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Original article

Measuring public awareness about blood donation in Assir, South-Western Saudi Arabia

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ABSTRACT

Objectives. – Blood transfusion is a life-saving measure in many acute and chronic conditions. Voluntary blood donation by healthy donors has been promoted by the World Health Organization (WHO) to ensure the availability of safe blood. Difficulty in the recruitment of donors and their retention is a problem faced in most populations. A paucity of research to identify barriers to blood donation in the Southwestern region of Saudi Arabia prompted us to explore this important public health issue.

Materials and methods. – A cross-sectional survey was performed using a pre-tested, structured, self-administered questionnaire comprising of questions on demographical details, awareness regarding blood donations, perceived barriers to blood donations, attitude towards blood donation, etc. was distributed to the general population in Assir region through one to one contact in big malls, hospital area as well as electronically through social media. The data thus collected was statistically analysed using appropriate tests.

Results. – A total of 844 subjects were surveyed. Most of the respondents (65.0%) reported not having donated blood in the past. The blood donation was found to have a significant relationship (≤ 0.05) with age, gender, occupation, and education status. Roughly, 40.0% of the respondents suggested that blood donation could be promoted by raising public awareness.

Conclusion. – Gaps were identified in the awareness of the studied population regarding blood donation. Specific awareness drives may help overcome these barriers to voluntary blood donation.

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1. Introduction

Blood transfusion is the lifeline for trauma patients, patients undergoing major surgeries, patients of hematological malignancies and blood illnesses such as thalassemia and sickle cell anemia and hemoglobin deficiency due to any other cause [1]. Procurement of adequate safe blood is a challenge that many hospitals regularly face [2]. Unavailability of safe blood at the right time can cause unnecessary loss of lives. Blood safety is essential to prevent transmission of serious infections such as Human Immunodeficiency Virus (HIV) and Hepatitis. Hence, blood donation is perceived as an act of solidarity mostly done on a volunteer basis and with-

out remuneration [3]. Global public health agencies such as the World Health Organization (WHO) have advocated for enhancing the capacity of societies for voluntary and unremunerated blood donation [4].

Blood cannot be stored for prolonged periods; neither could it be prepared synthetically [5]. Regular blood donation by healthy citizens is essential to meet the demand for this life-saving element in any society. According to the World Health Organization, blood donation by 1.0% of the population is generally sufficient to meet the population's safe blood requirements [4].

Blood donors may be classified into voluntary donors, family replacement donors, and rewarded or paid donors. Paid donors are discouraged due to the increased risk of blood-borne infection as well as the overall quality of the donated blood [6]. A right proportion of donated blood is received from family donors [7,8]. However, procuring blood for patients with rare blood groups could

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be an even serious issue [9]. Motivating healthy citizens to donate blood is a challenge in most countries [10]. Sections of the populations may have certain apprehensions and concerns about donating blood [11].

Another problem is that of rejection of deferral of blood donation. There could be serious reasons for the refusal of blood from a donor, but a previous study [12] found that deferral could be due to causes such as lack of sleep, cupping, low blood pressure, etc. Another study found that deferrals could be due to such causes as drug use, hypertension, anemia, etc. [13]. Many of the deferrals could be prevented by improving awareness of the populations.

Kingdom of Saudi Arabia has made significant progress in the way of ensuring safe blood for its citizens. In a span of three decades, blood requirement has shifted from imported blood to local voluntary donors [14]. This has been possible because of the highly efficient Blood Transfusion Service (BTS) as well as awareness activities to reach out to prospective donors [15].

Blood donation per 1000 population in Saudi Arabia stands at 13.8 per 1000 [16] of the population, which is low as compared to the median blood donation rate of 32.6 per 1000 for high-income countries [17]. This study plans to understand the different factors that affect a healthy adult's motivation to donate blood as well as the barriers to blood donation. There have been no similar regional studies in the past more than 15 years in this regard [18]. Also, as the Southern region of Saudi Arabia is one of the regions most affected by the hemoglobinopathies [19], the need for blood transfusion is likely greater in this region. This study conducted in the Assir region has a good sample size of 844 subjects and the findings shall hopefully be useful for public health policy making as regards the availability of safe blood.

2. Materials and methods

2.1. Study design

A purposely-constructed and pre-tested questionnaire, which was developed on the basis of the review of the literature was used for data collection. The reliability of the questionnaire was calculated using Cronbach's alpha. Face validity was established with the help of subject experts and few respondents. This process was performed in the pilot testing stage.

The questionnaire contained questions covering the study objectives viz. demographical information, awareness, and practices regarding blood donations, perceived barriers to blood donation, and attitude towards blood donation. Different subsets of the population in the region were approached at hospitals, large malls, as well as electronically through social media. The final sample size that formed the part of the current research comprised of 844 respondents.

2.2. Data analysis

Data were analyzed through SPSS ver.20. Descriptive statistics were obtained; the χ^2 test was used to measure the significant differences. Descriptive results were summarized as a percentage. *P*-value of less than 0.05 was considered as statistically significant.

2.3. Ethical consideration

Ethical approval was obtained from the Research Ethics Committee, College of Medicine, King Khalid University before the commencement of the study.

3. Results

After the data were collected, the internal consistency and reliability of the questionnaire were assessed. The Cronbach alpha coefficient was found to be 0.89 (Table 1), which is greater than the base estimate of 0.7 [20].

As per the responses, nearly 65.0% (306) of the respondents had not donated the blood in the past, while 35.0% had reported having donated blood in the past (Fig. 1).

Possible factors that may influence blood donation viz. age, gender, educational level, and occupation, were evaluated as depicted in Table 2. Out of a total of 844 respondents, 66.0% were males, while 34.0% were females. Saudi nationals comprised 98.5% of the sample. Most of the respondents (82.0%) belonged to the age group 18–40 years, while people aged more than 40 years comprised 15.0% of the sample.

As regards the educational level of the survey participants, 71.0% reported having attended university, while 23.0% have got below university education. Participants with advanced university qualifications represented only 6.0% of the total respondents. A good number of respondents comprised of students (53.0%), followed by health professionals (10.0%), military employees (7.0%), private sector employees (6.0%), and those were reporting having other occupations (24.0%).

Table 1
Reliability of the questionnaire.

Cronbach alpha	0.89
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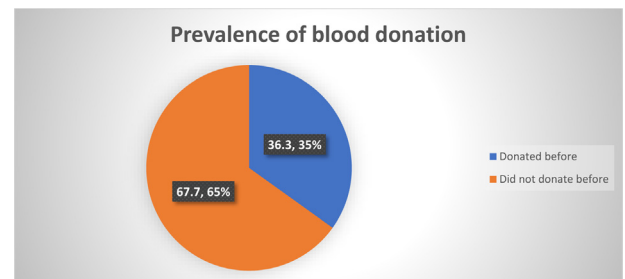


Fig. 1. Blood donation prevalence. The graph illustrated that 65.0% of the participants in the study had not donated the blood before, while 35.0% had donated blood.

Table 2
Demographic description.

	Frequency	Percentage
Nationality		
Non-Saudi	13	1.5
Saudi	831	98.5
Gender		
Female	287	34.0
Male	557	66.0
Age		
18–40	690	81.8
Less than 17	31	3.7
More than 40	123	14.6
Education		
Below university	194	23.0
Higher education	51	6.0
University	599	71.0
Occupation		
Health practitioner	84	10.0
Military	60	7.1
Other	203	24.1
Private sector	48	5.7
Student	449	53.2

Table 3
Comparisons of blood donation prevalence with demographical variables.

	Blood Donation		Total	P-value
	No	Yes		
Age				
18–40	462	228	690	0.001
Less than 17	29	2	31	
More than 40	47	76	123	
Awareness session regarding blood donations				
No	488	241	729	0.001
Yes	50	65	115	
Gender				
Female	262	25	287	0.001
Male	276	281	557	
Occupation				
Health practitioner	42	42	84	0.001
Military	17	43	60	
Other	133	70	203	
Private sector	24	24	48	
Student	322	127	449	
Education				
General education	132	62	194	0.001
Higher education	19	32	51	
University	387	212	599	

The Table 3 shows that blood donation prevalence has a significant relationship with occupation status, education status, gender, and age groups. A small percentage of the subjects had attended awareness sessions related to blood donation, and those who had attended such sessions were more likely to donate blood ($P < 0.001$). Females were less likely to donate blood as compared to males ($P < 0.001$).

The respondents were questioned about their perception of factors that may affect blood donation. Forty percent (40.0%) of the subjects believe that blood donation would improve by increasing awareness, 38.0% believed that blood donation could increase by better communication between blood banks and donors, 18.0% believed that it could increase by providing incentives and rewards, and 4.0% believed it could increase by other means (Fig. 2).

The identified barriers to blood donation in our study were lack of interest (30.6%), hemophobia (22.5%), followed by a busy work schedule (18.0%). Other factors identified were diseases, fear of complications of blood donations, and lack of knowledge (Fig. 3).

4. Discussion

The availability of healthy donors for blood transfusion is a major challenge in major societies. A number of factors affect the practice of voluntary blood donation viz. level of knowledge, attitudes, and beliefs [14]. In our study, only 35% of the subjects had donated blood in the past. Lack of interest, hemophobia, and busy work schedule were identified as the major barriers to blood donation in our study. Similar studies have identified barriers to blood donation such as fear of needles, inconvenience, laziness, pain, fear of fainting, lack of time, never thought about donating, difficulty in accessing blood donation centre, etc. [21–23].

The demand for blood transfusion is high in Saudi Arabia due to a high rate of road traffic injuries, besides regular need in health services. Thus, blood donation represents an essential issue in the health system in Saudi Arabia. The main goal of this study is to measure the awareness level regarding blood donation among the populations in Saudi Arabia and to identify the major obstacles and barriers.

In our study, 35.0% of the respondents reported having donated blood in the past. Though this percentage is in line with findings from other studies in Ethiopia [24] (35.0%) and Jordan [25] (29.0%), it is lesser as compared to most other studies conducted in Saudi Arabia. A study conducted in 2014 in central Saudi Arabia

reported a blood donation prevalence of 53.0% [26], while another study conducted in Hail in the year 2018 reported a prior blood donation prevalence of 50.0% [27]. Going back in the past, another study [15] conducted in Riyadh amongst the general population in 2005–2006 reported a blood donation prevalence of around 34% while another study [18] conducted in Najran in 2003 reported a blood donation prevalence of around 58%. In a study [28] conducted amongst students in Jeddah in the year 2013, just around 20% of the subjects reported having donated blood previously. In another study [29] conducted amongst health professions, students in Jeddah, in 2014–2015, around 30% of the respondents reported having donated blood. Though it appears there is an increase in the blood donation amongst the population over time, there is no definite pattern. This could be due to the selection of a population for the study and setting in which the study is conducted, sufficient details of which could not be found in the research publications.

The sample in our study had a preponderance of the age-group 18–40 years, with more than 82% belonging to this age group. In a study conducted in Riyadh [15] mentioned earlier, it was found that the age group 15–30 years were least likely to donate blood. The low rate of prior blood donation in this study could be in part because of the predominance of this age group in our sample. The reasons behind this reluctance to donate blood in this age group need to be understood in more detail.

In our sample, around 71% of the respondents reported having attended a university. As this was conducted in the city area malls, hospitals and through social media, it is expected that a great majority of the respondents are city dwellers and have a higher educational level as well a greater exposure to health communication materials as compared to populations living in rural areas or those not using the social media and the internet. Though the study setting in this study is somewhat similar to the other studies mentioned in this paper, the actual awareness regarding blood donation at the population level might be lower than that measured by the study, which is a matter of concern.

One of the important findings of this study was that those who had attended awareness sessions were more likely to donate blood ($P < 0.001$). This assumes significance as in other similar studies those who did not ever donate blood cited that not being aware of the need for blood donation. In the Riyadh study [15], 69.5% of those who had not donated previously reported that they were not aware if the blood banks needed blood. Likewise, in another study [18], around 43% of subjects reported their not being approached

Factors Promoting the Blood Donation

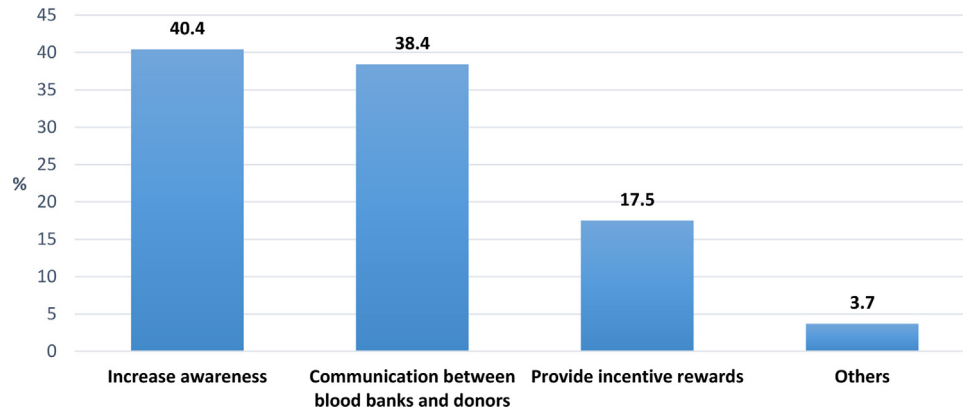


Fig. 2. Factors promoting blood donation. Increased awareness, in addition to the communication between blood banks and prospective donors, may increase voluntary blood donation.

by anyone to donate blood as the reason for them having not donated blood. Apart from that, around 40% of the subjects in our study believed that the blood donation rate could be improved by increasing awareness, and around 38% believed that establishing communication between blood banks and donors could also improve the donation rate. The level of awareness may be increased by spreading the culture of blood donation among citizens as well as by launching camps and field visits in public areas such as in parks, shopping centers, and universities. Besides, the media, in all its forms, should be competent in highlighting the significance of this issue and emphasizing the requirement for volunteers to cover the shortage of blood donation. Mobile blood collection vans make it easy for citizens to donate blood [26]. However, the number is still much lower compared with blood banks located in the

local hospitals, due to communication and awareness barriers. This obstacle should be tackled by better communication and cooperation between blood banks and the public. Social media can also be utilized to improve blood donation practice [30].

In an attempt to identify the potential factors that may contribute to raising the motivation of the community towards blood donation, a question was asked in our study about the main motivators for blood donation. Most of the respondents in our study believe that increased awareness level alongside better communications between the public and blood banks may enhance blood donation. Only around 18% of the respondents believed that blood donation could be improved by providing incentives. In a study [21] conducted in Riyadh in 2013, 31.5% of the respondents believed that token gifts could be a motivating factor, and 81% of all the

Possible Barriers of Blood Donation

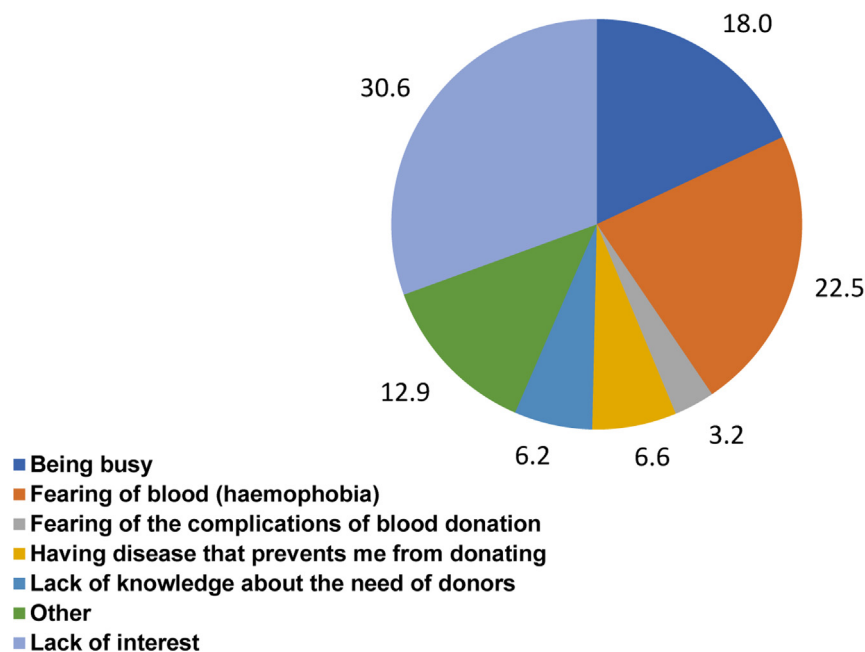


Fig. 3. Barriers to blood donation. The bar chart shows that the lack of interest in donating blood is a significant barrier, followed by hemophobia. Being busy also constitutes a large percentage indicating accessibility issues.

respondents voted for a day off as an incentive to promote donation. Around 79% of the subjects in the same study [21] were of the view that mobile donation caravans in public areas can increase the blood donation rate. In other studies also many motivators like one day off, an easily accessible mobile blood bank, gifts, paying money [14], better education campaigns to allay fears about donating [21], general altruism, social responsibility, and influence from friends [22] play a role in promoting blood donation.

Amongst many studies done amongst blood donors in Saudi Arabia, it was found that altruism and religious values were the most important motivating factors for the donor [14,26,31]. In a survey of blood donors in Tunisia [32], which is a Muslim majority country, it was found that the most important motivating factors were solidarity (69%) followed by religious values (21%). The respondents identified an act of altruism, such as blood donation, as one recommended by their religion. In another study in Greece, it was found that the two most important motivating factors were the assurance of future blood availability of blood for themselves and their family, followed by paid leave from work [33].

Other identified barriers to blood donation in our study were lack of interest, fear of the sight of blood, and busy work schedules which were cited by around 30%, 22%, and 18%, respectively. A small percentage of respondents also cited fear of diseases, fear of complications, and lack of knowledge as the factors behind any person not donating blood. Some people consider themselves unfit to donate blood because of the perception of being unfit. Based on these impressions, awareness drives could be created, targeting the specific segments.

In a similar study conducted in Riyadh [26], lack of time was cited as the major reason (52%) followed by difficulty in accessing the blood donation set up (34%), fear of anemia (22%) fear of needle (12%) fear of the sight of blood (8%). In the same study, fear of anemia was the second most important reason (36%) for not donating blood amongst the females. In another study in Ghana [8] conducted amongst first-time donors and repeat donors, the main reason cited as a barrier to blood donation was lack of privacy during pre-donation screening (54.6%) followed by a concern that their donated blood may be sold (50.9%). These concerns were quite different from those found in our study as well as in the review of literature pertaining to Saudi Arabia, which could be due to the relative absence of corruption in Saudi Arabia. Fear of weakness (35.7%), fear of needles (34.1%), and convenience factors (36.3%) as barriers were the other reasons cited. Fear of contagion and the absence of reward were the other major factors cited by 40% and 39% of the subjects in the Ghana study mentioned above.

In our study, females were less likely to donate blood ($P < 0.001$). This finding is similar to other studies in Saudi Arabia. In a study from Riyadh [21], it was found that males had a significantly better attitude towards blood donation as well as a tendency to donate blood. Another study conducted in Riyadh [26] in 2013 cited females as being significantly less likely to donate blood. As much as there was a less favorable attitude to blood donation amongst females as compared to males, females also cited an inability to reach the blood banks as one of the reasons for their not being able to donate blood. Another study from Pakistan [34] also indicated that the females were less likely to donate blood. However, a study conducted in Spain [35] found that females were more inclined to donate blood than men.

One of the objectives of this research was to study the feasibility of creating a database of volunteers of blood donation containing their blood groups and contact numbers to contact them in an emergency. However, the participants were not willing to share their details for such a database. This could be due to factors such as fear of misuse of data or the person not willing to be disturbed during work or holidays. Essentially this is due to a lack of motivation and realizing the life-saving significance of blood donation.

5. Conclusion

Our results show that the level of awareness about blood donation is low. Targeted campaigns to increase the awareness of the populations regarding the life-saving potential of safe blood, as well as to allay anxiety and fears related to blood donation, can be helpful. Altruism and a sense of religious duty have been observed as a motivating factor in other studies in Saudi Arabia and other Muslim populations, which may make it easy to recruit donors if more efforts are made to approach them. Increasing the ease of the blood donation process by way of mobile donation camps may help reach out to more potential donors.

Contribution

Mohammad M Alam – Validation, review & editing.
 Ahmad M Alalmi – Data collection and analysis.
 Hasan A Alshorfi – Conceptualization, methodology.
 Saud M Al Oudhah – Conceptualization, methodology.
 Ali A Asiri – Data collection and analysis.
 Mofareh A Asiri – Formal analysis, validation.
 Mohammad T Ahmad – Validation, review & editing.
 Hassan Otfi – Conceptualization, original draft preparation, & supervision.

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Disclosure of interest

The authors declare that they have no competing interest.

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