JIDAM
eISSN 2582 - 0559
"An Official Journal of IDA - Madras Branch"©2019.
Available online

ORIGINAL ARTICLE

ASSESSMENT OF KNOWLEDGE, MOTIVATION AND BARRIERS OF BLOOD DONATION AMONG ADOLESCENT POPULATION IN CHENNAI, INDIA

Kesavan. R, Vinita Mary.A.

Department of Public Health Dentistry
Thai Moogambigai Dental College and Hospital Chennai, Tamilnadu

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Address for correspondence:

Dr.R.Kesavan, MDS,
Reader,
Department of Public Health Dentistry,
Thai Moogambigai Dental College and Hospital,
Chennai
E-mail: keshavan84@gmail.com

Received : 12.02.2019
Accepted : 22.02.2019
Published : 26.03.2019

ABSTRACT

BACKGROUND: Adolescents are a potential source of great interest not only for the blood they could supply, but also on the spread of healthy lifestyles and contribute to the development of a mature, responsible civic culture. Blood donation is remarkably safe medical procedure. However, attitudes, beliefs, and level of knowledge may affect an individual's choice on blood donation.

MATERIALS AND METHODS: A cross sectional questionnaire survey was conducted among 1399 college students to assess their knowledge, motivations and barriers of blood donation. A pilot study was conducted to validate the questionnaire and to get the required sample size. A specially designed questionnaire consisting of 17 close ended questions divided into two sections was used for data collection by stratified random sampling method. Statistical analysis was done using SPSS (Statistical Package for Social Sciences) software version 21.0

RESULTS: The results showed that only 21% of the participants have donated blood in the past. The main reason for not donating blood was afraid of a needle (43%) which was followed by fear of blood (31%). Only 7.9% of the study participants were willing for blood donation in the future, whereas 48% responded that they will donate blood only if required by a family member. These results were found to be statistically significant.

CONCLUSION: The study concluded that most of the participants have poor knowledge and practice regarding blood donation. More educational programs to increase the awareness in specific targeted populations and also to focus on some motivational factors are recommended.

INTRODUCTION

Blood is a vital component of Human life and there are no alternatives developed till now. Accessibility of safe and wholesome blood and its products is a critical aspect of any health care activity[1].Transfusion of blood is a vital concern for the people of the society, since it is life saving for individuals during surgical procedures, road traffic accidents and for people with bleeding and other haematological disorders[2]. Developed countries with well-established health care systems and blood transfusion amenities are largely able to meet this demand. However people in developing countries like India are confronted with unawareness, fears and misperceptions about the blood donation, which result in a restricted figure of voluntary blood donors. We are confronted to develop creative enrolment methods to combat these delusions and to motivate people for blood donation[3]. In India, about 11.1 million units of blood were collected in 2016-17, which is 85% of the 13 million units target according to World Health Organization (WHO) norms. We fell short of 1.9 million units of blood that could have aided more than 320,000 heart surgeries or 49,000 organ transplants. There is an increase in shortage from 1.1 million units in the year 2015-16[4].

The maximum collection in the country was achieved by the state of Maharashtra which collected over 1.4 million units, 20% more than the requirement. It was closely followed by the state of West Bengal (1m units) and Karnataka (960,049 units). Chandigarh tops the list in terms of cities with 74,408 more units of blood than the requirement[4]. Tamil Nadu is the 6th largest state in terms of population and Chennai is one of the fastest growing metropolitan cities in India. With increasing migration of people from the rural areas and other parts of the country for the need of education and job opportunities, there is always an increasing demand for blood and its products.

Adolescents are a source of great interest not only for the blood they could contribute, but also on the spread of healthy practices and contribute to the development of a mature, responsible civic culture[5]. Adolescence and early adulthood are crucial periods for the development of an individual's attitudes and pro-social skills. It is a distinct period of development, not only physically but also psychologically and cognitively. During this period, the individuals are about to begin a new episode in their lives and the society legally considers them as an adult[5]. Any change in behaviour occurring during this period tends to last lifelong. Blood donation is remarkably safe medical procedure. However, personal attitudes, cultural beliefs, and poor knowledge may affect it.

Therefore the present study was a humble effort to understand the knowledge, motivations and barriers of blood donation among adolescent population in Chennai, India.

MATERIALS AND METHODS

A descriptive cross sectional study was conducted among undergraduate students of various colleges in Chennai. The study was conducted between September and December 2018. The study protocol was approved by the Institutional Review Board of Dr. MGR Educational and Research Institute University.

A specially designed questionnaire consisting of 17 close ended questions divided into two sections was used for data collection. The first part of the questionnaire consisted of the questions related to respondent's age, gender and year of study. In order to ensure anonymity, the respondents name was not recorded. The second part consisted of questions related to their knowledge, motivations and barriers regarding blood donation.

The questionnaire was validated during the pilot study consisting of 30 samples from the target population. The questionnaire showed adequate internal consistency with Cronbach's alpha value of 0.75. The reliability was assessed by test-retest and Kappa statistic and the agreement was good (0.85). The content and face validity of the questionnaire was done by a panel of experts who assessed whether the questionnaire items are adequately measuring the construct intended to assess, and whether the items are sufficient to measure the domain of interest. With 85 % power, margin of error at 5% and 95% confidence level, the estimated sample size was 1399.

SAMPLING METHODOLOGY

The subjects were selected using stratified

random sampling where each college forms strata. For administrative purpose, Chennai city has been divided into 13 zones.[6] One college from each zone was included in the study. After obtaining the list of students from each college, they were randomly selected till the required sample size was achieved.

DATA COLLECTION

The students were approached after obtaining the necessary permission from the head of the institution. The nature and purpose of the study was explained to them and written informed consent was obtained. The questionnaire was distributed by the principle investigator and to avoid any ambiguity, all the questions were explained. The respondents were requested to provide appropriate answers and were assured of the confidentiality. The filled questionnaire was collected on the same day and individuals who were absent or not willing to participate in the study were excluded.

STATISTICAL ANALYSIS

The data was analyzed using Statistical Package for Social Sciences, IBM Corporation, SPSS Inc., Chicago, IL, USA version 21 software package (SPSS). Descriptive statistics with frequency, percentage, mean and standard deviation was computed. Chi-square test was used to assess the level of significance at $p<0.05$.

RESULTS

Demographic details

The age of the participants ranged from 18 to 23 years with the mean age of 19.9 $\pm$1.1 years. The gender distribution was almost equal with 696 males and 703 females. Among the study population 427 (30.5%) were dental students, 472 (33.7%) were from arts and science and 500 (35.8%) were from engineering and technology. (Table 1)

Knowledge and practices regarding blood donation

In the present study, only 21% of the respondents have donated blood in the past. The main reason for not donating blood was fear of needle prick (43%); followed by fear of blood (31%) and getting disease (3%). Other reasons were being unwell, lack of opportunity, fitness and long donation process. (Fig 1 and 2). About 37.5% of the respondents knew that the actual donation process takes about 20 minutes, which was statistically significant. Only 20.7% of the respondents answered correctly that the world blood donor's day is June 14th. Nearly two thirds of the respondent's family members or relatives have donated blood in the past. Only 7.9% of the study participants were willing for blood donation in the future, whereas 48% responded that they will donate blood only if required by a family member. These results were found to be statistically significant. (Table 2).

Table 3 describes the motivating factors and barriers of blood donation among the study participants. Lack of knowledge was considered as an important barrier of blood donation by most of the respondents (42.2%), which was found to be statistically very highly significant.

About 45% believed that advertising through mass media is the most effective method for dissemination of information regarding blood donation. When asked about the advantages of blood donation, 48% of the respondents answered that improves health followed by free blood test (32.6%), justified absence from class (15%) and educational credits (4.3%). Friends were considered as most influential people in altering their choice of blood donation (47.4%) followed by parents and siblings (36.2%). The differences in responses were found to be statistically significant.

Table 4 describes the relationship between type of education and blood donation in future. Only 9.3% of the dental students were willing to donate blood in the future as a voluntary blood donor as compared to 14% among engineering students. Nearly half of the respondents in all the education groups responded that they will donate blood if required for a family member. The differences were found to be statistically very highly significant ($p<0.000$).

The relationship between education and factors affecting blood donation is described in table 5. 44.7% of the dental students believed that lack of knowledge regarding blood donation is an important factor affecting blood donation followed by fear (36.8%) and lifestyle (18.3%).

Table1 Demographic Characteristics of the Study Population	
AGE	**Mean (SD)**
17 to 23 years	19.8 + 1.2
GENDER	**No. (%)**
Male	696 (49.7)
Female	703 (50.3)
Education	**No. (%)**
Dental	427 (30.5)
Arts and Science	472 (33.7)
Engineering and technology	500 (35.8)
Total	1399

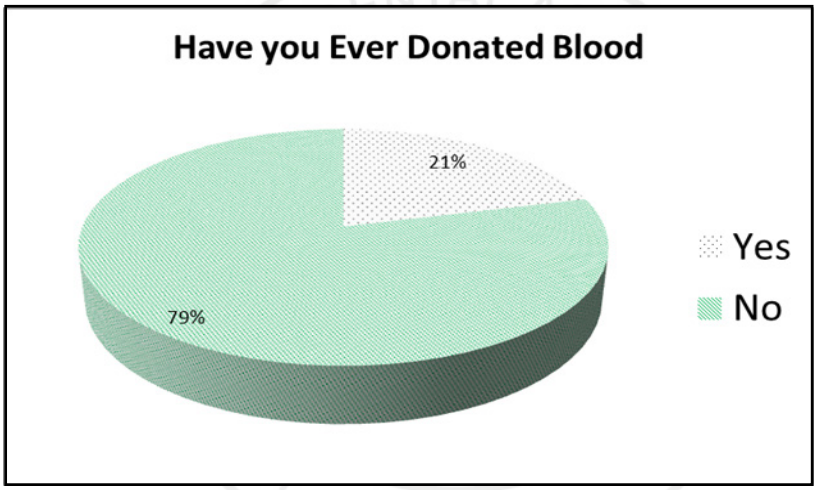

Figure 1

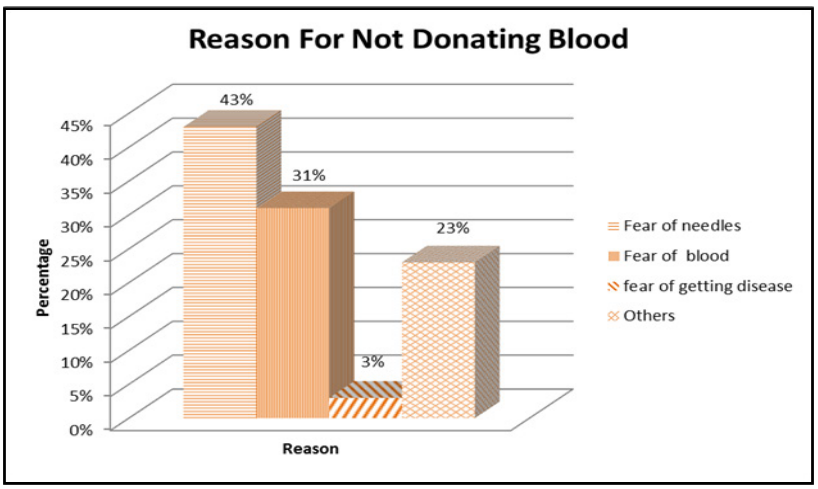

Figure 2

Table 2 Knowledge and practices of respondents regarding blood donation			
Questions	**Frequency**	**%**	**p Value**
Duration of blood donation			
20 minutes	525	37.5	0.02*
30 to 60 minutes	543	38.8	
1 to 2 hours	192	13.7	
Don't know	139	9.9	
World Blood Donor Day			
January 23	407	29.1	<0.001**
April 22	623	44.5	
June 14	289	20.7	
Don't know	80	5.7	
Contact HIV by Blood Donation			
Yes	400	28.6	<0.001**
No	645	46.1	
Don't know	354	25.3	
Blood donation by Known persons			
Parents & siblings	442	31.6	0.06
Relatives	600	42.9	
Friends	267	19.1	
Nobody	90	6.4	
Blood donation in future			
Yes	111	7.9	0.03*
No	503	36	
If required for family member	672	48	
If paid	113	8.1	

Table 3 Motivations and Barriers of blood donation among the participants			
Questions	**Frequency**	**%**	**p value**
Factors affecting blood donation			
Fear	478	34.2	<0.001**
Lack of knowledge	590	42.2	
Lifestyle	272	19.4	
others	59	4.2	
Effective methods of information dissemination			
Lectures & conferences	465	33.2	<0.001**
Mass media	629	45.0	
Through Blood donors	232	16.6	
Health centres	73	5.2	
Advantages of blood donation			
Improves health	672	48	<0.001**
Free blood check & refreshment	456	32.6	
Justified absence of class	211	15.1	
Educational credits	60	4.3	
People who can influence your choice to donate blood			
Parents & siblings	506	36.2	0.05*
Friends	663	47.4	
Relatives	180	12.8	
No one	50	3.6	

Table 4 Relationship between education and blood donation in future					
Education categories	**Yes**	**No**	**Only if required by family member**	**Only if paid**	**p value**
Dental	40 (9.3%)	162 (38%)	209 (49%)	16 (3.7%)	<0.001*
Engineering	70 (14%)	123 (25%)	255 (51%)	52 (10.4%)	
Arts and Science	01 (0.2%)	218 (46%)	208 (44%)	45 (9.5%)	
Total	111 (7.9%)	503(36%)	672 (48%)	113 (8.1%)	

Table 5 Relationship between education and factors affecting blood donation					
Education Categories	**Fear**	**Lack of knowledge**	**Lifestyle**	**others**	**p value**
Dental	157 (36.8%)	191 (44.7%)	78 (18.3%)	0 (0%)	<0.001*
Engineering	185 (37%)	198 (39.6%)	70 (14%)	47 (9.4%)	
Arts and Science	136 (28.8%)	201 (42.6%)	124 (26.3%)	12 (2.3%)	
Total	478 (34.2%)	590(42.2%)	272 (19.4%)	59 (4.2%)	

DISCUSSION

One of the major goals in the field of blood donation is to increase the members of the donor pool. In order to achieve this objective, it is essential to understand the motivations and barriers of blood donation[7]. The foremost purpose is to identify the factors that encourage or discourage adolescents from donating blood and to introduce strategies for maintaining an adequate and safe blood supply[5]. In the present study, only 21% of the participants have donated blood in the past, which was in the similar range to a study conducted by Verma et al[1] (12%). But in a study conducted by Najd Alfouzan[7] in Saudi Arabia, about 45% of the participants have donated blood. The main reason for not donating blood, in our study is the fear of needles (43%). Studies conducted by Elena Zito et al[5] in Italy and Najd Alfouzan[7] in Saudi Arabia also showed identical results (33% & 37% respectively). But a study conducted by Anju Dubey et al[3] showed only 3.75% of the respondents was afraid of needles. The main reason in that study was they never had an opportunity to donate blood (41%). Only 7.9% of the participants were willing for voluntary blood donation in future. This situation is alarming and necessary measures needs to be taken to change this attitude. A study conducted by Anju Dubey et al[3] in Lucknow also showed a lower positive response of 16%. But a study conducted in Saudi Arabia revealed majority of the participants willing to donate voluntarily (90%)[7]. Religion is one of the deep-rooted factor among Saudi culture and it serves as a chief motivating factor to donate blood. Nearly half of the participants were willing to donate blood if required by a family member (48%) which was identical to a study conducted in North India[3] in which 57% were willing to donate blood, if required for a family member. When analysing the factors affecting blood donation, about 42% considered lack of proper information as an important factor followed by fear and lifestyle. These results were in accordance to a study conducted by Elena Zito et al[5]. Most of the participants in the current study believe that mass media of communication is the most effective method of information dissemination regarding blood donation which was similar to most of the studies conducted elsewhere[5,7,8].

About 48% of the respondents feel that improvement of health is an important advantage of blood donation and almost the same number (47.4%) responded that friends are the most influential people in their choice of blood donation. Only 9.3% of the dental students responded that they will donate blood in the future whereas it was 14% among engineering students. Most of the dental students also feel that lack of knowledge plays an important role in their decision to donate blood. In spite of being in medical field, the knowledge and attitude of dental students is meagre and this needs to be addressed and changed for the betterment of the society. The present study was conducted among students in the urban area and this prevents generalization of our findings towards entire adolescent population which can be a limitation of the study.

CONCLUSION

The study concludes that the practice of voluntary blood donation is lacking among the college students in Chennai. Factors contributing to non-donation of blood were fear, pain, lack of knowledge, motivation and beliefs. These findings highlight the need to improve communication and awareness on blood donation in society.

FINANCIAL SUPPORT AND SPONSORSHIP:

Nil

CONFLICT OF INTEREST:

There is no conflict of interest

RECOMMENDATIONS

1. Informative programs on blood donation can be conducted through mass media of communication to promote knowledge and awareness.
2. A nationwide campaign could be targeted to make people aware about the existing shortage of blood.
3. Academic credits can be given to students on becoming a voluntary blood donor and a registry of these donors can be maintained by the college authorities.
4. Annual blood donation programs can be arranged in College premises in association with various blood banks.

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