Original Research Article

A study to assess the knowledge regarding blood donation among general population attending primary health centre of Dhawa, Jodhpur, Rajasthan

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ABSTRACT

Background: Human blood is an essential element of the human life and there is no substitute for it. Blood donation save lives during critical situation but several thousands of patients who need blood transfusion do not receive timely access to safe blood. Today, blood transfusion services constitute a crucial part of any health care delivery system. Adequate and safe supply of blood and blood component is essential.
Methods: Present study has been carried out among general population of community attending primary health center. Quantitative research approach was used to assess the knowledge regarding blood donation. Data was collected through self-structured knowledge questionnaire. Sixty samples were selected by non-probability convenient sampling technique.
Results: In the study there were 60 subjects, in which male were 33(55%) and female were 27(45%). Ten subjects had excellent knowledge, 21 subjects had good knowledge, 20 subjects had average knowledge and 9 subjects had poor knowledge. Statistically significant association was found between knowledge score and selected demographic variables (i.e., gender and occupation) at $p<0.05$ level of significance.
Conclusions: The study indicates that awareness session on blood donation should be held regularly to improve the knowledge and create positive attitude and remove the misconception among general population about blood donation.

Keywords: Assess, Knowledge, Blood, Blood donation, General population, Community

INTRODUCTION

Blood is considered to be the guiding force of our body. Human blood is an essential element of the human life and there is no substitute for it.[1]

Blood is a body fluid in humans and other animals that delivers necessary substances such as nutrients and oxygen to the cells and transports metabolic waste products away from those cells. It is composed of blood cells suspended in blood plasma. Plasma, which constitutes 55% of blood fluid, is mostly water (92% by volume). The blood cells are mainly red blood cells, white blood cells and platelets. The most abundant cells in vertebrate blood are red blood cells. These contain haemoglobin, an iron containing protein, which facilitate oxygen transport. Blood performs many functions within the body such as supply of oxygen to tissues, supply of nutrients, removal of waste products, immunological functions, coagulation, and regulation of body

temperature. Blood accounts for 7% of the human body weight. Normal amount of blood in human body is 76 ml/kg body weight in case of males and 66 ml/kg body weight in case of females. Human require only 40 ml/kg body weight of blood for daily work. Hence 26 ml/kg body weight is excess in males and 16 ml/kg body weight in females. A healthy person can easily give blood around 8 ml/kg body weight in blood donation.[2] According to WHO A blood donation occurs when a person voluntary has blood drawn and used for transfusions and/or made into biopharmaceutical medications by a process called fractionation (separation of whole blood components). Blood donation is a voluntary activity performed by individual.[3] It can be done only if he or she is fully willing for it. Blood can save lives of people and there exists the need of blood. But blood cannot be manufactured in laboratories, can only be taken from human beings by their will. Blood donation saves lives during critical situations. Blood donation is life saving and useful in surgery, accidents, delivery cases, bleeding, peptic ulcer, liver diseases, lung diseases, cancer, burn cases and blood diseases such as haemophilia, anaemia, thalassemia etc.[2] According to WHO Blood donation is divided into several groups based on who will receive the collected blood. An 'allogeneic' also called homologous donation is when a donor gives blood for storage at a blood bank for transfusion to an unknown recipient. A 'directed' donation is when person, often a family member, donates blood for transfusion to a specific individual. An 'autologous' donation when a person has blood stored that will be transfused back to the donor at a later date, usually after surgery. Blood that is used to make medications can be made from allogeneic donations or from donations exclusively used for manufacturing.[3] Donors are typically required to give consent for the process and minors cannot donate without permission from a parent or guardian. As per the Indian blood bank guideline and the eligibility criteria for blood donation are.[4]

Any donor, who is healthy, fit and not suffering from any transmittable diseases can donate blood, donor must be 18-60 years age and having a minimum weight of 50 kg can donate blood, donor's haemoglobin level should be 12.5% minimum, A donor can again donate blood after 3 months of last donation of blood, pulse rate must be between 50 to 100 beats/min without any irregularities, BP diastolic 50 to 100 mmHg and systolic 100 to 180 mmHg, body temperature should be normal (not exceed 37.5 degree Celsius).

Donors usually stay at the donation site for 10-15 minutes after donating blood since most adverse reactions take place during or immediately after the donation. Donated plasma is replaced after two to three days. Red blood cells are replaced by bone marrow into the circulatory system at a slower rate, on average 36 days in healthy adult male.[10]

The collected blood is usually stored in a blood bank as separate components. The longest shelf life used for platelets is seven days. There are no storage solutions to keep the platelets for extended period of time. Red blood cells, the most frequently used component, have a shelf life of 35-42 days at refrigerated temperatures. For long term storage applications, this can be extended by freezing the blood with a mixture of glycerol, but this process is expensive and requires an extremely cold freezer for storage. Plasma can be stored frozen for an extended period of time and is typically given an expiration date of one year.[10]

The awareness and attitude of public towards blood donation have been different. This difference is due to differences in culture, attitude, folkways etc. There is considerable shortage of blood, even in large metropolitan cities with the supply being less than 50% of the requirement. Safe blood is a critical component in improving the health care and in preventing the spread of infectious diseases globally.[2]

However, many people in developing countries are faced with ignorance, misperceptions and fear about the blood donation process which result in limited donors. A nation with a population of more than one billion and an annual requirement of 8.5 million units of blood, India is able to collect only 4.4 million units of blood.[3]

There are also some medical benefits of blood donation like the incidence of acute myocardial infarction is lesser in regular voluntary donors. Voluntary blood donation also increases the insulin sensitivity and thus helps in maintaining the equilibrium of glucose in body.

According to WHO, young people should be the special target group because they from the great part of the population and are generally full of zeal and the enthusiasm.[9]

Today, blood transfusion services constitute a crucial part of any health care delivery system. Adequate and safe supply of blood and blood component is essential, to enable a wide range of critical care procedures to be carried out in hospitals. India with a population of about 121 crore is naturally the country which requires a lot of blood to save the life of citizens. It has been quoted that there is need of 8 million units of blood every year in our country. Out of this, only half that is 4 million units of blood can be obtained from voluntary blood donors. Rest all comes from replacement blood donation from relatives or paid donors.[8]

Blood transfusion help in improving health and saving life of patient, but many patients requiring transfusion do not have timely access to safe blood. Voluntary blood donation is considered as backbone of blood safety and safe transfusion practices. [9]

The world health organization (WHO) recognizes world blood donor's day on 14 June each year to promote blood donation. This is the birthday of Karl Landsteiner, the scientist who discovered the ABO blood group system. On 14 June, countries worldwide celebrate world blood donor's day with events to raise awareness of the need for safe blood and blood products and to thank voluntary blood donors for their life saving gifts of blood. The theme of the 2012 world blood donor's day campaign," every blood donor is hero" focuses on the idea that every one of us can become a hero by giving blood. While recognizing the silent and unsung heroes who have lives every day through their blood donations, the theme also strongly encourages more people all over the world to donate blood voluntarily and regularly.[8]

Transfusion of blood and blood products saves millions of lives each year. In the most developing countries, however, preventable deaths still occur due to inadequate supply of safe blood and blood products. Most of this burden falls in women and children as consequences of pregnancy related complications, malnutrition, malaria and other infectious diseases. Trauma, including road traffic accidents and injuries due to armed conflicts increases the demand of blood. Despite its vital role in saving life, blood transfusion may expose the recipient to a number of adverse effects which can be life threatening. These include the transmission of infections such as HIV/AIDS, hepatitis B, and hepatitis C which are immense public health importance.[8]

In developing countries, the hesitation among people to donate blood is accounted to misconception related to fears of physical harm in the process of blood donation or donating blood.

According to NACO (National aids control organisation) current phase of the national AIDS control programme (NACP-IV 2012-17) emphasizes blood safety that aims to support 1,300 blood banks and aims to achieve 90,00000 blood units from NACO supported blood banks and 95% voluntary blood donation in 2016-17. The key strategies under NACP-IV are, strengthening structure of blood transfusion services, streamlining the coordination and management of blood banks and blood transfusion services; and new initiatives such as the establishment of metro blood banks and plasma fractionation centre.[4]

According to WHO, it is estimated that blood donation by one percentage of the population can meet a nation's most basic requirement for blood, which means India currently needs around 12.8 million units of blood. As of 2008, the WHO estimated that more than 81 million units of blood were being collected annually.[3] Blood transfusion help in improving health and saving life of patient, but many patients requiring transfusion do not have timely access to safe blood. Voluntary blood donation is considered as backbone of blood safety and the safe transfusion practices.

METHODS

The present study was carried out to assess the knowledge regarding blood donation among general population attending PHC. In this study, quantitative research approach was used to assess the knowledge regarding blood donation. Population attending primary health centre (PHC) within the age group of 18-60 years were selected. Non-probability convenient sampling technique was adopted for this study.

Self-structured knowledge questionnaire was prepared for assessing the knowledge of general population regarding blood donation based on the review of research and non-research literature and opinion of experts. The data was collected using self-structured questionnaire consisting of two parts: Part A-Items of demographic variables like age, gender, education, economic status. Part B-self-administered questionnaire on knowledge regarding blood donation.

Self-administered questionnaire had 26 questions for assessing the knowledge regarding blood donation. Every correct answer was given a score of 1, incorrect answer was given score of zero. Unanswered response was marked as 0. Validity of the tool was established by opinion of panel of experts. Suggestion of the experts was incorporated and tools were modified accordingly.

The reliability of the tool was tested through Kuder-Richardson formula 20. The reliability for the self-structured tool was found to be 0.72. Thus, tool was found to be reliable.

In present study data collection technique was structured interview schedule and data collection was done using self-structured knowledge questionnaire to assess the knowledge of general population regarding blood donation. Formal approval was taken from medical officer, PHC and written consent were taken from each subject who was participated in the study. Data was collected at PHC. 30 subjects were interviewed per day. Data collection from one subject took on the 30-35 minutes.

The data was collected in following manner-self-introduction and establishing rapport with the subjects, setting up of conducive atmosphere for data collection, subject was assured of the confidentiality of their data and Data was collected with the help of self-structured interview schedule.

RESULTS

The analysis of data is presented in the following section. For analysis and interpretation of the collected data, descriptive and inferential statistics were used. The data were summarized as mean, frequency, percentage and standard deviation. The chi square test was used to test the association.

Findings related to demographic variables of general population attending PHC

Table 1: Frequency and percentage distribution of subject according to demographic variables.

Variables	Frequency	Percentage (%)
Age (years)		
18 to 28	32	53.33
29 to 39	15	25
39 to 49	4	6.66
>50	9	15
Gender		
Male	33	55
Female	27	45
Marital status		
Married	54	90
Unmarried	5	8.33
Other	1	1.66
Religion		
Hindu	56	93.33
Muslim	4	6.66
Sikh	0	0
Christian	0	0
Other	0	0
Educational qualification		
Illiterate	7	11.66
Primary school	26	43.33
High school	14	23.33
Higher sec. school	3	5
Graduate and above	10	16.66
Occupation		
Govt. employee	7	11.66
Private employee / self-employee	23	38.33
Homemaker	16	26.66
Unemployed/ student / others	14	23.33
Total monthly income (Rs.)		
<5000	30	50
5000 to 10000	18	30
11000 to 15000	6	10
16000 to 20000	2	3.33
More than 20000	4	6.66
Type of family		
Nuclear	21	35
Joint	39	65
Extended/other	0	0
Blood group		
Yes	15	25
No	45	75
Blood group type		
A	5	33.33
B	7	46.66
AB	2	13.33
O	1	6.66
History of blood transfusion		
Yes	15	25
No	42	70
Don't know	3	5

The data presented in the Table 1 reveals that: 53% subjects were in age group of 18-28 years, whereas 25% were in age group of 29-39 years, 6.6% were in age group of 39-49 years. and 15% were above 50 years.

The 55% of subjects were male and 45% were female. 90% were married, 8.3% were unmarried and 1.6% were come under another group (divorced, widower, widow or separated). About 93.3% subjects were Hindus whereas 6.6% were Muslims.
Educational qualification 11.6% were illiterate, 43.3% were educated up to primary school, 23.3% subjects were high school passed, 5% were higher secondary passed and 16.6% were graduates.

About 11.6% were government employee, 38.3% were private/self-employee, 26.6% were homemaker, and 23.3% were belongs to other occupation.

The 25% of subjects were knowing about their blood group whereas 75% of subjects don't know.

About 33.3% had type A blood group, 46.6% had type B blood group, 13.3% had AB blood group and 6.6% had type O.

On an average 25% had history of previous blood transfusion in family, 70% subject had no previous blood transfusion and 5% subject didn't know.
Findings related to knowledge of the general population attending PHC DHAWA, Jodhpur, Rajasthan.

Knowledge regarding blood donation was assessed by self-structured interview schedule consisting of 26 questions After obtaining data of 60 samples, the grading of the score was as excellent (100%-81%), good (80-61%), average (60%-41%) and poor (below 40%) scoring.

Correct response is scored as 1, incorrect response is marked as 0, unanswered response is marked as 0.

Table 2: Knowledge level frequency, percentage, mean and standard deviation of findings.

Criteria to assess the knowledge level (%)	Frequency	%	Mean	SD
Excellent (81-100)	10	17		
Good (61-80)	21	35	15.73	4.43
Average (41-60)	20	33		
Poor (<40)	9	15		

Table 2 depicts that 33% of respondents had average knowledge, 15% had poor knowledge regarding blood donation. Only 17 % had excellent knowledge about blood donation.

Findings related to association between knowledge score and demographic variables

To determine the significant association between knowledge score of subjects with selected demographic variables, following research variables were selected: Age, gender, marital status, religion, educational status, occupation.

Table 3 depicts that there was no significant association of marital status, religion or educational qualifications of subject with level of knowledge at $p<0.05$ level of significance.

Table 3 also shows that there was significant association of occupation and gender with level of knowledge at $p<0.05$ level of significance.

Table 3: Chi-square value showing association of knowledge score of subjects with selected demographic variables.

Variables	Knowledge level				Chi-square	Table value	Degree of freedom	Significant/not significant at 0.05 level of significance
	E	G	A	P				
Age (year)								
18 to 28	4	11	12	5				
29 to 39	0	7	4	4	8.902	16.92	9	Not significant
39 to 49	1	3	0	0				
>50	1	4	4	0				
Gender								
Male	3	20	10	0	18.592	7.82	3	Significant
Female	3	5	10	9				
Marital status								
Married	5	22	18	9				
Unmarried	0	3	2	0	6.290	12.59	6	Not significant
Other	1	0	0	0				
Religion								
Hindu	6	24	19	7				
Muslim	0	1	1	2				
Sikh	0	0	0	0	3.307	7.82	3	Not significant
Christian	0	0	0	0				
Other	0	0	0	0				
Educational status								
Illiterate	1	1	3	2				
Primary school	1	8	12	5				
High school	2	9	2	1	19.186	21.03	12	Not significant
Higher sec. school	2	0	1	0				
Graduate and above	0	7	2	1				
Occupation								
Govt. employee	1	2	2	2				
Private employee/self-employee	1	15		1	27.478	16.92	9	Significant
Homemaker	0	1	9	6				
Unemployed/student/others	4	7	3	0				

Major findings

The 53% subjects were in age group of 18-28 years, whereas 25% were in age group of 29-39 years, 6.6% were in age group of 39-49 years and 15% were above 50 years.

The 55% of subjects were male and forty-five percent were female.

The 90% were married, 8.3% were unmarried and 1.6% were come under another group (divorced, widower, widow or separated).

Educational qualification 11.6% were illiterate, 43.3% were educated up to primary school, 23.3% subjects were high school passed, 5% were higher secondary passed and 16.6% were graduates.

About 11.6% were government employee, 38.3% were private/self-employee, 26.6% were homemaker, and 23.3% were belongs to other occupation.

As regard to family income per month, 50% of subjects had family income of less than rupees 5000, 30% subjects had rupees 5,000 to 10,000, 10% subjects had rupees 11,000 to 15,000, 3.33% subjects had rupees 16,000 to

20,000 and 6.6% subjects had more than rupees 20,000 family income per month.

The 25% of subjects were know about their blood group whereas 75% of subjects don't know.

About 33.3% had type A blood group, 46.6% had type B blood group, 13.3% had AB blood group and 6.6% had type O.

On an average 25% had history of previous history of blood transfusion in family, 70% subject had no previous blood transfusion and 5% subject don't know.

Findings related to Knowledge level frequency, percentage, mean and standard deviation of findings

17% of subjects had excellent knowledge, 35% had good knowledge about blood donation. 33% had average knowledge and 15% of respondents had poor knowledge about blood donation.

Findings related to association of knowledge score of subjects with selected variables

There was no significant association of knowledge score and age, marital status, religion, educational qualification of subjects at the level 0.05 level of significance.

Association of knowledge score and gender were found to be statistically significant (7.82) of subjects in study at the level 0.05 level of significance.
Association of knowledge score and occupation were found to be statistically significant (16.92) of subjects in study at the level 0.05 level of significance

DISCUSSION

This study was conducted to assess the knowledge regarding blood donation among general population attending PHC.

The study reveals that 35% people had good knowledge and 33% only had average knowledge regarding blood donation. The current results were supported by study conducted by Umakant et al on knowledge and attitude regarding blood donation among individuals aged 18-60 year in rural Pondicherry. After conducting the study, they found that 79.5% of subjects were aware that the blood could be donated, and only 14.8% of them knew about the correct frequency of blood donation.[15]

Limitation

The study was confined to a small number of samples which limit the generalization of the findings. The study was confined to persons attending PHC only.

CONCLUSION

The study findings revealed that there existed deficiency in knowledge of subjects regarding knowledge about blood donation. Awareness regarding blood donation in community need to be increased by undertaking IEC activities and targeted awareness campaigns. The community people can be counselled regarding voluntary blood donation by addressing knowledge deficit through education campaign and increase awareness of the need for donation.

Community with improved knowledge about blood donation will result in healthier and positive outlook towards blood donation which can ultimately lead to increased availability of life saving blood for the needy population.

Recommendations

On the basis of findings of study, it is recommended that: The study can be replicated on a large sample for generalization. A similar study can be conducted with experimental research approach.

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