

DETERMINANTS OF KNOWLEDGE AND MOTIVATION TOWARDS ORGAN DONATION

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BACKGROUND: Shortage of organs is a global problem in which Asia lags behind the rest of the world. A huge gap exists between patients who need organ transplants and potential donors. The organ donation rate from dead bodies in India is estimated to be a minuscule 0.05 per million people. There are various barriers which prevent people from donating organs to the needy. Socio-cultural barriers are one among them where in lack of awareness and motivation to donate organs are important determinants. **OBJECTIVES:** 1) To study the determinants of knowledge regarding organ donation and motivation to donate organs in a selected student population in Bellary and 2) To find independent predictors of knowledge levels and motivation towards organ donation. **METHODOLOGY:** A cross sectional survey was conducted in a setting of degree colleges of Bellary city. A stratified random sampling technique was adopted to select the colleges and students within the sections. Information was collected using face to face interviews based on a structured, pre-tested questionnaire. Data were entered into an electronic database and analysis was done to ascertain the determinants of knowledge levels and motivation of organ donation using SPSS version 16.0.1 (SPSS, 2007). **RESULTS:** In this study 125 students (43%) achieved an adequate knowledge score for Organ Donation, The field of education; income group and region from which they hail were found to have a significant association with knowledge scores of organ donation. In this study 125 students (43%) people expressed a high motivation to donate. Higher the age group, Perceived allowance of organ donation in religion and the adequate knowledge levels were significantly associated with the motivation to donate. By multi-logistic regression, type of branch chosen in education emerged as significant independent predictor of knowledge status of respondents and higher the age group, adequate knowledge scores and perceived allowance of organ donation in religion emerged as significant independent predictors of motivation towards organ donation. **CONCLUSION:** knowledge of organ donation is correlated with field of education opted by the student and motivation to donate in turn is associated with both the religion and awareness of organ donation.

KEYWORDS: Organ donation, Knowledge, Motivation, Determinants.

INTRODUCTION: Organ donation is the donation of biological tissue or an organ of the human body, from a living or dead person to a living recipient in need of a transplantation¹. Shortage of organs is a global problem in which Asia lags behind the rest of the world. A huge gap exists between patients who need organ transplants and potential donors. The organ donation rate from dead bodies in India is estimated to be a minuscule 0.05 per million people (although India has among the world's highest number of deaths from road accidents). Hong Kong's organ donation rate is less than 5 per million, while it is 25 per million in the United States. The situation is likely to get worse. As Asia's population lives longer, organ diseases and problems like diabetes--one of the main causes of kidney failure--are

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expected to rise, creating even greater demand for organ donations. Contributing to the problem are misconceptions and myths that surround organ donation. One misconception is that religions forbid organ donation and transplantation.²

The major problem is lack of awareness. Cadaver donation is not a familiar concept among the Indian public. Myths and misconceptions exist at large³. There are various barriers which prevent people from donating organs to the needy. Socio-cultural barriers are one among them where in lack of awareness and motivation to donate organs are important determinants. With this back ground we started our study with the objective to study the determinants of knowledge regarding organ donation and motivation to donate organs in a selected student population in Bellary and to find independent predictors of knowledge levels and motivation towards organ donation.

METHODOLOGY: STUDY DESIGN, STUDY SETTING AND SAMPLING: A cross sectional survey was conducted in a setting of degree colleges of Bellary city where in first we stratified the degree colleges in Bellary city into Medical degree colleges (included MBBS, Dental and Nursing colleges), Business degree colleges (included BBA and BCom colleges), Science degree colleges (BSc and BCA colleges) and Social sciences degree colleges (included BA and BEd colleges). Within each stratum of degree colleges, one college was selected randomly. A total of four degree colleges were included in the study. Among the selected colleges, one section/grade was selected randomly and all the students in the selected section were included in the study.

METHOD OF DATA COLLECTION: Information was collected using face to face interviews based on a structured, pre-tested questionnaire. Pre testing was done on adults falling in the same age brackets, in a similar setting, to screen for potential problems in the questionnaire. The interviewers discussed the questionnaire thoroughly among themselves before data collection to decrease interviewer bias. With the exception of a few open ended questions, the interview was based on prompted questions.

A total of 340 students were approached for participation in our survey, 31 (9.1%) declined to participate in the study. Of the 309 students who gave consent to participate in the study, 293 completed the full interview.

QUESTIONNAIRE: The questionnaire had three parts, where in the first part was structured to elicit the socio-demographic profile of the students.

The second part of the questionnaire consisted of ten questions structured to elicit and gauge the knowledge levels about organ donation where in knowledge was assessed through questions related to meaning of the terms like "organ donation", awareness of about organ donation by living people as well as cadavers, can a diabetic/old age person donate organs, etc. Students who answered more than or equal to 60% ($\geq 60\%$ score) of the questions correctly were regarded as being adequately knowledgeable while those achieving less than 60% scores were regarded as being inadequately knowledgeable.

The third part of the questionnaire was directed to elicit the attitudes and their motivation towards organ donation where in questions regarding opinion on willingness to donate organs in the future, influence of religion on attitude towards organ donation and factors influencing choice of recipient for future donation were elicited.

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STATISTICAL ANALYSIS: Data were entered into an electronic database and analysis was done to ascertain the determinants of knowledge levels and motivation of organ donation using SPSS version 16.0.1 (SPSS, 2007).

ETHICAL CONSIDERATIONS: The study was given ethical approval by Ethical Review Committee of Vijayanagara Institute of Medical Sciences. All ethical requirements including confidentiality of responses and informed consent were stringently ensured throughout the project.

RESULTS:

Sociodemographic profile of the study sample (Table no. 01): A total of 340 students were approached for participation in our survey, 31 (9.1%) declined to participate in the study. Of the 309 students who gave consent to participate in the study, 293 completed the full interview. Both male and female students were almost equally distributed in our study sample, Majority of the students were Hindus(82%), 62% of students belong to low income group, most of the students belong to non-medical group.

Univariate analysis of Knowledge score v/s sociodemographic variables (Table no. 02): In this study 125 students (43%) achieved an adequate knowledge score for Organ Donation while 168 (57%) had inadequate knowledge. These cumulative scores were based on a set of questions related to organ donation; people achieving $\geq 60\%$ score were regarded as being adequately knowledgeable while those achieving less than 60% scores were regarded as being inadequately knowledgeable. The field of education, income group and region from which they hail were found to have a significant association with knowledge scores of organ donation.

Multiple logistic regression analysis showing Independent predictors of knowledge score of organ donation (Table no. 03): For knowledge status of respondents, the following variables were subjected to the multiple regression analysis: 'type of education', 'income' and 'region hailing from'. We found that the type of branch chosen in education emerged as significant independent predictor of knowledge status of respondents.

Univariate analysis of motivation to donate v/s socio-demographic variables (Table no. 04): In this study 125 students (43%) people expressed a high motivation to donate. Higher the age group, Perceived allowance of organ donation in religion and the adequate knowledge levels were significantly associated with the motivation to donate.

Multiple logistic regression analysis showing Independent predictors of Motivation to organ donation (Table no. 05): For the motivation status of respondents, the following variables were subjected to multiple logistic regression: 'Age group', 'knowledge score of organ donation' and 'perceived allowance of organ donation in religion'. We found that higher the age group, adequate knowledge scores and perceived allowance of organ donation in religion emerged as significant independent predictors of motivation to organ donation.

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DISCUSSION: In this study 125 students (43%) achieved an adequate knowledge score for Organ Donation where the field of education, income group and region from which they hail were found to have a significant association with knowledge scores of organ donation.

Overall, globally the prevalence of knowledge for organ donation ranges from 60% to 85% using different knowledge variables.⁴ This trend has been reported to vary with the development status of the country. Most of the research evidence on this subject is from the more developed countries. In a study from USA that included 278 respondents, 69.1% knew that blood-type made a difference in donation ($p = 0.000$), 61.6% knew that transplant survival rates were high ($p = 0.000$), and 75.9% knew that transplants could come from living donors ($p = 0.000$).⁵

This difference in the knowledge of organ donation from our study can be attributed to the different study settings, different study subjects and knowledge variables used to elicit the knowledge levels.

However in developing countries like Pakistan and Nigeria the prevalence of adequate knowledge regarding organ donation was 60%^{6,7}, which is more compared to our study and this difference can be attributed to difference in the study population. But in another survey conducted in the state of Maharashtra, India, 32.1% of respondents were aware of body donation, compared to 95.83% of health care professionals.⁸

The field of education had a significant association with the adequate knowledge levels where medical students had a better knowledge when compared to other students and a similar association was seen in a study conducted by⁶ Taimur Saleem et al in Pakistan, where they found that awareness of organ donation is correlated with education and socioeconomic status.

In our study 125 students (43%) people expressed a high motivation to donate. Higher the age group, Perceived allowance of organ donation in religion and the adequate knowledge levels were significantly associated with the motivation to donate. Similarly the Organ Donation Attitude Survey (ODAS) tool was used in Broadway, Pittsburg, USA, to study the factors influencing organ donation behaviour showed that education regarding organ donation, knowledge of someone who had donated an organ after death, awareness of anyone who received a donated organ, and religious beliefs had a significant association with the organ donation behaviour which explained 24.95% of the ODAS total score variability in the regression analysis.⁹

Our study results of motivation to donate organs were similar to study conducted among the university students in China by Zhang L et al,¹⁰ where in 49.8% showed their willingness to donate organs and factors like students' knowledge of the value of living organ transplantation, their economic background and cultural beliefs were considered to be determinants of individual willingness.

Our study findings are different from data from other developing countries like Nigeria where only 30% of the respondents expressed a willingness to donate in one survey.⁷ In a study from Ohio, over 96% of respondents expressed favorable attitudes toward.

In a study conducted by Taimur Saleem et al in Pakistan,⁶ the determinants that influence an individual willingness to donate organs were similar to our study results where they found that socio-economic status, knowledge score for organ donation and the perception about the allowance of organ donation in religion was significantly associated with the motivation to donate. In another study conducted by Gauher ST el al¹² among the university students of Indian and Pakistan descent in UK showed that six key factors - religion, awareness of the importance of donation, impact of medical

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education, culture-specific factors, treatment of donors and their organs, and influence of family were the important determinants influencing organ donation.

A similar picture was revealed in studies conducted in Middle east countries like Turkey¹³ and Iran¹⁴ where nearly 60% of study subjects in Turkey were willing to donate and organ donation behavior and thoughts were significantly higher among the group with better economic position, students whose mother had an education higher than high school, students who had a relative working in the medical field and the group who stated they were well informed about organ donation. In Iran, among the high school girls, they found a significant positive correlation between willingness for organ donation and attitude. In addition, attitude and willingness had positive correlation with educational levels, age and educational courses.

Another study done in European Union determined that more educated, younger age, and expressing some sort of political affiliation determined willingness to donate one's own organs and consent to the donation of those of a relative.¹⁵

There are number of factors which influence directly or indirectly an individual behaviour towards organ donation. In this regard a systematic review of published research that assessed the predictors of attitudes toward deceased organ donation, willingness to donate, and donor behaviour revealed that individuals who are younger, female, have higher education levels and socioeconomic status, hold fewer religious beliefs, have high knowledge levels, know others with positive attitudes, are more altruistic, and have fewer concerns about manipulation of the body of the deceased donor are more likely to have positive attitudes toward donation and are more willing to donate their organs.¹⁶

Many factors affect the general public's willingness to donate organs, but their relative contribution is different for living related versus cadaveric donation. Efforts to improve organ donation rates should be directed toward factors that are most important in explaining the existing variation in willingness to donate.

CONCLUSIONS: In our study Awareness and knowledge of organ donation is correlated with field of education opted by the student and motivation to donate in turn is associated with both the religion and awareness of organ donation. And very importantly students have a positive attitude towards organ donation

LIMITATIONS: As the information was collected via face to face interview which was based on a questionnaire, it might have introduced interviewer's bias in the process of data collection despite all efforts to minimize it. Since we have used a quantitative tool to assess knowledge levels based on correct answers to a set of questions is somewhat arbitrary, does not incorporate differential weightage that may be placed on different questions and has not been validated. As the study is done in student community, results of the study cannot be generalized to the general population.

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Sociodemographic Variables of Study Sample			
Sociodemographic Variables		Frequency (n = 293)	Percentage
Gender	Males	154	52.60%
	Females	139	47.40%
Age (in yrs)	18-20	177	60.40%
	21-26	116	39.60%
Income	Low	182	62.10%
	Middle	71	24.20%
	High	40	13.70%
Religion	Hindu	240	81.90%
	Muslim	30	10.20%
	Christian	20	6.80%
	Others	3	1%
Level of Education	BBA/BCom	51	17.40%
	Medical	63	21.50%
	BSc/BCA	107	36.50%
	BA	72	24.60%

Table 1

Knowledge Score of Organ Donation by Socio-demographic Variables						
Sociodemographic Variables		Knowledge of Organ Donation				
		Adequate Score		Inadequate Score		P Value
		Frequency	%	Frequency	%	
Age (in yrs)	18-20 (n=177)	82	46.30%	92	53.70%	P = 0.117
	21-26 (n=116)	43	37.10%	73	62.90%	
Gender	Male (n=154)	66	42.90%	88	57.10%	P = 0.94
	Female (n=139)	59	42.40%	80	57.60%	
Education	BBA/BCom (n=51)	20	39.20%	31	60.85%	
	Medical (n=63)	54	85.70%	9	14.30%	P = 0.0000
	BSc/BCA (n=107)	25	23.40%	82	76.60%	
	BA (n = 72)	26	36.10%	46	63.90%	
Religion	Hindu (n=240)	105	43.80%	135	56.30%	P = 0.3368
	Muslim (n=30)	13	43.30%	17	56.70%	
	Christian (n=20)	5	25.00%	15	75.00%	
	Others (n=3)	2	66.70%	1	33.30%	
Income	Low (n=182)	65	35.70%	117	64.30%	P = 0.0085
	Middle (n=71)	39	54.90%	32	45.10%	

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	High (n=40)	21	52.50%	19	47.50%	
Area	Urban (n=200)	95	47.50%	105	52.50%	P = 0.014
	Rural (n=93)	30	32.30%	63	67.70%	

Table 2

Independent predictors of knowledge score of organ donation					
Socio-demographic Variables		Adequacy of Knowledge n (%)	Adjusted Odds Ratio	95% CI	P value
Area (P=0.014)	Urban	95(76%)	1		
	Rural	30(24%)	0.76	0.43 - 1.4	P=0.356
Income (P=0.008)	Low	65(52%)	1		
	Middle	39(31.2%)	1.28	0.66 - 2.46	p=0.465
	High	21(16.8%)	1.52	0.70 - 3.32	P=0.292
Education (P=0.000)	BA	26(20.8%)	1		
	BSc/BCA	25(20%)	0.6	0.31 - 1.18	P=0.137
	BBA/BCom	20(16%)	1.15	0.55 - 2.43	P=0.706
	Medical	54(43.2%)	10.2	4.31 - 24.20	P=0.000

Table 3

Motivation for Organ Donation by Socio-demographic Variables						
Sociodemographic Variables		Motivation for Organ Donation				P value
		Yes		No/Not sure		
		Frequency	%	Frequency	%	
Age (in yrs)	18-20 n(177)	67	37.90%	110	62.10%	P = 0.039
	21-26 n(116)	58	50.00%	58	50.00%	
Gender	Male (n=154)	67	43.50%	87	56.50%	P = 0.758
	Female (n=139)	58	41.70%	81	58.30%	
Education	BBA/BCom (n=51)	23	45.10%	28	54.90%	P = 0.8933
	Medical (n=63)	27	42.90%	36	57.10%	
	BSc (n=107)	47	43.90%	60	56.10%	
	BA (n = 72)	28	38.90%	44	61.10%	
Religion	Hindu (n=240)	113	47.10%	127	52.90%	P = 0.0128
	Muslim (n=30)	7	23.30%	23	76.70%	
	Christian (n=20)	4	20.00%	16	80.00%	
	Others (n=3)	1	33.30%	2	66.70%	
Income	Low (n=182)	77	42.30%	105	57.70%	P = 0.785
	Middle (n=71)	29	40.80%	42	59.20%	
	High (n=40)	19	47.50%	21	52.50%	
Area	Urban (n=200)	86	43.00%	114	57.00%	P = 0.863

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	Rural (n=93)	39	41.90%	54	58.10%	
Knowledge	Adequate (n=125)	62	49.60%	63	50.40%	P=0.038
	Inadequate (n=168)	63	37.50%	105	62.50%	

Table 4

Independent predictors of Motivation to organ donation					
Socio-demographic Variables		Adequacy of Knowledge n (%)	Adjusted Odds Ratio	95% CI	P value
Age (P=0.039)	18 - 20yrs	67(53.6%)	1		
	21 - 26yrs	58(46.4%)	1.7	1.04 - 2.78	P=0.034
Knowledge (P=0.038)	Adequate	62(49.6%)	1		
	Inadequate	63(50.4%)	0.59	0.36 - 0.95	p=0.033
Religion (P=0.012)	Christian	4(3.2%)	1		
	Muslim	7(5.6%)	1.2	0.29 - 4.90	P=0.796
	Hindu	113(90.4%)	3.34	1.07 - 10.5	P=0.038
	Others	1(0.8%)	1.44	0.09 - 20.78	P=0.788

Table 5

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