Original Article**Knowledge, attitudes and practices related to blood donation in a selected population in Jaffna**

Ziyad S¹, Amarasingam S¹, Sangaralingam K¹, Gamage PK¹, Sosai ST¹, Kumar. R¹, Seneviratne D², Sooriyakumar, T².

¹ Faculty of Medicine, Jaffna, ² Teaching Hospital Jaffna

Abstract

Poor knowledge and negative attitudes among the public regarding blood donation have resulted in insufficient availability of blood and blood products for transfusion procedures in many clinical settings. This study aims to assess knowledge, attitudes and practices related to blood donation and their associated socio-demographic factors in Jaffna.

A descriptive cross-sectional study was carried out among service-users at the Motor Traffic Department, District Secretariat, Jaffna, between 12 noon and 4 pm during a six-week period. Data were collected through an interviewer-based questionnaire. Frequencies, proportions, and the Chi Square test were used to analyze the data with SPSS (v25). The critical level was set at 0.05.

A total of 300 service users participated; of them, most were females (59%), between 18 to 39 years (77%), with at least O/L qualifications (90%). Knowledge on eligibility criteria for blood donation was low compared to knowledge on risk behaviors that rendered them ineligible. Although an overwhelming majority (96%) believed that people should donate blood, only 21% had donated once in their lifetime. The most common reason for not having donated blood was that they had not been approached for blood donation (42%). Male gender ($p < 0.001$) and being employed ($p = 0.013$) were significantly associated with having donated blood.

Knowledge gaps exist even among a fairly educated population in Jaffna. Attitudes on blood donation seem favourable, although practices are poor. Blood donation campaigns should address

knowledge gaps and actively recruit the public for blood donation. Strategies should be developed to encourage voluntary blood donation.

Keywords

Knowledge, attitude, practice, blood donation, Jaffna

Background

Blood transfusion is a lifesaving clinical procedure in both routine and emergency situations. Many common conditions such as anemia, bleeding disorders, complications of childbirth, surgery and trauma require blood transfusion. The only source of blood products used in blood transfusion procedures are human donors; no substitute has yet been discovered. [1]

Voluntary donor blood is associated with a significantly lower risk of transmitting infections. [2] To ensure a continuous supply of safe blood and blood products, there needs to be a critical mass of voluntary blood donors, in turn, requiring a knowledgeable population with favorable attitudes and practices of donation. [3] The rate of blood donation in low- and middle-income countries is estimated to be 18 times lower than in high-income countries. [4] Myths, misperceptions and ignorance are known to instill fear, anxiety and an overall negative attitude towards blood donation. [2] Various sociodemographic factors, including gender, age, education and occupation, are known to be associated with knowledge, attitudes and practices regarding blood donation. [1, 2, 5]

In Sri Lanka too, the National Blood Transfusion Service relies 100 per cent on voluntary blood

Corresponding author : S. Ziyad, Email: shyaminaaziyad@gmail.com, <https://orcid.org/0000-0002-0153-4798>,

Submitted June 2021 Accepted November 2021

This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution and reproduction in any medium provided the original author and source are credited

donation from non-remunerated regular blood donors. [6] While some misconceptions, fears and knowledge gaps are identified among the public in some parts of Sri Lanka, overall rates of blood donation among eligible persons are known to be poor, where male gender, younger age, higher education and being employed are identified to be associated with the practice of donation. [5, 7, 8]

Experts in the health sector of the Northern Province report shortfalls in voluntary blood donation in Jaffna. While it has been suggested that citizens fear donating blood owing to myths and misconceptions, systematic studies on this topic have not been undertaken.

The District Secretariat Jaffna is accessed by citizens representing a wide social spectrum. The Motor Traffic Department in the Jaffna District Secretariat is usually visited by young and middle-aged persons applying for vehicle licenses from all parts of the district, and thus represents an ideal setting to capture the knowledge, attitudes and practices regarding blood donation among the age group eligible for donation in Jaffna. This study aims to assess knowledge, attitudes and practices related to blood donation and their associated factors among service users at the Motor Traffic Department of the District Secretariat, Jaffna.

Methods

This descriptive cross-sectional study was conducted amongst service users at the Motor Traffic Department of the District Secretariat, Jaffna, in 2020/2021. The required sample size was 377. Consecutive sampling was used to recruit 300 consenting adults less than 60 years accessing services at the Motor Traffic Department from 12 noon to 4 pm on weekdays during the 6-week data collection period. Data collection was terminated prematurely owing to the COVID-19 pandemic.

Data were collected by an interviewer-administered questionnaire developed by the investigators based on information from the National Blood Transfusion Service. [9] and World Health Organization. [10] Content and face validation were assessed

by a consultant hematologist and a consultant transfusion physician. The questionnaire was designed to elicit information on sociodemographic factors, knowledge, attitudes, practices and reasons for not donating blood. The questionnaire was translated to Tamil and checked against the English version by two bilingual members of the research team, and pre-tested on 10 persons visiting the Nallur Divisional Secretariat, Jaffna.

Data collection was carried out by the investigators in the waiting area of the Motor Traffic Department. The purpose of the research was explained prior to data collection and informed written consent obtained from the participants. Privacy was ensured owing to physical distancing requirements during the pandemic.

Data were entered into a password-protected personal computer and analysis was performed by using the Statistical package for Social Science (SPSS 25) software. Frequencies and percentages were used to describe the variables. The association between selected sociodemographic factors and practices was assessed using the Chi Square test. The critical value was set at 0.05. Tables and charts were used to present the data.

Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna, and written permission to collect data was obtained from the District Secretary of Jaffna.

Results

Sociodemographic characteristics of the sample

In total, 300 service users at the Motor Traffic Department participated in the study. The mean age of the sample was 31.3 years (SD 10.3) with a median of 29 years (IQR 23-38). The sample consisted mostly of females (n=178, 59%) between the ages of 18 to 39 years old (232, 77%), mostly Hindu (n= 241, 80%). With regard to education level and employment, 90% (n=269) had at least O/L qualifications, and a considerable proportion were employed (n= 137, 46%). Only 9 (3%)

reported being health care workers. Over half of the sample resided more than 10 km away from the Teaching Hospital Jaffna (n= 163, 54%). (Table 1)

Table 1. Sample characteristics (n=300)

Characteristic		n	%
Gender	Male	122	40.7
	Female	178	59.3
Age (years)	18-39	232	77.3
	40-60	68	22.7
Religion	Hindu	241	80.3
	Christianity	40	13.3
	Islam	18	6.0
	Buddhism	1	0.3
Educational level	Never been to school	2	0.7
	Grade 5 or below	4	1.3
	Grade 6 – 10	25	8.3
	O/L qualified	112	37.3
	A/L qualified ± diploma	115	38.3
	Bachelor's degree	38	12.7
Occupation	Postgraduate degree	4	1.3
	Student	81	27
	Housewife	79	26.3
	Employed	137	45.7
Healthcare worker	Retired	3	1.0
	Healthcare worker	9	3.0
Household monthly income (Rs.)	Not a healthcare worker	291	97.0
	< 20 000	70	23.3
	20 000-35 000	117	39.0
	35 001-50 000	73	24.3
Distance from Hospital	50 001-80,000	25	8.3
	> 80,000	15	5.0
	≤10 km	137	45.7
	>10 km	163	54.3

Knowledge regarding blood donation

In the sample, only 28% (n= 85) were aware of the correct eligible age group (18 years to 60/65 years), while 43% (n=129) was aware of the minimum weight (50 kg) to be a blood donor. Most

participants knew that pregnant mothers could not donate blood (n=228, 76%) but many were not of the knowledge that menstruating women were eligible to donate blood (n=244, 81%). A considerable proportion were aware that donors with common disease conditions such as diabetes mellitus (n=205, 68%) and hypertension (n= 196, 65%) could donate blood, while only 55 (18%) were aware that those with hyperlipidaemia could donate blood. Majority were aware of the groups of people who were ineligible to donate blood such as sex workers and their clients (n= 265, 88%), injectable drug users (n=265, 88%), those who have multiple sex partners (n=222, 74%), and those who arrive immediately after alcohol consumption (n=236, 79%) (Table 2).

Table 2. Knowledge on eligibility and risk factors (n=300)

		n	%
Eligible age group	Correct	85	28.3
	Incorrect	100	33.3
	Do not know	115	38.3
Minimum weight	Correct	129	43.0
	Incorrect	73	24.3
	Do not know	98	32.7
Pregnant mothers	Correct	228	76.0
	Incorrect	36	12.0
	Do not know	36	12.0
Menstruating women	Correct	56	18.7
	Incorrect	202	67.3
	Do not know	42	14.0
Diabetes mellitus	Correct	205	68.3
	Incorrect	47	15.7
	Do not know	48	16.0
Hyperlipidaemia	Correct	55	18.3
	Incorrect	178	59.3
	Do not know	67	22.3
Hypertension	Correct	196	65.3
	Incorrect	46	15.3
	Do not know	58	19.3
Sex workers and their clients	Correct	265	88.3
	Incorrect	21	7.3
	Do not know	14	4.3
Injectable drug users	Correct	265	88.3
	Incorrect	22	7.3
	Do not know	13	4.3

Having multiple sexual partners	Correct	222	74.0
	Incorrect	35	11.7
	Do not know	43	14.3
Alcohol consumers	Correct	236	78.7
	Incorrect	43	14.3
	Do not know	21	7.0

Attitudes regarding blood donation

In the sample, a large majority responded favourably towards the statements “people should donate blood” (n= 287, 96%) and “blood donation is a national duty” (n=252, 84%). In fact, 241 (80%) said they would like to donate blood in the future, and 266 (89%) believed they should motivate family and friends to donate blood. However, 130 (43%) said they would be willing to donate blood only in emergencies, while 119 (40%) preferred to donate only to family and friends.

Practices of Blood Donation

In the sample, only 64 (21%) had donated blood at least once in their lifetime (Table 3). Among them, 31 (48%) had donated blood at the blood bank, 19 (30%) had donated at a blood donation campaign, and 18 (28%) had donated at a mobile camp. Amongst the 64 ever donors, only 24 (38%) individuals had donated 3 or more times in their lifetime. Furthermore, when considering the last donation, only 21 (33%) had donated blood in the 12 months (Table 3).

Table 3. Practices of blood donation

		n	%
n=300			
Donor status	Ever donated	64	21
	Never donated	236	79
n=64			
No. of donations	≥ 3	24	38
	1-3	40	62
Time of last donation	≤ 1 year prior	21	33
	> 1 year prior	43	67

Reasons for not donating blood

Non-donors were asked the reasons for not donating blood as an open-ended question. Among them, the

most common reasons for not donating blood were that no one had asked them to donate blood (n= 98, 42%), they were not fit enough to donate blood (n= 58, 25%), they were scared of blood/needles (n= 41, 17%), and they feared that they may get sick or weak (n=34, 14%). Notably, only 6% (n= 13) of non-donors feared acquiring an infection while 5% (n=11) feared gaining weight after donating blood (Table 4).

Table 4 Reasons for not donating blood among non-donors (n=236)

Reason	n	%
No one asked me to donate	98	41.5
I am not fit to donate	58	24.6
I am scared of needles/ seeing blood	41	17.4
I fear that I may get weak or sick	34	14.4
I do not have time to donate blood	18	7.6
I fear that I may acquire an infection	13	5.5
I fear that I may gain weight	11	4.7
It is not a priority for me	9	3.8
I do not know where to go to donate blood	6	2.5
It is a painful procedure	6	2.5
I do not know about blood donation	3	1.3
I fear that I may age faster	1	0.4

Factors associated with having ever donated blood

The study found a significant association between gender and having donated blood, with males (39%) more likely to have donated than females (10%) ($X^2=36.21$, $df=1$, $p<0.001$). The currently employed (28%) were more likely to have donated blood than the unemployed (16%) ($X^2= 6.16$, $df=1$, $p=0.013$). However, there was no significant association between age, education level, income, history of transfusion in the family, distance of residence from hospital, and having had a mobile camp or blood donation campaign in the area ($p>0.05$). (Table 5)

Table 5 Factors associated with donor status (n=300)

		Donor status		X ² , df	p value
		Ever donated	Never donated		
		n (%)	n (%)		
Gender	Male	47 (38.5)	75 (61.5)	36.21, 1	<0.001
	Female	17 (9.6)	161 (90.4)		
Age (years)	18-39	48 (20.7)	184 (79.3)	0.25, 1	0.615
	40-60	16 (23.5)	52 (76.5)		
Employment	Employed	38 (27.7)	99 (72.3)	6.16, 1	0.013
	Unemployed	26 (16.0)	137 (84.0)		
Education level	<O/level	9 (29.0)	22 (71.0)	1.22, 1	0.269
	O/level or above	55 (20.4)	214 (79.6)		
Income	≤Rs. 50,000	52 (20.0)	208 (80.0)	2.07, 1	0.151
	> Rs.50,000	12 (30.0)	28 (70.0)		
History of transfusion in family	Yes	7 (15.2)	39 (84.8)	1.21, 1	0.271
	No	57 (22.4)	197 (77.6)		
Distance from hospital	≤10km	30 (21.9)	107 (78.1)	0.05, 1	0.827
	>10 km	34 (20.9)	129 (79.1)		
Mobile camp / blood donation campaign in the area	Yes	22 (22.0)	78 (78.0)	0.04, 1	0.842
	No	42 (21.0)	158 (79.0)		

Discussion

The sample was relatively young with a mean age of 31.3 (SD 10.3 years) and represented a fairly educated working population. Over half (52.3%) had educational qualifications above G.C.E Ordinary Level, while 45% reported current employment.

We identified several knowledge gaps regarding blood donation. Although participants were aware of the conditions that made individuals ineligible for donation, they were not as familiar with the eligibility criteria. Less than half the sample knew the eligible age group (28%) and minimum weight (43%) required for blood donation. Over 80% of the

sample responded that patients with hyperlipidemia (82%) and menstruating women (81%) could not donate blood. While this lack of familiarity with eligibility criteria may act as a barrier when one wants to volunteer for donation, misconceptions about menstruation may perhaps explain the low proportion of women in the group of blood donors.

A striking majority (96%) responded favorably that people should donate blood, that donating blood is a national duty (84%), and were willing to donate blood in the future (80%). This is in contrast to studies carried out in other settings where unfavorable attitudes were more common. For instance, a study from Saudi Arabia found that lack of altruism was a barrier for blood donation. [11] In Sri Lanka, a study among donors from Galle found that the main reason for lack of re-donation was that there were no benefits of donation for the donors. [8] In Jaffna too, a substantial proportion in the present study were willing to donate only in an emergency (43%), and to family and friends (40%), suggesting that fewer may act on their stated intention to donate in the future.

Indeed, in the present study, 236 participants (79%) had never donated blood. Amongst those who did, only 24 (38%) individuals had donated 3 or more times in their lifetime. Furthermore, when considering the last donation, only 21 (33%) had donated blood in the 12 months. This is consistent with the findings of previous studies that suggest that favourable attitudes do not necessarily drive the public to donate blood. Positive attitudes not being reflected in blood donation practices has been shown to be a common theme in resource-poor settings. [3] A study from Batticaloa among the public concluded that although knowledge and attitudes on blood donation were at a reasonably good level, various barriers impeded donation. [5]

The most common reason cited by participants for not donating blood was that they were not approached for blood donation (42%). This is

similar to a study from Saudi where the majority of non-donors (42%) stated that they had not donated blood because nobody approached them. [11] This may indicate the need for blood donation campaigns to actively recruit eligible members of the public, especially the younger working population, for blood donation in Sri Lanka.

We found a significant association between having donated blood and gender ($p < 0.001$), where males were more likely to have donated blood. As most participants believed that menstruating women were not eligible for blood donation, taken together, our findings suggest that blood donation campaigns may need to target women specifically through gender-specific messages. The association between gender and blood donation varies by context where women are more likely to donate in some countries. [12] but less likely to do so in most settings. [13, 14]

Employment was found to be significantly associated with blood donation ($p = 0.013$) in the present study, where the employed were more likely to have donated. As we only carried out bi-variate analysis, this could be a result of confounding with education level or income. On the other hand, this result may also reflect the fact that blood donation campaigns are often organized in work settings in Sri Lanka.

As with any study, we have our limitations. The sample was recruited from the Motor Traffic Department at the Jaffna District Secretariat. Although this study population may be representative of those eligible for blood donation, service-users are likely to own a vehicle. This means that our results may not be applicable to disadvantaged communities who may not own a vehicle. Data collection was carried out in the midst of the Covid 19 crisis with various disruptions. Lastly, confounding factors were not taken into account as we performed bivariable analysis.

Conclusion

This study identified certain knowledge gaps and negative attitudes on blood donation that may prevail in the Jaffna community. While over two-thirds of the sample had never donated blood, being male and employed were found to be associated with blood donation. Over a third of participants mentioned not being asked to donate blood as a reason. While a deeper understanding of the eligibility criteria for blood donation may motivate the public to donate, blood donation campaigns may need to target women. Due to the present Covid-19 pandemic situation when donors are unwilling to interact with healthcare services, encouraging blood donors and combating myths surrounding it is even more important.

Conflicts of interest

There are no conflicts of interest.

Author contributorship

All authors contributed to the planning, conduct, and writing up of the research.

Ethics approval

Ethics approval was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna.

References

1. Rathod GB, Parmar P. Comparison regarding knowledge, attitude and practice of blood donation between health professionals and general population. *Int J Curr Res Rev* 2012; 04: 114-120.
2. Dubey A, Sonker A, Chaurasia R, Chaudhary R. Knowledge, attitude and beliefs of people in North India regarding blood donation. *Blood Transfus* 2014; 12: 21 – 27.
3. Lownik E, Riley E, Konstenius T, Riley W, McCullough J. Knowledge, attitudes

and practices surveys of blood donation in developing countries. *Vox Sang* 2012; 103: 64-74

4. Majdabadi HA, Kahouei M, Taslimi S, Langari M. Awareness of and attitude towards blood donation in students at the Semnan University of Medical Sciences. *Electron Physician* 2018; 10: 6821–6828.
5. Madhuwanthi LDM, Kajenthini K., Chandrika JPM, Jayarathna APGSM. Knowledge, attitude and barriers for donating blood voluntarily among people aged between 18-55 years living in selected Grama Niladhari Divisions in Manmunaipattu Divisional Secretariat Division, Batticaloa, Sri Lanka. *Health Care Digital Library, Eastern University* 2020, <http://dlfhcs.esn.ac.lk/handle/123456789/707> (Accessed on November 15, 2021)
6. National Blood Transfusion Service (2016). About NBTS. <http://www.nbts.health.gov.lk/index.php/about/about-nbts> (Accessed on November 15, 2021)
7. Sumali GAK, Illeperuma RP. A study on knowledge, attitude and practice of blood donation among undergraduate students in the University of Peradeniya. *Prim Health Care* 2017; 7: 60.
8. Karunanayake A, Weerasuriya M, Karunathilaka A. Knowledge, attitudes and practices (KAP) among blood donors from southern Sri Lanka. *Kotelawala Defence University International Research Symposium Proceedings* 2014: 79–85.
9. National Blood Transfusion Service (2016). Who can donate blood. <http://www.nbts.health.gov.lk/index.php/donate-blood/donate-blood-2> (Accessed on November 15, 2021)
10. World Health Organization 2020. Blood safety and availability. <https://www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability#:~:text=The%20median%20blood%20donation%20rate,people%20in%20low%20income%20countries> (Accessed on November 15, 2021)
11. Alam M, El Din Masalmeh B. Knowledge, attitudes and practices regarding blood donation among the Saudi population. *Saudi Medical Journal* 2004; 25(3):318-21.
12. Öhrner C, Kvist M, Blom Wiberg K, Diedrich B. Why do young men lapse from blood donation?. *Vox sang.* 2019;114(6):566-75.
13. Bala SS, Handoo S, Jallu AS. Gender differences in blood donation among donors of Kashmir Valley. *IOSR J Dent Med Sci.* 2015;14(2):116-9.
14. Alfouzan N. Knowledge, attitudes, and motivations towards blood donation among King Abdulaziz Medical City population. *International Journal of Family Medicine* 2014; <https://doi.org/10.1155/2014/539670>. (Accessed on November 15, 2021)