medical And Dental Undergraduates Regarding On Whole Body Donation For Teaching Learning Purposes: A Perspectives From Bioethics- A Cross Sectional Study

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ABSTRACT

Background: Cadaveric dissection provides as for student to learn the detailed structure of human anatomy; thus, body donation program is pertinent in ensuring the continuation of dissection class. The objectives of this study were to assess the student knowledge, attitude, practice on body donation and to validate the questionnaire that assesses knowledge, attitude and practice during dissection.
Methodology: A cross sectional study was conducted on 264 undergraduates medical and dental students in B.P. Koirala Institute of Health Sciences, Nepal, who had attended regular dissection classes for one year. Ethical approval was obtained from Institutional Review Committee-IRC/1455/018. A non- probability purposive sampling technique was applied to sample the study subjects. A questionnaire consisting of 32 items was distributed to the students on day-1 and day-15 of intervention and the data was analyzed using Paired 't' test. A bivariate correlation was done for intra class correlation of each domain and Cronbach's alpha was calculated for each domain.
Results: Religion, lack of awareness program, insecurity of being mishandled were found to be main barriers which discouraged for body donation in future. 98 % student claimed that the dissected body needs to be handled respectfully to maintain the dignity of person after death. Attitude and practice were positively correlated ($r= 0.17$, $p<0.01$). Factors affecting practice and attitude were significant ($p<0.05$) and positively correlated ($r=0.814$). There was significant relation between knowledge, attitude and practice ($p =0.018$, 0.004, 0.000) at 95 % C.I. The intra class correlation scores of each domain during test and retest were 0.83, 0.72, 0.60 and correlated significantly ($p<0.05$). The questionnaire designed was reliable for knowledge, attitude, practice domain with Cronbach's alpha of 0.68, 0.70, and 0.60 respectively.
Conclusion: Overall knowledge, attitude and practice on body donation was acceptable among the students involved in this study. A validated questionnaire was developed which can be used to collect the opinion on whole body donation for academic purposes.
Keywords: body donation, knowledge, attitude, practices, undergraduate medical students

Introduction

Dead body donation is useful for medical education and in research which is beneficial for needs of living persons. Cadavers remain principal tool for medical education and anatomists, without the dissection of human body, learning of anatomy are incomplete. For depth knowledge of human organs dissection is important [1]. For collection of dead bodies for teaching purposes there is Bombay Anatomy Act in India, an Act to provide for supply of unclaimed dead bodies of deceased persons and for donation before death by a person of his body or any part, after his death to hospitals and medical and teaching institutions for therapeutic proposes or for medical education and research including anatomical examination and dissections [2]. The right to a decent burial is the most basic right of any human being, as cadaver remains deprived of this right for the benefit of our medical students and future care takers of health which helps to preserve life science even in death and is a symbol of generosity at its zenith deserving our extreme gratitude and reverence. The immense courage needed to give away the body of a loved one for dissection must be acknowledged and respected by all [3]. When dealing with the dead, the margin between ethical and unethical is hair lined and fragile. It is very important to define the boundary between meaningful, judicious use, commercial exploitation and ravenous abuse. The purposes should be noble and ethically justified if we were to use; as a mere tool; another person who once that full life legend behind him. Faculties, students and *care providers (who take care and handle cadavers)* motive should be clear and so to maintain the human nature towards cadavers when we get involved during dissection [4]. As pointed out by many anatomists worldwide, an international debate on body donation and the use of the dissection of human cadavers in healthcare studies is needed. Numerous countries have no donation programs in place, or difficulties in obtaining bodies for anatomy teaching [5]. The numbers of medical colleges are increasing for health care of the society and increase in demand of cadavers for teaching learning activities. So there is scarcity of the dead bodies for dissection and research by medical students. It is very difficult to emphasis and promote people in society on whole body donation for academic purposes [6-7].

Cadaveric crisis faced by many medical institutions can be resolved through increased awareness and proactive community involvement. Cadaver donation, if done in an ethically morally and legally justified manner, can help to preserve our cadaver heritage as the essence of medical anatomy studies and clinical therapeutics [5,8]. Hence this research was focused on various factors e.g. social, cultural aspects and religious rituals which may act as barrier to whole body donation and also on ethical issues an aspect regarding whole body donation, attitude, practice during dissection to maintain dignity and goodwill even after death of a person. Also, this may raise awareness to initiate to plan for the whole-body donation after death for teaching learning purposes in a medical institute.

Objectives

1. To know knowledge, attitude, practice of whole-body donation for academic purposes and
2. To identify barriers for whole body donation for academic purposes, validate the questionnaire prepared for our context.

Research Design and Methodology

A quantitative, cross-sectional research was conducted among the undergraduate students of MBBS and BDS in BPKIHS who had undergone through dissection during their 1st year and 2nd year preclinical courses. Non-probability (purposive) sampling technique was applied for sampling method. Predictor baseline variables were Incentives for donating body, Known relatives who had already donated body and *Section 3 of Libel and Slander Act 2016*. The outcome variables were e.g. increase in interest/ willingness to donate whole body for academic purposes and barriers to whole body donation for academic purpose. The ethical approval was obtained from IRC, B.P. Koirala Institute of Health Sciences, Nepal IRC- 1455-018.

Calculation of Sample size
This study considered 95% of CI, and 80% of power, to estimate the sample size. For this purpose, we considered 30 % prevalence in practice from various study done in different years [7-8].

Sample size, $n = z^2pq/ d^2$
Where,
n = number of sample to be calculated
value of z = 1.96 at when 95% CI is considered, so (z =1.96 which is ≈2, z^2=4)
p = prevalence 30 %, taken from prevalence in practice from above mentioned studies,
hence, q= (100-30) = 70 %
d= (20% of p), i.e. = 20 % of 30 (prevalence) = 6
d = 6 at 80 % power of study
so d^2= 36
putting all values in above equation then, $n = z^2pq/ d^2 = 4 *30* 70 / 36=240$.
10 % was added in calculated size to reduce the various sample bias=24. Total required sample size was, *n* = 240+24 = 264

Criteria for Sample Selection
Those undergraduate students of BPKIHS who had done dissection during their regular LABEX session and those who voluntarily gave their consent was included and be a part of study were included for this purpose.

Data Collection Technique / Methods :
Questionnaire was distributed among to the 3rd and 2nd year MBBS (200- students), BDS (120-students) who had done dissection during their labex session and those who wished to give a consent to participate and be the part of study. The purpose of the study and procedure was explained and written informed consent was obtained. The participant was informed that their participation was voluntary. The data collection tools was a multipart questionnaire with 11 knowledge, 8 attitude and 13 practice questions towards whole body donation for teaching learning [10]. They were assured that their responses was confidence and anonymity was maintained by coding. The questionnaire was developed by process including the item generation, item reduction, item scaling and pretesting. The data collection tools was a multipart questionnaire which

Pre-testing the Data Collection Tools:
Pre-testing of data collection tools was done in 10 % of participant and was kept confidential.
contained 11 knowledge, 8 attitude and 13 practice domain questions. The scale had different values rating from 1-3 were used for knowledge assessing, where *1= yes, 2= no, 3= don't know. To, assess the attitude, scale with values ranging from, 1-5 is used, where 1= strongly disagree, 2= disagree, 3= No, 4= agree, 5= strongly agree. To, assess the practice, scale with values rating, 0-1 is used, where 0 = Yes, 1= No*

Face and content Validity:
Face validity was confirmed by the expert committee consisting of three anatomist, one lawyer practicing in medical issues in court and member of IRC, and one Head of Nepal National Unit UNESCO bioethics who himself was a psychiatrist, one from Health Professions Education, one statistician and two steering members of UNESCO bioethics Nepal Unit, BPKIHS. They reviewed the questionnaire added and deleted item, scaling of item in the tools. Further the review of literature was done to confirm the face validity.

Test- retests reliability:
The questionnaire was distributed among the target population on day 0 and again after 15 days, the same questionnaire was distributed and the test- retest reliability coefficient was calculated.

The Cronbach's alpha was calculated and the intra class correlation coefficient was calculated for each questions [11]**.** Validity and Reliability of the Research The Cronbach's alpha was calculated for our local context and those were later on included in the sample size and the intra class correlation coefficient was calculated for each questions [12].

Data handling

First master was prepared and collected data was entered in Microsoft Excel 2010 and converted into Statistical Package for Social Sciences- SPSS 11.5 version for analysis. For descriptive statistics: Percentage, proportion, mean with standard deviation (SD) was calculated. For inferential statistics: Chi square test, Pearson correlation test, t-test was applied. Correlation analysis was performed to assess association between knowledge, attitude, practice and barriers. Logistic regression analysis was performed to find the predictors of knowledge, attitude, practice and barriers for whole body donation for the medical education purposes.

Results

Religion, lack of awareness program, insecurity of being mishandled was found to be main barriers which discouraged for the body donation in future. 98 % student claimed that the dissected body needs to be handled respectfully to maintain the dignity of person after death (Figure 3&4). Attitude and practice was positively correlated (r= 0.17, p<0.01) (Table 5). The different domains also demonstrated good internal consistency and correlation within them shelves, test-retest reliability was also good. The questionnaire strength was found to be acceptable and reliable with an overall Cronbach's alpha for internal consistency of three domains knowledge, attitude and practice which was 0.68, 0.70 , 0.60 respectively (p<0.01) at 95 % CI and intra- class correlation scores for each domain questions in both test and retest were 0.83, 0.72, 0.60 and were significantly correlated (p <0.01) at 95% C.I. (Table 7).

Fig. 1 Shows the knowledge domain regarding whole body donation, Responses (in%)

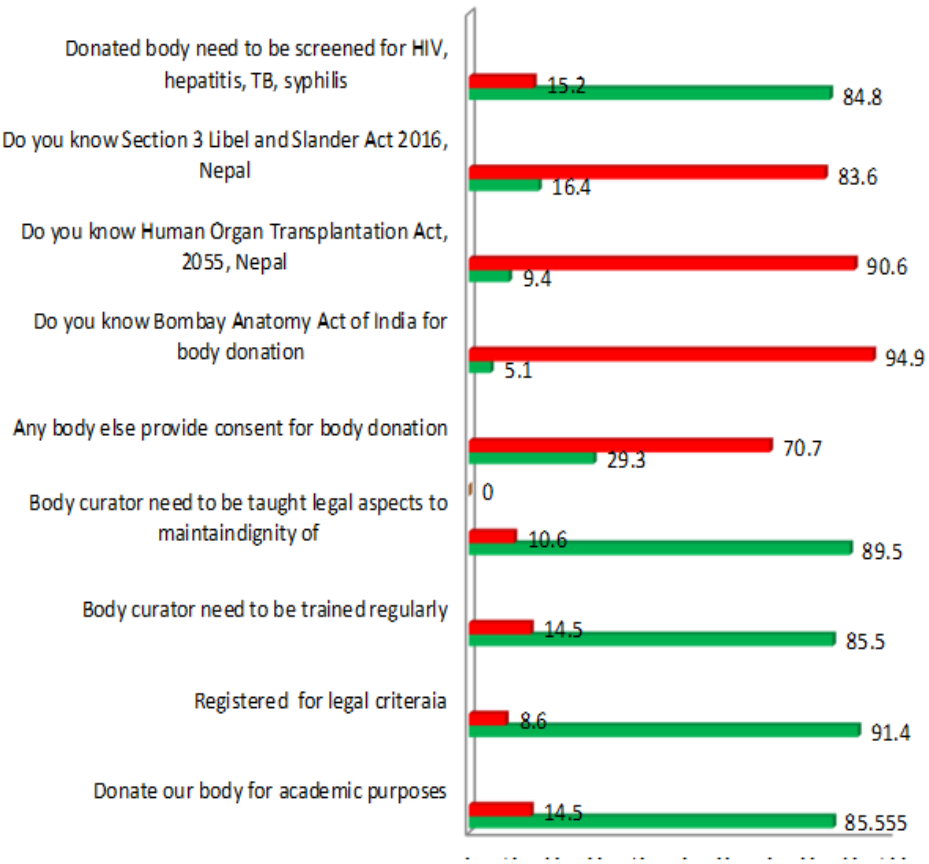

Fig 2: Shows the attitude domain regarding whole body donation, Responses (in %)

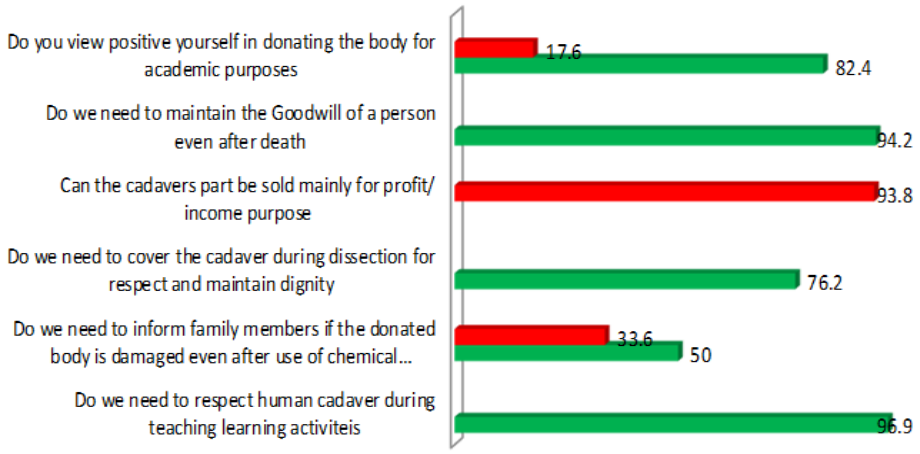

Fig. 3 Shows the practice domain regarding whole body donation, Responses (in %)

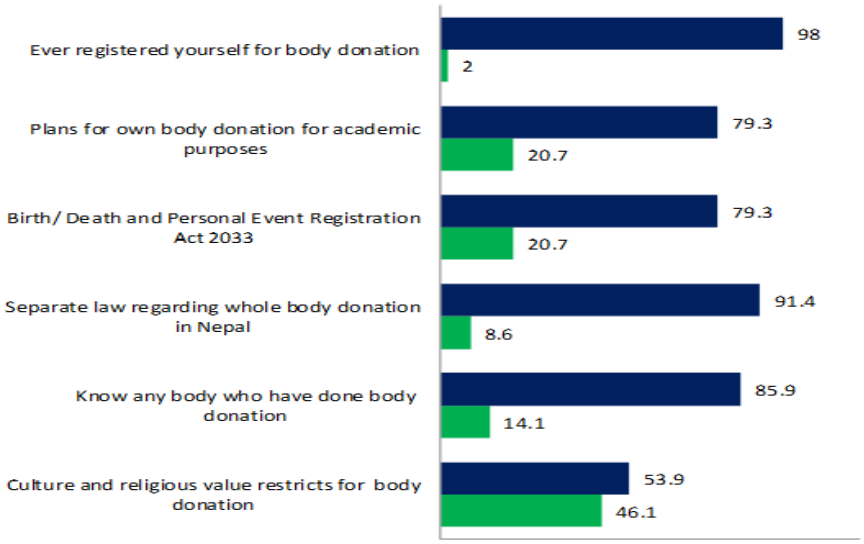

Fig. 4 Shows the practice domain regarding whole body donation, Responses (in %)

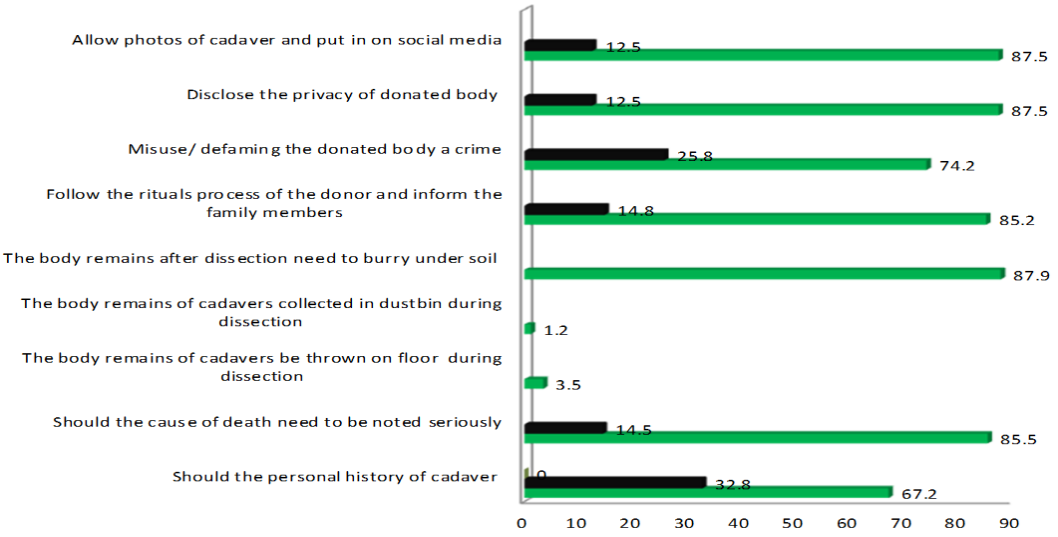

Table 1: Mean and SD of total score of Knowledge, Attitude and Practice domain after pre-test and post-test (n= 264)

	Pre test Knowledge score	Pre test Attitude score	Pre test Practice score	Post test Knowledge score	Post test Attitude score	Post test Practice score
Mean	6.95	29.21	10.64	7.18	37.00	11.04
Std. Deviation	1.247	3.606	1.669	1.041	3.550	1.397
Minimum	3	12	5	4	21	6
Maximum	11	36	15	11	46	16

Table 2: Comparing mean for total score in different domains among all student under study (*n= 264), Paired Samples Test*

Domain	Mean score of domain	Mean diff.	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	p- value
Practice	10.64 11.04	-.395	2.170	.136	-.662	-.127	.004*
Attitude	29.21 37.0	-7.789	5.233	.327	-8.433	-7.145	.000*
Knowledge	6.95 7.18	-.234	1.577	.099	-.428	-.040	.018*

Table 3: Comparing mean for total score in different domains among MBBS student under study (n= 169), Paired Samples Test

Domain	Mean diff.	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	p- value
Practice	-.391	2.203	.174	-.734	-.048	.026*
Attitude	-7.491	5.544	.437	-8.35	-6.628	.000*
Knowledge	-.248	1.525	.120	-.486	-.011	.040*

Table 4: Comparing mean for total score after post-test in different domain among dental UG student (n= 95), Paired Samples Test

Domain	Mean diff.	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	p- value
Attitude	-8.295	4.642	.476	-9.240	-7.349	.000 *
Practice	-.400	2.126	.218	-.833	.033	.070
Knowledge	-.211	1.699	.171	-.550	-1.230	.222

Table 5: Correlations between knowledge, attitude and practice domain in Pretest- day 0 (bivariate test), n**= 264**

Correlations

		Pre total knowledge	Pre total attitude	Pre total practice
Pre total Knowledge	Pearson Correlation	1	.110	.097
	Sig. (2-tailed)		.080	.122
Pre total Attitude	Pearson Correlation	.110	1	.171**
	Sig. (2-tailed)	.080		.006
Pre total Practice	Pearson Correlation	.097	.171**	1
	Sig. (2-tailed)	.122	.006	

**. Correlation is significant at the 0.01 level (2-tailed)

Attitude and Practices showed a direct and significant positive correlation (r= 0.171, p<0.01)
**. Correlation is significant at the 0.01 level (2-tailed)

Table 6: Correlations between knowledge, attitude and practice domain after Posttest- day 2 *(bivariate test),* ***n= 264***

Correlations

		Post knowledge	Post attitude	Post Practice
Post Knowledge	Pearson Correlation	1	.418**	.146*
	Sig. (2-tailed)		.000	.019
Post Attitude	Pearson Correlation	.418**	1	.271**
	Sig. (2-tailed)	.000		.000
Post Practice	Pearson Correlation	.146*	.271**	1
	Sig. (2-tailed)	.019	.000	

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

Positive correlation seen with Attitude and Practices which was significant (r= 0.271, p<0.01)

**Correlation is significant at the 0.01 level (2-tailed)

Table 7: Intra class Correlation (Test – retest reliability) Coefficient

Domain	Intra class Correlation	95% Confidence Interval	p - value
Knowledge	**0.830**	**0.025 – 0.151**	**0.000**
Attitude	**0.725**	**0 .011- 0.106**	**0.000**
Practice	**0.601**	**0.024-0 .103**	**0.000**

Significant at $p < 0.05$

Discussion

In a study, for the awareness, perception and attitude of whole body donation after death, 92.2 % (461) students knew about the body donation, 55.6 % students were willing to donate the bodies and 123 (24.6 %) of students apprehend that bodies would not be handled properly and finally denied to donate the body. They concluded it was due to lack of proper motivation & lack of awareness in policy and guidance to the public about body donation [1]. Our study revealed that 85 % knew whole body donation can be done for academic purposes in medical institution, 20.7 % were willing to donate body in future for teaching learning purposes 46.1 % revealed that their cultural and religious values restricted them which act as a barrier for donation program as they claimed right to a decent burial is the most basic right of human being and the cadaver remains deprived of this right for benefit of medical students. Similar findings were seen in a study conducted in United States [13].

In a study, among 205 medical professionals 8 % of medical professionals were unaware of term body donation and 85 % believed that donated bodies were misused. Only 22% of physicians were willing to donate their bodies for medical education. Only 7% had already registered their own names of body donation, 64 % were not aware of any known person having registered. They claimed that this was due to lack of knowledge regarding whole body donation for a academic purposes and recommended for mass awareness to non-medical professionals also [14]. Our study revealed that 85.9 % were not aware of any known person had ever registered for whole body donation, but interesting 2 % of them have done registration whereas 79.3 % had no future plans for their own body donation for academic purposes in a medical institute. Likewise, 96.9 % claimed that the dissected body need to be handled respectfully, 94.2 % urged to maintain the goodwill of a person even after death, 85.5 % responded that the body curators need to have a regular training for cadaver preservation and 89.5 % encouraged to teach the legal aspect and different Acts of body donation. This would enhance the knowledge of the curators so that the donated body won't be misused and mishandled. Hence to then maintain the dignity of human body even after death.

In a study among the 150 nurses, the average knowledge, attitude and practice score were (50.60 ±16.19), (85.25 ±35.61) and (34.43 ±47.71) respectively [9]. There was direct and significant relation between attitude and practice ($r = + 0.33$, $p < 0.05$), but relation between attitude and knowledge was indirect and significant ($r = -0.183$, $p < 0.05$). Similarly in our study, score of knowledge, attitude and practice domain was (7.18 ± 1.04), (37.0 ± 3.55) and (11.04 ± 1.40) respectively which increased after the pretest. Attitude and practice showed a positive correlation and was highly significant ($r = 0.171$, $p < 0.01$) while after post-test, there was positive correlation of knowledge with attitude and practice which was significant ($r = 0.41, 0.27$, $p < 0.05$)

Researchers proposed the creation of an international body donation programs in 2014, numbers of legal, ethical, cultural and religious aspects of current practice in body donation in European countries were reviewed to maintain respect for the body and created guidelines for good practice [5]. Our findings suggested many were unaware of various Act and provision in Law for the body

part donation. Most were uncertain and unsecured of religious and cultural aspect being not followed which is required to be after death due to lack of proper guidelines for good practice.
Authors included various cases with classification of material on Conflict of Laws and practical advice and caution to lawyers and legislators in considering the possible conflict elements in law during the use of cadavers [15]**.** Our study revealed the lack of proper and separate law regarding the use, handling of cadavers for academic purposes. Hence the lawyers and legislators in our country need to frame Act to address this matter.
According to some researchers, Human cadavers have lots impact on medical education and researches which are acquired from donors who have willed their body to science during their lifetime. The concept of donation through informed consent respects the autonomy of the donor and the dignity of the dead body [16]. According to a study in the United States, a number of body acquisition companies have been established which distributed the specimens to surgical training organizations, researchers and educational institutions with no charges to the receiving organizations for the bodies with a fee to cover the transport, handling and other services to create a profit with a constitute an ethically appropriate mechanism to obtain and distribute bodies. The combine role of these organizations and government is to address and develop guidelines for best practices so there is no violation of ethical issues in use and regulation of willed bodies [17-18]. On similar pattern, our government also can initiate the step to established best standard operating protocols to maintain and respect the dignity, ethical values for cadaver handling.

Conclusion

Lack of knowledge regarding various Acts for body donation, uncertain of not following the cultural and religious rituals process after death, fear of donated body being mishandled reduced the attraction towards body donation program. A positive and significant correlation between attitude and practice was present. Knowledge was seen not significant in UG students. The questionnaire designed was reliable which can be used to obtain the opinion regarding whole body donation for the academic purposes.
Mass awareness program is necessary to reduce the lack of knowledge which acts as barriers and to convince for the importance of body donation in medical education and research

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