

Voluntary Body Donation: A Study of Awareness and Willingness Regarding Organ / Body Donation in Population of Kalaburagi

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Abstract

Background: The purpose of this study is to assess the awareness and willingness regarding organ and body donation in population of Kalaburagi region followed by counseling session to encourage them towards organ and body donation. **Aim:** To study the awareness and willingness towards Organ and Body donation in population of Kalaburagi. **Material and Methods:** Across-sectional study using a specially designed, validated questionnaire containing mcq's was done amongst Medical, Dental, Ayurveda and Nursing students, staff and patients of ESIC Institute Gulbarga after taking their informed consent. It was followed by a counseling session where queries regarding organ and body donation were solved and procedure of registration for the same was explained. **Results:** Amongst the 1000 study participants surveyed, 1.) 511 participants (63.39%) amongst total 806 participants shown awareness towards organ donation. 2.) 565 participants (70.09%) amongst total 806 participants shown awareness towards body donation. 3.) 317 participants (39.33%) amongst total 806 participants shown willingness for organ donation. 4.) Only 137 participants (16.99%) amongst total 806 participants shown willingness towards body donation. **Conclusions:** 1.) Highest awareness was observed amongst medical students for organ and body donation compared to other categories of study participants. 2.) Least awareness was observed amongst general public/patients for organ and body donation compared to other categories of study participants. 3.) Female respondents of all categories have shown higher degree of awareness towards organ/body donation compared to their male counterparts. 4.) Female respondents of all categories also showed more willingness for organ donation than male participants.

Keywords: Awareness; Organ Donation; Body Donation; Acquaintedness; Willingness; Participants.

Introduction

Human Anatomy is the principal basic subject for medical student, both under-graduates, post-graduate and teaching faculties. Cadaveric dissection is the principal teaching tool and the best method to learn anatomy. Aside from anatomy classes, cadavers are also used for practicing surgical skills and developing new technique in various hands-on workshops. With rising number of intake of medical students and medical colleges and different streams of medical science, there has been a rise in the need of cadavers, which can't be fulfilled by

supply of unclaimed bodies only. The cadaver to medical/dental student ratio in various teaching institutes of India is 1:25, optimal being 1: 10 [1]. The situation is even worse in medical colleges which are not attached to government hospital. Moreover, the awareness regarding body donation in Gulbarga region is extremely low, this can be safely said by looking at the cadaver status of all the medical, dental and ayurvedic colleges in Gulbarga. We established a Body Donation Society at Department of Anatomy in ESIC Medical College Gulbarga on 08.02.2018. The purpose of our study is to access the awareness and willingness regarding body donation in population of Kalaburagi region, followed by counseling session to encourage them towards this gracious act of body donation.

The conclusions emerging from this study will help us to set goals for our Body donation society towards changing the perspective of population of Kalaburagi towards organ / body donation, eventually leading to improvement in medical training and services.

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Materials and Methods

The present study is a specially designed, self-administered questionnaire based cross-sectional study, containing 18 points testing the awareness, attitude, knowledge and willingness towards body / organ donation followed by counseling session conducted in Kalaburagi region within 1000 participants. The questionnaire (prepared in English and Kannada) was circulated among the medical, dental, nursing students, staff and daily OPD patients of ESIC Institute of Gulbarga from 1st February 2018 to 31st May 2018.

The study targeted ground level population which includes general public, patients, staff and the students. Doctors and faculties were deliberately excluded from the study owing to their awareness regarding body and organ donation. The questionnaire comprised mostly of multiple choice questions and option for personal reason/opinion was given for almost every question.

The questionnaire was pilot tested first amongst 40 random people for:

- i. The clarity of the questions included in it and
- ii. Time period required to fill it. A time duration of 15 minutes was given for completing the questionnaire.

No discussion amongst each other was allowed. Our questionnaire thus got validated after minor modifications. Our research team, after taking informed consent distributed the pretested / validated questionnaire to students and staff at counseling room and patients and their relatives at OPD. One of the researcher always accompanied the participants during filling of questionnaire. Duly filled and signed questionnaire were collected.

All participants were requested for a counseling session about Body/organ donation concept and its registration procedure. The complete procedure of registration of body donation was explained to them and their doubts regarding organ and body donation were clarified.

The participants were categorized in three age groups as follows:

1. *Based on Age [2]:*
 - Young age group : 15-24 yrs
 - Middle age group : 25-44 yrs
 - Older age group : 45 yrs and above.

2. *Based on Familiarity with Cadaveric dissection:*

- Acquainted group
- Lesser acquainted group
- Not acquainted group

3. *Based on Sex:*

- Male
- Female

Sampling Technique

From all the categories of population i.e. Student, Staff, Patient and General public; taken together, 1000 participants after taking informed consent were selected through Simple random sampling method.

Sample Selection

Inclusion criteria:

1. Those who are born and brought up in Gulbarga region.
2. Above 18 years of age.
3. Those who have given consent.

Exclusion Criteria

1. Doctors and faculty members of ESIC Medical, Dental and Ayurveda colleges were excluded.
2. Those born and brought up outside Gulbarga.
3. Those who refused to give consent.

Data Collection Procedure

A specially designed, self-administered questionnaire containing 18 multiple choice questions testing the awareness, attitude, knowledge and willingness. It has been prepared in English and Kannada.

Data Analysis Procedure

Parameters which were studied were age, gender, acquainted and non-acquainted participants. Analyzed with SPSS software. Percentage was calculated. Chi square test was used. Data was represented graphically.

Results

Amongst the student, staff and patient/public group, 1000 participants, were randomly selected for the study. Duly filled and signed questionnaires

were collected from them after taking informed consent. This was followed by personal counseling. Out of 1000, 194 questionnaires were found to be incomplete. During the counseling session, these 194 participants withdrew their consent and their questionnaires were discarded from the study. After analyzing the questionnaires, the general observations were as follows:

1. 511 participants (63.39%) amongst total 806 participants shown awareness towards organ donation.
2. 565 participants (70.09%) amongst total 806 participants shown awareness towards body donation.
3. 317 participants (39.33%) amongst total 806 participants shown willingness for organ donation.
4. Only 137 participants (16.99%) amongst total 806 participants shown willingness towards body donation.

The data collected from filled questionnaires collected from 806 study participants was classified

into various categories and the observations were tabulated (seven tables) and graphically represented.

Study observed that, among 806 participants, 360 (44.7%) were male and 446 (55.3%) were female. there were 320 (39.7%) general public and patients, 201 (24.9%) medical students, 118 (14.7%) ayurveda students, 80 (9.9%) non-medical staff, 50 (6.2%) nursing students and 37 (4.6%) dental students (Table 1).

Study observed that, maximum number of awareness about organ and body donation in males was medical students 79 (91.8%) and 81 (94.2%) respectively. General public and patient have less awareness about organ and body donation 56 (35.0%) and 76 (47.5%)

Study reveals that, there was statistically very highly significant difference of awareness about organ and body donation in male participants with respect to faculty of participants ($p < 0.001$)

Study reveals that, there was no statistically significant difference of willingness about organ

Table 1: Sex and faculty wise distribution of study participants

Faculty of Study participants	Male		Female		Total	
	No.	%	No.	%	No.	%
Medical students	86	42.7	115	57.3	201	24.9
Dental students	09	24.3	28	75.7	37	4.6
Ayurveda students	33	27.9	85	72.1	118	14.7
Nursing students	18	36.0	32	64.0	50	6.2
Non-medical Staff	54	67.5	26	32.5	80	9.9
General public / patient	160	50.0	160	50.0	320	39.7
Total	360	44.7	446	55.3	806	100.0

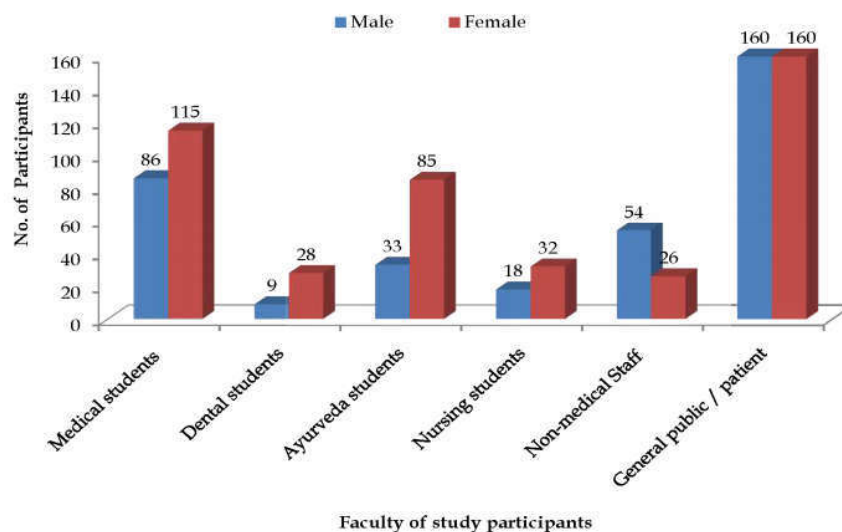


Fig. 1: Multiple bar diagram represents Sex and faculty wise distribution of Study participants

donation and body donation among the female participants ($p>0.05$)

Study reveals that, there was no statistically significant difference of willingness about organ donation and body donation among the male participants ($p>0.05$)

Study observed that, highest percentage of willingness about organ donation in males was nursing students 11 (61.0%), followed by medical students 48 (55.8%) and highest percentage of willingness about body donation was 20 (37.0%) non medical staff.

Study reveals that, there was statistically highly significant difference of willingness about organ

and body donation in male participants with respect to faculty of participants ($p<0.01$).

Study reveals that, there was statistically significant difference of willingness about organ donation and body donation among the male participants ($p<0.05$)

Willingness about organ donation had given significantly more number of participants as compare to willingness about body donation in males.

Study observed that, maximum number of awareness about organ and body donation in females was medical students 111 (96.5%) and 104 (94.8%) respectively. General public and patient have less awareness about organ and body donation 58 (36.1%) and 66 (41.5%)

Table 2: Faculty wise comparison of male participant's awareness of organ and body donation

Faculty of Study participants	Awareness about organ donation		Awareness about body donation		Total No (%)
	Yes No (%)	No No (%)	Yes No (%)	No No (%)	
Medical students	79 (91.8%)	07(8.2%)	81(94.2%)	05(5.8%)	86 (100.0%)
Dental students	05 (55.5)	04 (44.5%)	07 (77.8%)	02 (22.2%)	09(100.0%)
Ayurveda students	25 (75.7%)	08 (24.3%)	27 (81.8%)	06 (18.2%)	33(100.0%)
Nursing students	16 (88.9%)	02 (11.1%)	16 (88.9%)	02 (11.1%)	18(100.0%)
Non-medical Staff	34 (63.0%)	20 (37.0%)	31 (57.4%)	23 (42.6%)	54(100.0%)
General public / Patient	56 (35.0%)	104(65.0%)	76 (47.5%)	84 (52.3%)	160(100.0%)
Total	215 (59.7%)	145 (40.3%)	238 (66.1%)	122 (33.9%)	360(100.0%)
ANOVA test P-value & significance	F= 18.76 P<0.001 VHS		F= 12.82 P<0.001 VHS		---
Chi-square test P-value & significance	Comparison of willingness about organ donation and body donation $\chi^2 = 3.19, P>0.05, NS$				

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

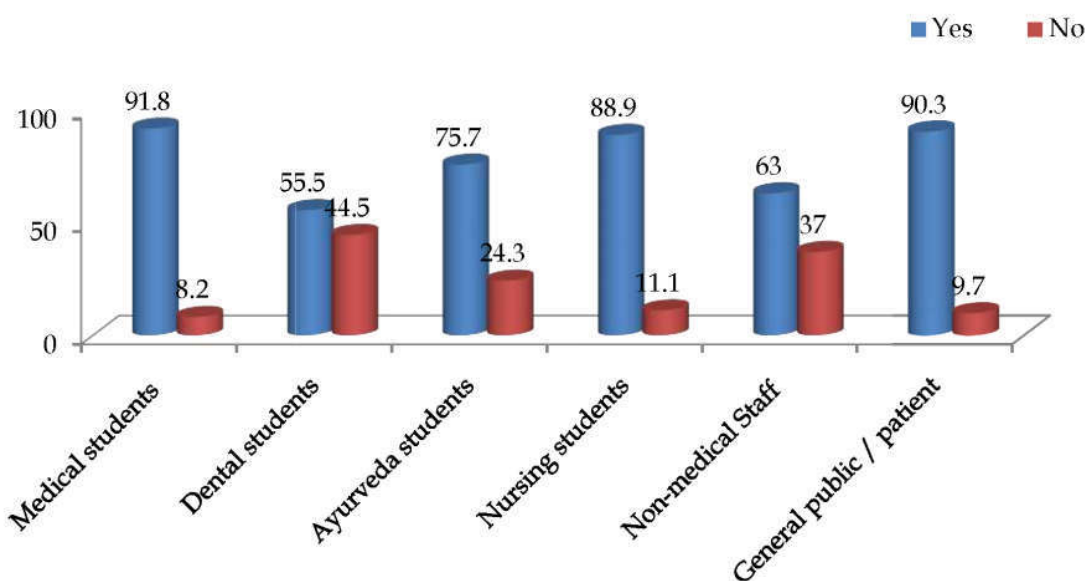


Fig. 2: Multiple bar diagram represents Faculty wise comparison of male participant's awareness of organ donation

Table 3: Faculty wise comparison of male participant’s willingness for organ and body donation

Faculty of Study participants	Willingness about organ donation		Willingness about body donation		Total No (%)
	Yes No (%)	No No (%)	Yes No (%)	No No (%)	
Medical students	48 (55.8%)	38 (44.2%)	18 (20.9%)	68 (79.1)	86 (100.0%)
Dental students	02 (22.2%)	07 (77.8%)	03(33.3%)	06(66.7%)	09(100.0%)
Ayurveda students	09 (27.3%)	24 (72.7%)	08 (24.2%)	25 (75.8%)	33(100.0%)
Nursing students	11(61.1%)	7 (38.9%)	05(27.8%)	13 (72.2%)	18(100.0%)
Non-medical Staff	26 (48.1%)	28 (51.9%)	20 (37.0%)	34 (63.0%)	54(100.0%)
General public / Patient	37 (23.0%)	123 (77.0%)	15 (9.1%)	145 (90.9%)	160(100.0%)
Total	133 (36.9%)	227 (63.1%)	69(19.2%)	291(80.8%)	360(100.0%)
ANOVA test P-value & significance	F= 7.92 P<0.001 VHS		F= 4.21 P<0.003HS		---
Chi-square test P-value & significance	Comparison of willingness about organ donation and body donation $\chi^2 = 9.696, P<0.05, S$				

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

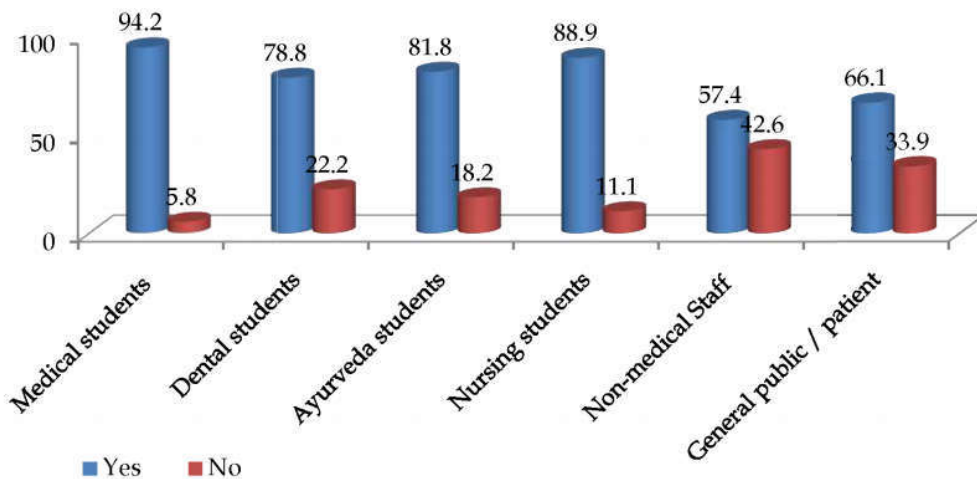


Fig. 3: Multiple bar diagram represents Faculty wise comparison of male participant’s awareness of body donation

Study reveals that, there was statistically very highly significant difference of awareness about organ and body donation in female participants with respect to faculty of participants ($p<0.001$).

Study reveals that, there was no statistically significant difference of willingness about organ donation and body donation among the female participants ($p>0.05$).

Table 4: Faculty wise comparison of female participant’s awareness for organ and organ donation

Faculty of Study participants	Awareness about organ donation		Awareness about body donation		Total No (%)
	Yes No (%)	No No (%)	Yes No (%)	No No (%)	
Medical students	111 (96.5%)	04 (3.5%)	104 (94.8%)	06 (5.2%)	115 (100.0%)
Dental students	19 (67.8%)	09 (32.2%)	22 (78.6%)	06 (21.4%)	28 (100.0%)
Ayurveda students	71 (83.5%)	14 (16.5%)	83 (97.6%)	02 (2.4%)	85 (100.0%)
Nursing students	21 (65.6%)	11 (34.9%)	27 (84.4%)	05(15.6%)	32 (100.0%)
Non-medical Staff	16 (61.5%)	10 (38.5%)	20 (76.9%)	6 (23.1%)	26 (100.0%)
General public / Patient	58 (36.1%)	102 (63.9%)	66 (41.5%)	94 (58.5%)	160 (100.0%)
Total	296(66.4%)	150(33.6%)	327 (73.3%)	119 (26.7%)	446(100.0%)
ANOVA test P-value & significance	F= 7.537 P<0.001 VHS		F= 6.171 P<0.001 VHS		---
Chi-square test P-value & significance	Comparison of awareness about organ donation and body donation $\chi^2 = 4.27, P>0.05, NS$				

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

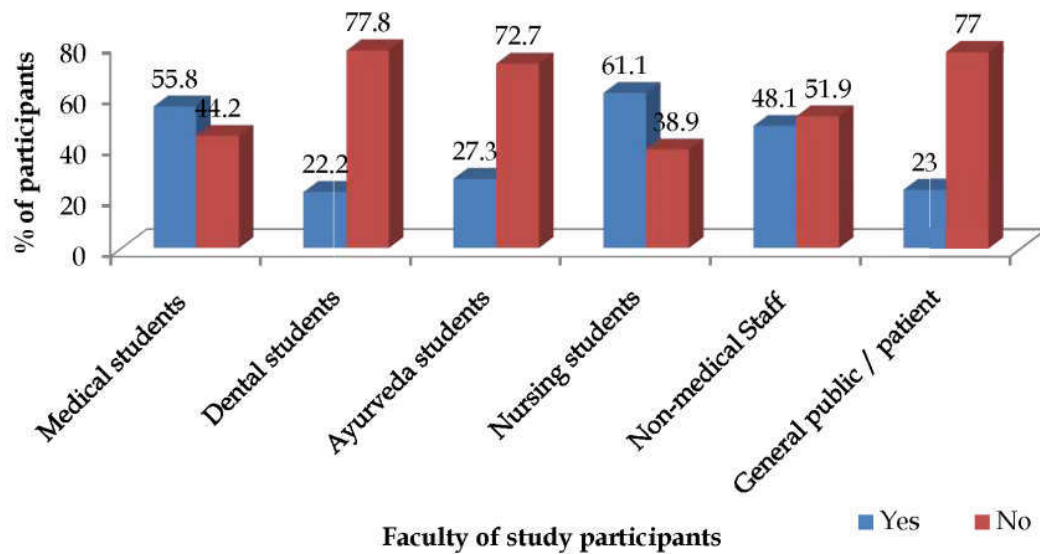


Fig. 4: Multiple bar diagram represents Faculty wise comparison of male participant's willingness of organ donation

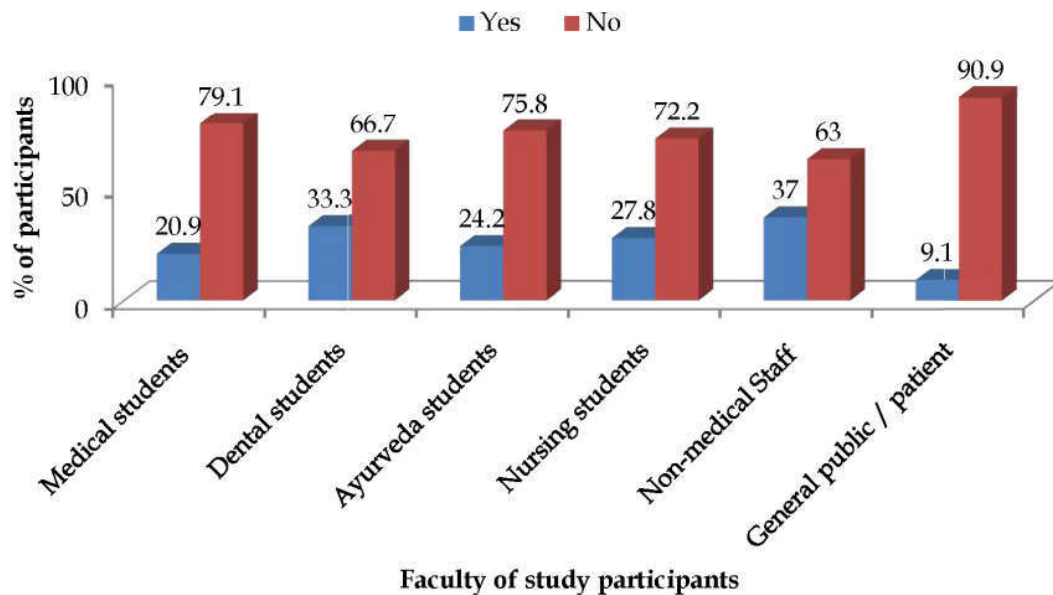


Fig. 5: Multiple bar diagram represents Faculty wise comparison of male participant's willingness of body donation

Study observed that, highest percentage of willingness about organ donation in female was non-medical staff 18 (69.2%), followed by medical students 79 (68.7%) and highest percentage of willingness about body donation was 12 (46.1%) non medical staff.

Study reveals that, there was statistically highly significant difference of willingness about organ and

body donation in female participants with respect to faculty of participants ($p < 0.01$)

Study reveals that, there was statistically highly significant difference of willingness about organ donation and body donation among the participants ($p < 0.01$)

Willingness about organ donation had given significantly more number of participants as compare

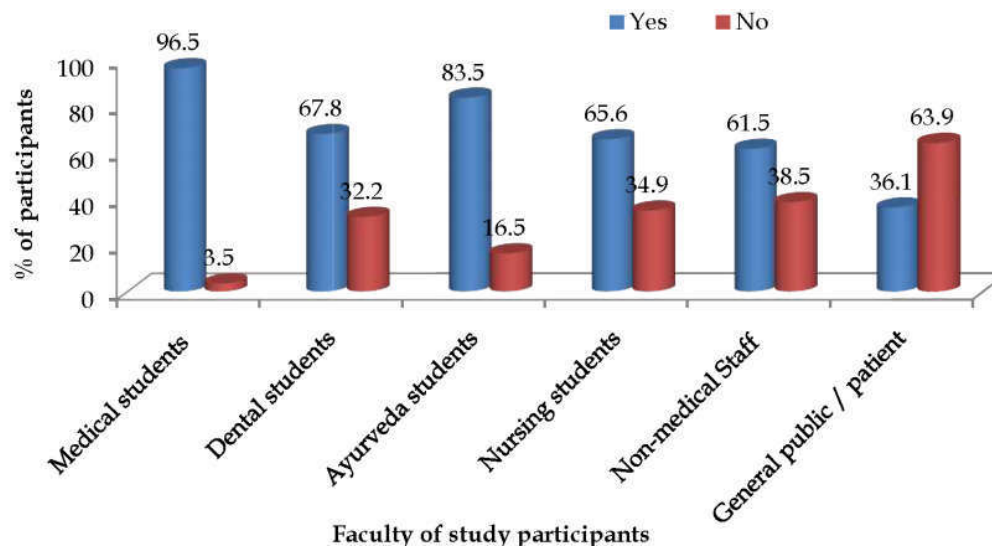


Fig. 6: Multiple bar diagram represents Faculty wise comparison of female participant's awareness of organ donation

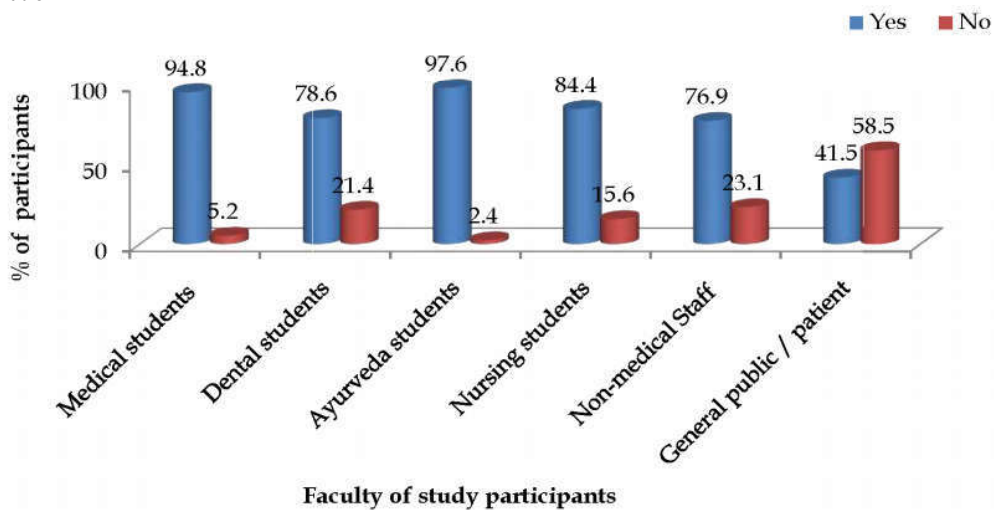


Fig. 7: Multiple bar diagram represents Faculty wise comparison of female participant's awareness of body donation

Table 5: Faculty wise comparison of female participant's willingness for organ and body Donation

Faculty of Study participants	Willingness about organ donation		Willingness about body donation		Total No (%)
	Yes No (%)	No No (%)	Yes No (%)	No No (%)	
Medical students	79 (68.7%)	36 (31.3%)	22 (19.1%)	93 (80.9%)	115 (100.0%)
Dental students	05 (17.8%)	23 (82.2%)	02 (7.2%)	26 (92.8%)	28 (100.0%)
Ayurveda students	32 (37.6%)	53 (62.4%)	15 (17.6%)	70 (82.4%)	85 (100.0%)
Nursing students	16 (50.0%)	16 (50.0%)	03 (9.4%)	29 (90.6%)	32 (100.0%)
Non-medical Staff	18 (69.2%)	08 (30.8%)	12 (46.1%)	14 (53.9%)	26 (100.0%)
General public / Patient	34 (21.1%)	126 (78.9%)	14 (8.6%)	146 (91.4%)	160 (100.0%)
Total	184 (41.3%)	262 (58.7%)	68 (15.2%)	378 (84.8%)	446(100.0%)
ANOVA test	F= 15.23 P<0.001 VHS		F= 3.54 P<0.006 HS		---
P-value & significance	Comparison of willingness about organ donation and body donation				
Chi-square test	$\chi^2 = 13.85, P<0.001, HS$				
P-value & significance					

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

to willingness about body donation in females.

Study observed that, the commonest source of information for the participants was from medical professionals 395 (49.0%), followed by media i.e. TV, Internet, radio and newspaper 322 (39.9%).

Study observed that, the commonest reason for showing unwillingness towards organ/body donation was objection from family members 363 (45.0%), followed by other reasons (27.0%) which

included no reason, not aware of any such donation and religious barrier was 177 (22.0%).

Statistical data analyzed by IBM SPSS 20.0 version software. Data scored yes was as 1 and no was 0, for quantitative data analysis applied ANOVA test and for qualitative data analysis applied chi-square test for statistical significance. If p value was less than 0.05 considered significant.

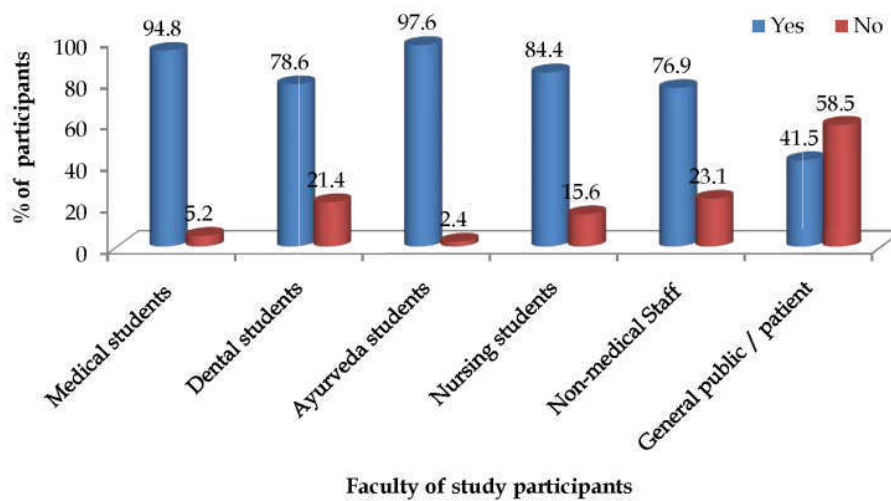


Fig. 8: Multiple bar diagram represents Faculty wise comparison of female participant's Willingness of organ donation

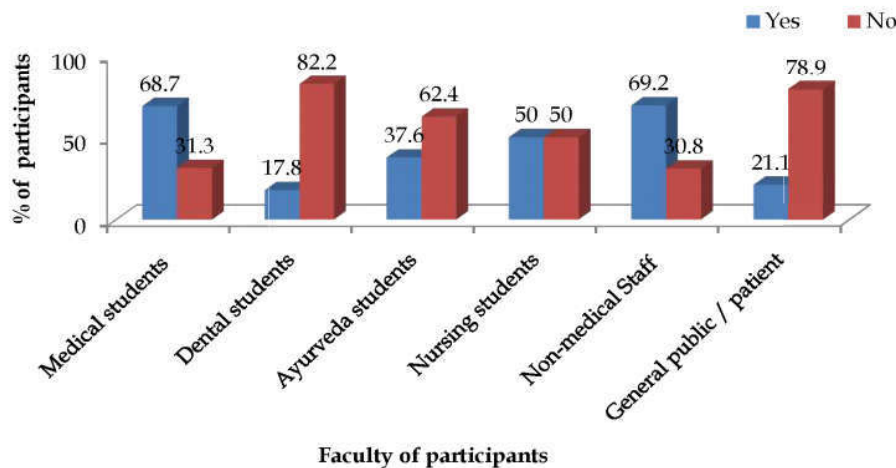


Fig. 9: Multiple bar diagram represents Faculty wise comparison of female participant's Willingness of body donation

Table 6: Source of information wise distribution of study participants

Reasons for unwillingness	Study participants	Percentage
Organ/body could be wasted	8	1.0
Unethical use of organ/body	16	2.0
Religious barrier	177	22.0
Objection from family members	363	45.0
Can't tolerate self dissection	8	1.0
Anxiety	16	2.0
Other reasons	218	27.0
Total	806	100.0

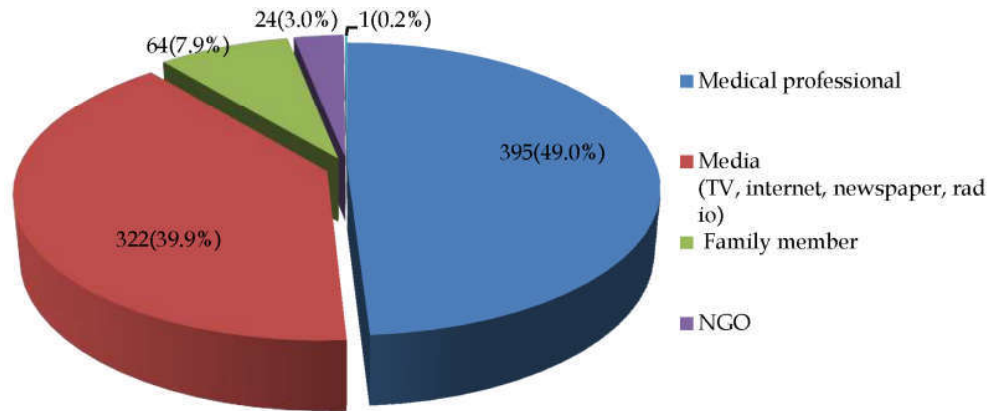
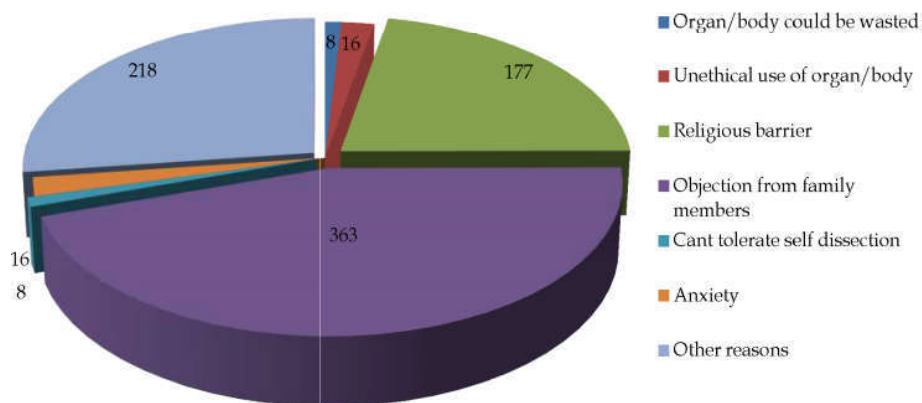


Fig. 10: Pie diagram represents Source of information wise distribution of study participants

Table 7: Reasons for unwillingness wise distribution of study participants

Reasons for unwillingness	Study participants	Percentage
Organ/body could be wasted	8	1.0
Unethical use of organ/body	16	2.0
Religious barrier	177	22.0
Objection from family members	363	45.0
Can't tolerate self dissection	8	1.0
Anxiety	16	2.0
Other reasons	218	27.0
Total	806	100.0



Discussion

To overcome the deficiency of supply of cadavers for academic purpose, Body Donation Society was established in Department of Anatomy in ESIC Medical College Gulbarga in the month of February this year. The drive to spread more awareness about organ/body donation led us to conduct this study to understand the thoughts of general public, patients, staff and students in Kalaburagi region about organ/body donation. In present study, overall awareness for organ donation was 63.39%

and for body donation was 70.09%. This finding match with studies of Dope et al. [3] (68%), Pradnyesh Panshewdikar et al. [4] (76.84%) and Vaishaly Bharambe et al. [5] (78%).

In present study, Medical students showed more awareness about organ donation (91.86%) and body donation (94.18%) than any other group. These findings match findings from older studies of Chung CK, Ng CW et al. [6]. 2008 and P Burra, M De Bona et al. [7] 2005.

The commonest source of information for the participants were medical professionals (49.00%),

followed very closely by media i.e. TV, Internet, radio and newspaper (39.95%). Vaishaly Bharambe et al. [5] in their study stated media as the source of information in 71% of cases.

Approaching medical, dental and nursing students for the study was easy as they were readily accessible in department during classes. Because of familiarity with them they didn't express much resistance and readily gave consent for their participation. Female students showed significant anxiety and had to be counseled considerably to convince them to participate in the study. In contrary to what expected, medical students, have shown least willingness for body donation (male - 20.93%, female -19.13%) compared to other students. Even dental, ayurvedic, nursing students and staff have shown more willingness than medical students.

Female medical students (19.13%) surprisingly showed more willingness towards body donation compared to other female dental (07.14%), nursing (09.37%) and ayurvedic (17.64%) students. Overall, female study participants showed more awareness and willingness for organ and body donation compared to their male counterparts. This finding match with that of Bilgel H, Sadikoglu G et al. [8] (2006).

Most of the ayurvedic students denied to participate as they assumed that submitting the filled and signed questionnaire will obligate them towards body donation. Despite counseling, most of ayurvedic students didn't participate in study.

House keeping staff were the most resistant as they completely denied to participate in the study. So they were excluded.

Instead dealing with paramedical and ministerial staff was easier than expected. They showed lesser degree of awareness than students but still showed highest willingness for body donation. (Male-37.03%, female - 46.15%) They were considerably mature in their thoughts towards organ and body donation. This can be attributed to their age as they were elder to the students group.

Another thing observed was that paramedical staff and ministerial staff attempted all questions whereas students had to be instructed repeatedly to do the same.

The commonest reason for showing unwillingness for organ and body donation was objection from family members (45.03%), followed by other reasons (27.07%) which included no reason, not aware of any such donation etc.

From the present study it is clear that medical, dental and other students were not agree to donate

their body for dissection purpose despite being nicely aware. Older study among medical professionals showed that only 22% physicians are willing to donate their bodies for medical education, 85% believed that donated bodies were misused [9]. A study among Turkish anatomist is reported that 63.9% would not consider themselves to donate their bodies as they were not prepared. So, shortage of organ or body is not due to ignorance or misconception only, but it is the thought of getting self -dissected as a cadaver. Practice of honouring the cadaver by students and teachers from the commencement of medical course session should be followed as in Korea and Thailand [10,11]. Although religions across the world support and encourage the act of donation, the final decision is left to personal conscience. So, proper counselling and guidance is very much necessary by which we could significantly turn the potential donor into an actual donor.

Conclusions

1. *Highest awareness* was observed amongst *medical students* for organ and body donation compared to other categories of study participants.
2. *Least awareness* was observed amongst *general public/ patients* for organ and body donation compared to other categories of study participants.
3. Nursing students showed the highest willingness for organ and body donation, whereas general public / patients expressed the least desire to donate their organ or body for academic purpose.
4. *Female respondents* of all categories have shown *higher degree of awareness* towards organ/body donation compared to their male counterparts.
5. *Female respondents* of all categories also showed *more willingness for organ donation* than male participants.
6. *Medical professionals and media (TV, Internet, radio, newspaper etc.)* was the main source of information about organ/body donation for all the study respondents.
7. Commonest reason for showing unwillingness for organ/body donation was anxiety and fear amongst family members and participants themselves for this act.

Suggestions

1. *Establishment of Body Donation Society* in each institution to address the issue of scarcity of

cadavers is the need of hour. Regular awareness seminars for medical faculty, students, staff and patients should be conducted under the society.

2. Compulsory inclusion of lectures on Human body donation and its necessity, its procedural details, information about 'Anatomy Act' for cadaver procurement and related legal implications in 1st MBBS syllabus and rotatory compulsory internship.
3. Special provisions like providing free medical services till death, offering free health insurance, giving first preference etc. for those who have registered for body/organ donations should be initiated to stimulate more people towards this gracious act.
4. Frequent awareness programmes and camps should be organized in rural areas especially old age homes, orphanages, school etc. to convey the desperate need for organ and body donation.

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