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RESEARCH ARTICLE

Knowledge, Attitude and Practice of Blood Donation among adults in a rural population in Karnataka, India

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Abstract

Introduction

Blood donation is vital to the efficient functioning of a nation's health system. Despite a requirement of over 8 million units of blood per year, data regarding awareness and practices of blood donation among rural populations remains inadequate. A study on the knowledge, attitude and practice of blood donation among adults in a rural population will help highlight the importance of adopting effective measures in rural areas to motivate voluntary blood donation among the population.

Objectives

To assess the knowledge, attitude and practice of blood donation among adults in a rural population in Karnataka.

Methodology

A pre tested validated questionnaire was administered to 141 subjects aged 18-60 years using systematic random sampling in Mugalur sub-center, rural Karnataka. The questionnaire comprised of sections on knowledge, attitude and practice of blood donation.

Results

The mean knowledge score was 11.01±6.9 with 52 subjects (36.9%) having good knowledge. The mean attitude score was 8.06±3 with 84 (59.4%) having good attitude. There was a significant correlation between knowledge and attitude scores. There was no gender difference in the case of knowledge and attitude regarding blood donation. Younger age group (<30) and higher education levels had better knowledge. Better knowledge and attitude prevailed among those who had previously donated blood and whose family members had donated or received blood.

Conclusion

Good knowledge about blood donation translates into a more positive attitude however this has not necessarily translated into practice. The lack of awareness and misconceptions concerning donation may contribute to the lack of initiative for voluntary donation. Higher education, younger age and prior contact with health care providers are a major positive influence.

Introduction

Blood donation is an essential component of an efficient and effective health system, saving millions of lives each year. Despite blood and blood products playing a crucial role in several facets of medical practice, many patients do not receive timely blood transfusion. Human blood has no substitute. [(1)]India with its ever increasing population requires about eight million units of blood annually, a figure that is trending upwards.[(2)] There are around 2433 blood banks in India, capable of collecting nine million units of blood annually but in reality, fewer than seven million units are.[(3)]

It is paramount that a country's health policy focuses on a comprehensive model that is capable of providing safe and adequate blood to every citizen. The national blood donation policy of India attempts to fulfil this, through the collection of blood from voluntary blood donors. [(4)] Despite paid blood donation being forbidden by law, the paucity of donors and the lack of awareness and willingness to donate forces health care facilities to accept blood from them. [(5)]In developing countries more than 50% of blood donations are by paid donors. [(6,7)]This could increase the risk of transfusion related infections, and be detrimental to the recipient. The majority of voluntary donors are replacement donors, who donate blood for their family or friends. Ignorance, fear and misconceptions about donation, as well as the lack of voluntary blood donation organizations are significant constraints in developing countries.[(8)]

The role of youth in promoting and actively participating in blood donation is significant. According to the WHO, an estimated 38% of reported voluntary blood donations are by people under the age of 25. [(7)] The WHO has also suggested that all developing countries focus on the youth, in trying to achieve 100 percent voluntary blood donation. [(9)]In India there is an estimated shortfall of three to four million units of blood every year. 68.84% of India's population resides in, and a higher proportion of patients are from rural areas. [(10)] Encouraging blood donation here is of vital importance.

Recruiting people as replacement donors at short notice or for those who require regular transfusions is a difficult task. Hence, a planned, targeted promotion, motivation and selection of healthy volunteer donors are essential and form the foundation of safe blood transfusion in highly developed countries. [(11)] An extensive review of the literature revealed that there have been no previous published studies on the knowledge and attitudes regarding blood donation in rural South India. Hence, this study was undertaken to assess the knowledge, attitudes and practices regarding blood donation among the residents of Mugalur sub-center in Bangalore urban district.

Materials and Methodology

This cross sectional study was conducted over a period of two months in January 2013 in seven villages in Mugalur sub-center of Sarjapura primary health center area, Anekal taluk, Bangalore urban district. The study group included the residents in the age group of 18 years to 60 years. A pilot study was conducted in a nearby village with a relative precision of 10%, desired confidence interval of 95%, a mean of 12 and standard deviation of 7 to estimate the sample size of 141 subjects.

Based on population proportionate to size, the sampling frame of residents aged 18 to 60 years, in each of the seven villages was calculated. Systematic random sampling was then adopted to determine the household from which the subject to be interviewed was chosen. At each house, one of the adults (18-60 years) was chosen using lottery method and administered a structured, validated and pretested questionnaire in their local language, to assess their knowledge, attitude and practice about blood donation after taking informed consent. The questionnaire was adopted from various similar studies with modifications made relevant to our sample population. [(11, 12)] The reliability was evaluated using 15 samples and accepted with a Chronbach's alpha coefficient of 0.94.

The questionnaire comprised of four sections: on demographic data, knowledge, attitude and practice about blood donation. Knowledge was assessed by 18 questions on blood groups, the blood donation process and situations

requiring blood donation. Attitude was assessed by 12 questions on harmful effects of blood donation, time and necessity of blood donation and the last section was to assess Practices related to whether the subject or his/her family members have donated or received blood in the past and related to participation or willingness to participate in blood donation camps.

Using a scoring system for the grading of knowledge, which was used previously in a similar study done in South India among health science students [11], Knowledge was graded as Good Knowledge(>16), Average Knowledge(9-15) and Poor Knowledge(≤8) out of a total of 24 points. Using the same guidelines which were used for the scoring of knowledge, Attitude levels were graded as Good Attitude (>9 and more), Average Attitude (5-8) and Poor Attitude (<5) out of a total of 12 points.

The data was tabulated in Microsoft Excel version 10 and analyzed using statistical package of social sciences, SPSS version 18.

Results

A total of 141 subjects participated in the study, of which 80(56.7%) were males and 61(43.3%) were females. The mean age in years was 38.4±13.4, 120(85.1%) were married. They ranged from having received no previous formal education 44(31.2%) to having an undergraduate degree 8(5.7%) with 73.3% of the donors having been educated to 10^{th} standard or higher. (Table 1) 15(10.6%) among the subjects had donated blood at least once in the past.

Median score of knowledge was found to be 12, with a minimum of zero and maximum of 24; that of attitude was 8 with a minimum of zero and maximum of 12. Mann Whitney U test and Kruskal Wallis test were used to compare the knowledge scores and attitude scores between the groups. The statistical significance was determined on 5%level of significance. All the analysis was done using the software SPSS version 18.0.
Of the 141 subjects, 49(34.8%) of the subjects had knowledge of their own blood group. (Table 3) The subjects had poor knowledge of the criteria to be met by blood donors with only 32(22.7%) knowing who could donate blood. It is of interest to note that 98(69.5%) of the subjects were aware that diseases could be transmitted through blood and 91(64.5%) knew that blood was tested for infective agents before transfusion. (Table 3) 123(87.2%) of the subjects felt that blood donation was a generous act, but as many as 92(85.2%) of the subjects felt that it could be harmful to the donor. (Table 3) It was good to note that 106(75%) of the population under study felt that they would donate blood in an emergency and 50(35.5%) would voluntarily donate blood. (Table 3) Only 15(10.6%) had donated blood in the past and 14(9.9%) of the subjects had received blood at least once in the past. While 11(7.8%) of the subjects had also encouraged blood donation in the past among their family and friends, only 2(1.4%) people had actually taken part in blood donation camps and awareness activities on blood donation. (Table 3)

It was found that there was a significant correlation of 0.719 between the knowledge scores and attitude scores, implying that good knowledge translates into good attitude.

There were no gender differences in knowledge and attitude regarding blood donation. There was a statistically significant difference between different age groups in the case of knowledge and attitude, $p < 0.001$. Younger subjects (<30) had more of knowledge and a better attitude, with a median score of 16.0 and 11.0 respectively. Education level also shows a statistically significant difference, $p = <0.001$. People educated past secondary school were found to have better knowledge and attitude scores. (Table 1)

Of the 141 participants of the study, 12(8.5%) had history of diabetes and 19(13.5%) had a family history of diabetes. This subset had significantly better knowledge and attitude compared to those who didn't. (Table 2)

Among the study group those who had donated or received blood in the past or whose family members had done the same, had better knowledge and attitude scores. These results were statistically significant (Table 2). Those participants who had encouraged their relatives or friends to donate blood seemed to have better knowledge and attitude, which was found to be statistically significant. There were 13(9.2%) participants who had a history of surgery in the past and their knowledge and attitude were comparatively better than who didn't, which is statistically significant, p=0.003 (knowledge) and p=0.03 (attitude) respectively. (Table 2)

On analysis of the knowledge scores of the 141 subjects, it was found that 55(39%) seemed to have poor knowledge and the remaining 34(24.1%) had average knowledge, mean knowledge score being 11.01± 6.96. However

84(59.4%) of the participants were found to have good attitude, 28(19.9%) had average attitude and only 29(20.6%) had poor attitude with a mean attitude score of 8.06±3.82. (Table 4)

Table 1: Knowledge and Attitude score of the population under study according to demographic characteristics

Characteristics	Knowledge Scores			Attitude Scores	
	Number (n=141) No (%)	Median	IQR	Median	IQR
Sex					
Male	80 (56.7)	12	(5,18)	10	(6,11)
Female	61 (43.3)	12	(5,17)	9	(5,11)
p value		0.576		0.249	
Age (years)					
<30	51 (36.2)	16	(10,19)	11	(9,12)
31-50	60 (42.6)	9.5	(5,16)	8	(4.3,11)
>50	30 (21.3)	6.5	(3,12)	8	(3,10)
p value		<0.001*		<0.001*	
Education					
Illiterate	44 (31.2)	7	(3,11.5)	5	(2,8)
Primary	40 (28.4)	9	(3,14)	8.5	(4.5,10.8)
Secondary	30 (21.3)	16	(8.8,19)	11	(10,12)
Higher Secondary	19 (13.5)	18	(15,19)	12	(11,12)
Degree	8 (5.7)	18.5	(13.5,20)	11	(10,11.8)
p value		<0.001*		<0.001*	
Marital Status					
Married	120 (85.1)	10	(4.3,16.8)	9	(5,11)
Unmarried	21 (14.9)	17	(10,18.5)	11	(10,12)
p value		0.015*		<0.001*	

*p value less than 0.05 is considered statistically significant
**IQR: Inter Quartile Range

Table 2: Knowledge and Attitude score of the population under study according to their medical and family history

Medical and Family History	Knowledge Scores			Attitude Scores	
	Number (n=141) No (%)	Median	IQR	Median	IQR
Diabetes					
Yes	12 (8.5)	6.5	(3,12)	6.5	(3,8)
No	129 (91.5)	12	(5,18)	10	(6,11)
p value		0.045*		0.010*	
Family history of Diabetes					
Yes	19 (36.2)	18	(8,19)	11	(9,12)
No	122 (42.6)	10	(4.8,17)	9	(5.8,11)

p value		0.011*		0.027*	
Family History of Surgery					
Yes	13 (9.2)	18	(11.5,20)	11	(9.5,11.5)
No	128 (90.8)	10	(4.3,17)	9	(5,11)
p value		0.003*		0.03*	
Donated Blood					
Yes	15 (10.6)	19	(18,22)	12	(11,12)
No	126 (89.4)	10	(4,16)	9	(5,11)
p value		<0.001*		<0.001*	
Family donated blood					
Yes	8 (5.7)	17.5	(16.3,18.8)	11	(9.3,12)
No	133 (94.3)	10	(5,17)	9	(5,11)
p value		0.005*		0.032*	
Received Blood					
Yes	14 (9.9)	18	(15.5,20)	10.5	(9,12)
No	127 (90.1)	10	(4,17)	11	(10,12)
p value		<0.001*		0.027*	
Family Received Blood					
Yes	13 (9.2)	19	(17.5,21)	9	(5,11)
No	128 (90.8)	10	(4.3,16)	11	(10,12)
p value		<0.001*		0.009*	
Encouraged Blood Donation					
Yes	11 (7.8)	19	(18,22)	11	(10,12)
No	130 (92.2)	10	(4.8,16.3)	9	(5,11)
p value		<0.001*		0.007*	

*p value less than 0.05 is considered statistically significant
**IQR: Inter Quartile Range

Table3: Questionnaire on Knowledge, Attitude and Practice of Blood Donation

Question	Answered Correctly (n=141) No (%)
Who can donate blood	32 (22.7)
Frequency of Blood donation	41 (29.1)
Can diseases be transmitted through Blood	98 (69.5)
Testing for infective agents before transfusion	91 (64.5)
Where do you donate blood	90 (63.8)
Can you decide to whom to donate blood	71 (50.4)
Received education on Blood donation	56 (39.7)
Feel good about Blood donation	123 (87.2)
Is blood donation harmful to the donor	92 (85.2)
Will you faint/feel weak if you donate blood	87 (61.7)
Will you get an infection if you donate blood	106 (75.2)
Will you voluntarily donate blood	50 (35.5)
Will you donate at the time of Emergency	106 (75.2)
Donated blood in the past	15 (10.6)
Received blood in the past	14 (9.9)
Have you encouraged Blood donation	11 (7.8)
Have you taken part in blood donation camps	2 (1.4)

Table 4: Knowledge and Attitude Scores

Knowledge Grade (score)	Number (n=141) No(%)	Attitude Grade (score)	Number (n=141) No (%)
Good Knowledge (>15)	52 (24.1)	Good Attitude (>9)	84 (59.4)
Average Knowledge (9-15)	34 (24.1)	Average Attitude (5-8)	28 (19.9)
Poor Knowledge (<9)	55 (39)	Poor Attitude (<5)	29 (20.6)

Discussion

The study of knowledge, attitude and practices of blood donation enables one to understand the outlook towards donation, and the barriers to it. Such information can then be used in devising modules to eliminate these obstacles. The present study assessed the knowledge, attitude and practices regarding blood donation among the residents in Mugalur sub center in Bangalore urban district.

On analysis of the information gathered it was found that good knowledge about blood donation translates into a more positive attitude. Attitudes and beliefs are based on the foundation of knowledge, and this study reiterates this fact, as there was a significant correlation between knowledge and attitude.

The percentage of the population that had donated blood at least once in the past was 15 (10.6%) which is slightly higher than a study conducted in a Delhi slum, where 7.7% had donated blood. [(13)] A greater proportion of the donors were male (9, 60%) compared to female (6, 40%). These findings are consistent with a study conducted in Uttarakhand where males constituted 84% and females, 16% of donors. [(14)] However gender did not arise as a significant factor for knowledge and attitude scores, which is similar to a study carried out in a university in South India. [(11)]

The questionnaire covered various aspects of blood donation, ranging from knowledge about blood groups, the need and importance of donating, various misconceptions, fears, reasons for not donating, suggestions on encouraging blood donation, individual preferences and experiences. 106 of the participants (75.2%) viewed blood donation as an

act of replacement when a sick relative or a close friend is admitted. In fact, only 35.5% said that they would voluntarily donate, and of these donors, only 2(1.3%) had voluntarily donated. This is in stark contrast to a study done in Sikkim where voluntary blood donation was found to be as high as 46%. [15]

It is of interest to note that only a small percentage of the entire sample under study (32, 22.7%) were aware of the eligibility for blood donation. Only 49(34.8%) were aware of their blood group. The lack of awareness and misconceptions concerning blood donation may contribute to the lack of initiative for voluntary donation. The reasons for not donating blood were as follows: no situation requiring them to donate (89, 63.1%), fear of becoming anaemic (82, 58.1%), faint (85, 60.3%) or contracting infection (104, 73.7%). A study done among medical undergraduates in Pondicherry showed that the fact that there was no need to donate was the main reason for not donating blood. [16] However many studies have shown that fear of blood donation is the main reason for not donating blood. [17, 18]

Of the 141 participants, 123 (87.2%) felt that blood donation was a good act. This has not necessarily translated into practice. Dhaka University showed that 82% of the participants showed a positive attitude towards blood donation, but only 16% of the respondents in this study had actually donated blood voluntarily. [19]

The influence of education and age on blood donation needs to be explored further. While a study in Tanzania showed a relation between secondary school attendance and voluntary blood donation, a study in Thailand showed absolutely no correlation between age and education level with knowledge. [20, 21] The difference is evident as the mean knowledge and attitude scores among the age group < 30 years was 16 and 11 respectively, while the mean knowledge and attitude score among the age group > 50 years was 6.5 and 8.0 respectively. Higher educational status, more awareness and health education could have contributed to this fact. Those who had received secondary education had a score of 16 and 11 in knowledge and attitude, higher secondary 18 and 12 while those who had received no formal education had scores of 7 and 5 respectively.

Increased contact with doctors and health facilities may contribute to the higher knowledge and attitude scores in those with diabetes, positive family history of diabetes or a family history of surgery. The study also made an interesting observation of a case of poor knowledge about blood donation translating into good practice. There is a common misconception that exists among the rural population that the blood donated by a relative before surgery or during emergency as replacement donation is the same blood that will be transfused to the patient. Perhaps this misconception stems from various socio cultural influences but it this false belief that is sustaining the concept of replacement donation.

Based on the findings of the study, the authors feel that health education programmes regarding the importance of voluntary blood donation, the safety procedures followed and the beneficial aspects of blood donation to self and society must be implemented with greater force among the rural population. It must target all age groups, the youth in particular, as they would be more eligible to donate.

Conclusion

Good knowledge about blood donation translates into a more positive attitude however this has not necessarily translated into practice. The misconceptions concerning blood donation may be one of the contributing factors to the lack of initiative for voluntary donation. This study highlights the importance of adopting effective measures in rural areas to motivate voluntary blood donation among the population. It can help us understand the different aspects of blood donation as perceived by the target group. Such an understanding is vital to design educational programmes to motivate and promote voluntary blood donation, in order to meet the safe blood requirements of our country.

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