



Original Research

## Factors influencing blood donation

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### ABSTRACT

**Objectives:** Blood donation for transfusion as a life-sustaining procedure and an integral part of health system can save lives and improve health of recipients. The aim of the study is to explain volunteer and repeated donation motivating factors and barriers among non-donors in Kabul, Afghanistan.

**Material and Methods:** A comparative cross-sectional study among blood donors and non-donors was conducted using the convenience sampling method in Kabul, Afghanistan in 2020. Data were managed and analyzed using Epi Info version 7.2.1.

**Results:** From a total of 495 study participants, 244 (49%) were donors and 251 (51%) were non-donors with mean age of  $33.19 \pm 10.1$  and  $30.31 \pm 12.01$ , respectively. Among donors, 151 (62%) were volunteers and almost half of them, 121 (49%) donated their blood for the 1<sup>st</sup> time. Willingness of Allah as motivating factor was reported among 171 (70%) of donors and associated with volunteer ( $\chi^2 = 44.5, P < 0.001$ ) and repeated donation ( $\chi^2 = 10.89, P < 0.001$ ). In addition, rescuing someone's life was stated by 70 (29%) of donors and only associated with repeated donation ( $\chi^2 = 6.01, P < 0.01$ ). As barrier, 120 (48%) of non-donors were concerned on health risks of blood donation with an association found with willingness to donate blood in the future among this category ( $\chi^2 = 22.56, P < 0.001$ ).

**Conclusion:** Among volunteer donors, Willingness of Allah was the most prominent motivating factor while along this factor, rescuing someone's life was mostly reported among repeated donors. Concerns about health risks of blood donation were the highest reported barrier among non-donors in contrast to other barriers. Religious and altruistic factors motivated blood donors to volunteer and repeated donation while misinformation about blood donation hindered this effort. Relying on religious informative channels could help in the development and sustaining volunteer donors' pool in Afghanistan.

**Keywords:** Blood donation, Voluntary donation, Motivator, Barrier, Afghanistan

### INTRODUCTION

Blood donation for transfusion as a life-sustaining procedure and an integral part of health system can save lives and improve health of recipients.<sup>[1]</sup> Donated blood in terms of autologous (later transfusion for donor) and allogenic (later transfusion for others) transfusions have many indications including management of pregnancy and delivery-related complications, congenital blood disorders, injuries, and severe childhood anemia.<sup>[2]</sup> Globally, approximately 118 million blood donations are performed each year with high-income countries leading this endeavor contributing in 40% of total global blood donations. In addition, the whole blood donation rate as an indicator of blood general availability shows a median donation rate of 31.5/1000 people in

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high-income countries in contrast to only 5 donations/1000 people in low-income countries.<sup>[3]</sup>

Usually, there are three types of blood donors: Volunteer donor, family/replacement donor, and paid or commercial donors. The World Health Organization recommends that all countries should adopt the voluntary non-remunerated blood donation strategy and maintain its sustainability for all blood products through volunteer non-paid donors. Most of the developed nations have adopted this strategy and are self-reliance on all blood products. However, the challenges on the path of volunteer donation have been visible in low-income and developing countries.<sup>[4]</sup> Therefore, exploring motivators and barriers of volunteer blood donation has been approached throughout these countries. A study conducted in Iran on motivational factors of volunteer blood donation revealed that majority of blood donors were driven by altruistic factors such as believing God and rescuing someone's life.<sup>[5]</sup> The same altruistic motivators have been explored in study conducted among young adult students in India. In addition, findings of this study highlighted the fear of needle prick and feeling weak as major barriers among non-donors.<sup>[6]</sup> Furthermore, non-donors in Pakistan believed weight loss or gain, fear of needle prick, and adverse effects of blood donation as major barriers of blood donation.<sup>[7]</sup> In addition, a study conducted in Ghana reveals rescuing the life of someone in need may motivate the study participant to blood donation as well as highlight good behavior of blood bank staff.<sup>[8]</sup> However, among other motivators receiving incentives were reported by study participants in Nigeria.<sup>[9]</sup>

Given the high maternal mortality associated with post-partum hemorrhage (638 deaths/100,000 live births) and injury-related mortality, there is an extensive need for sufficient and safe blood supply in Afghanistan.<sup>[10,11]</sup> This demand could be responded to by volunteer blood donation efforts. The preliminary data from the Central Blood Bank in 2019 show that only 42% out of all blood donations were voluntary. There is a paucity of information in all aspects of health care including blood donation in the country. Furthermore, very few studies reflect the motivational factors and barrier on blood donations in Afghanistan. Therefore, to bridge this gap of knowledge, this study is conducted to explore the motivational factors and barriers for volunteer blood donation in Kabul while exploring motivating factors for repeated blood donation as well. The findings of this study will help to understand the facilitating and deterrent factors of voluntary blood donation and to compare the sociodemographic differences between volunteer blood donors and non-volunteer blood donors. The policy implications that come out of this study will guide the central blood bank leadership/Ministry of Public Health (MoPH) to refine its strategic interventions for promoting voluntary blood donation in the country. As this is the first study on

blood donation in Afghanistan, it would be a foundation for more researchers in this priority area.

## MATERIAL AND METHODS

A total of 495 blood donors and non-donors were studied through a comparative cross-sectional study in Kabul, Afghanistan during 2020 to evaluate the motivators and barriers for each category, respectively. For this study and considering the current available literature body, blood donors were defined as those individuals who had the history of blood donation for transfusion of different blood products while non-donors were those who had not donated blood even once in their lifetime till date of study. Blood donors and non-donors were recruited through convenience sampling from the Central Blood Bank and Central Polyclinic, respectively. Those individuals who visited Central Poly Clinic for treatment purposes were selected as non-donors upon assessing their blood donation history. Males and females older than 18 years and giving consent to participate were included in this study for both categories while companions of blood donors were excluded. The study tool was designed to assess the utmost motivators for blood donors while finding out the factors that can hinder the blood donation efforts among non-donors. Data were collected through face-to-face interview upon seeking the consent of participant. Collected data were then entered and analyzed in Epi Info version 7.2.1. Numbers and percentages were used to represent categorical variables while mean  $\pm$  standard deviation was applied for continuous variables. Chi-square test was used accordingly whenever required with pre-determined alpha level of 0.05 and 95% of confidence interval. The protocol for this study was reviewed and approved by the Institutional Review Board (IRB) of Afghanistan National Public Health Institute, MoPH of Afghanistan with ethical IRB code A.0721.0334.

## RESULTS

From the total of 495 participants of this study, 348 (70%) were male and 147 (30%) were female with a mean age of  $31.73 \pm 11.56$ . More than one-third of study participants, 341 (69%), had the ability to read and write while 385 (78%) came from urban settings. In addition, 307 (62%) had average economic status compared to good 45 (9%) and poor 30 (6%). In total, 244 (49%) had the history of blood donation while 251 (51%) did not donate at least once [Table 1].

Almost half of the blood donors, 121 (49%), donated blood for once compared to another half. Almost one-third of the donors, 151 (62%), were volunteers compared to 93 (38%) of non-volunteer. Among blood donors, 240 (98%) had the will to donate blood in the future. More than two-thirds of blood donors, 173 (70%), believed the Willingness of Allah as one of the blood donation motivators while for 70 (29%) rescuing

life was driving factor. Receiving information from close relatives, 49 (20%), followed by seeing promotional posters and advertisements in television 30 (12%) were among the sources of information regarding blood donation among all donors. In addition, 230 (94%) of blood donors were satisfied with the behaviors of Central Blood Bank staff [Table 2].

However, among non-donors, only 194 (77%) had the willingness to donate blood in the future. Apparently, 181 (72%) of these non-donors stated that they will as volunteer act while remaining 70 (28%) believed that they will be required for involuntarily donation (e.g., for family or relatives). Almost half of non-donors, 120 (48%) believed that blood donation can cause adverse health effects while 70 (30%) did not face with the need to donate blood. However, 24 (9%) of non-donors cited other barriers such as lack of time and medical doctor advice as well. In addition, among non-donors, 60 (23%) believed that blood donation can cause side effects including hypotension, health problems, and sexual weakness [Table 3].

The association of blood donation history was found to be statistically significant with gender ( $\chi^2 = 43.4$ ,  $P < 0.001$ ) and marital status ( $\chi^2 = 11.7$ ,  $P < 0.001$ ). Among donors, 205 (84%) were males while considering marital status, 188 (77%) of donations were made by married category. However, no statistical significance was found regarding blood donation history based on level of education and residency setting [Table 4].

Among blood donors, the motivators for volunteer donation and repeated donation were sought upon analysis. The motivator of Willingness of Allah in blood donation was found to be significantly associated with volunteer and repeated donation ( $\chi^2 = 44.5$ ,  $P < 0.001$ ) and ( $\chi^2 = 10.89$ ,  $P < 0.001$ ), respectively. Half of volunteer donors 129 (52%) accounted Willingness of Allah as motivating factor while almost four-fifths of repeated donors, 98 (79%) were driven by mentioned factor. No other motivators except donations for relatives ( $\chi^2 = 122.1$ ,  $P < 0.001$ ) were found to be associated with volunteer donation. However, rescuing someone's life ( $\chi^2 = 6.01$ ,  $P < 0.01$ ) and medical doctors' advice ( $\chi^2 = 3.93$ ,  $P = 0.04$ ) were significantly associated with repeated donation. Among those blood donors who believed rescuing someone's life as motivating factor, 44 (63%) were repeated donors while from a total of 62 donors who believed medical doctors' advice as their motivating factor, 38 (61%) of them were repeated donors. However, other motivators were not found to be statistically associated with repeated donation [Table 5].

In addition, factors influencing the will to donate blood in the future were assessed along with volunteer will among non-donors of this study. The barrier of health risks of blood donation had a significant association with willingness to donate blood in the future and doing it voluntarily among non-donors ( $\chi^2 = 22.56$ ,  $P < 0.001$ ) and ( $\chi^2 = 19.15$ ,  $P < 0.001$ ), respectively. From those non-donors who did not have the

**Table 1:** Sociodemographic characteristics of blood donors and non-donors.

Characteristic	Donors (n=244) Number (%)	Non-donors (n=251) Number (%)	Total
Age	33.19±10.1	30.31±12.01	
Sex			
Male	205 (84)	143 (57)	348
Female	39 (16)	108 (43)	147
Marital status			
Single	56 (23)	93 (37)	149
Married	188 (77)	158 (63)	346
Level of education			
Literate	167 (68)	174 (69)	341
Illiterate	77 (32)	77 (31)	154
Economic status			
Good	25 (10)	20 (8)	45
Average	155 (63)	152 (60)	307
Low	54 (22)	59 (23)	113
Poor	10 (4)	20 (8)	30
Place of residency			
Urban	187 (76)	198 (79)	385
Rural	57 (23)	53 (21)	110

**Table 2:** Motivators and informative channels for blood donors.

Characteristics	Yes (%)	No (%)
Motivators for blood donation		
Willingness of Allah	171 (70)	73 (30)
Rescuing life	70 (29)	174 (71)
For relatives	97 (40)	147 (60)
For self-health purposes	14 (6)	230 (94)
Medical doctor advice	62 (25)	182 (75)
Blood donation informative channel		
Radio	10 (4)	234 (96)
Television	30 (12)	214 (88)
Social media	16 (7)	228 (93)
Relatives	49 (20)	195 (80)
Promotional posters	16 (7)	228 (97)
Blood bank bus	10 (4)	234 (96)

**Table 3:** Barriers of blood donation among non-donors.

Characteristics	Yes (%)	No (%)
Barriers of blood donation		
Health risks of blood donation	120 (48)	131 (52)
No need for donation	70 (30)	181 (70)
Side effects of blood donation	60 (24)	191 (76)
Fear of disease transmission	7 (3)	244 (97)
Fear of needle injection	3 (1)	248 (99)
Others	24 (9)	227 (91)

will to donate blood in the future, 43 (36%) of them believed that donation causes health risks while 49 (41%) did not want to donate voluntarily in the future considering the mentioned

barrier. The barrier of not being required to donate blood was significantly associated with the will of blood donation in the future ( $\chi^2 = 8.96$ ,  $P = 0.002$ ) and not volunteer donation. Perception of blood donation's possible side effects was not associated with both above-mentioned outcomes [Table 6].

**Table 4:** Sociodemographic factors association with blood donation history.

Characteristic	Blood donation		$\chi^2$	P-value
	Yes (%)	No (%)		
Sex				
Male	205 (59)	143 (41)	43.3	<0.001
Female	39 (26)	108 (74)		
Marital status				
Single	56 (37)	93 (63)	11.7	<0.001
Married	188 (54)	158 (46)		
Level of education				
Literate	167 (49)	174 (51)	0.04	0.81
Illiterate	77 (50)	77 (50)		
Place of residency				
Urban	187 (48)	198 (52)	0.36	0.5
Rural	57 (51)	53 (49)		

## DISCUSSION

Although non-paid blood donation is required to sustain the supply of safe blood for those in need, there are plenty of motivators that drive this will or hinder it in some ways. This comparative study elucidates that the spiritual belief of Willingness of Allah is the motivator of volunteer blood donation while concerns of non-donors think that blood donation is risky for health hinders blood donation will among this category. Furthermore, no need for blood donation has been cited by non-donors of this study as one of the barriers. Findings of this study regarding the motivator of volunteer blood donation have been previously studied and elaborated in the context of Iran,<sup>[5]</sup> Saudi Arabia,<sup>[12]</sup> and India.<sup>[6]</sup> On the other hand, the barrier of blood donation health risk concern among non-donors found out in this study is in close resemblance with that of Cameron,<sup>[13]</sup> Nigeria,<sup>[14]</sup> and Namibia<sup>[15]</sup> while study on blood donors in India<sup>[6]</sup> supports the no need for donation hindering factor. Similar to findings of motivators of repeated blood donation in Ghana,<sup>[8]</sup> the result of this study reveals that those who accounted Willingness of Allah and altruistic motivator of helping someone in need were more likely to fall in repeated donors' category.

**Table 5:** Motivators of volunteer and repeated donation among donors.

Characteristic	Volunteer blood donation		$\chi^2$	P-value	Donation status		$\chi^2$	P-value
	Yes (%)	No (%)			Once (%)	Repeated (%)		
Willingness of Allah								
Yes	129 (75)	42 (25)	44.5	<0.001	73 (42)	98 (58)	10.89	<0.001
No	22 (30)	51 (70)			48 (65)	25 (35)		
Rescuing life								
Yes	42 (60)	28 (40)	0.15	0.70	26 (37)	44 (63)	6.01	<0.001
No	109 (62)	65 (38)			95 (54)	79 (46)		
Medical doctors' advice								
Yes	34 (55)	28 (45)	1.7	0.18	24 (39)	38 (61)	3.93	0.04
No	117 (64)	65 (36)			97 (53)	85 (47)		
For relatives								
Yes	19 (20)	78 (80)	122.1	<0.001	51 (52)	46 (48)	0.57	0.44
No	132 (89)	15 (11)			70 (47)	77 (53)		

**Table 6:** Association of blood donation barriers with will of blood donation in the future and type of this approach.

Characteristic	Will to donate blood in future		$\chi^2$	P-value	Type of donation in future		$\chi^2$	P-value
	Yes (%)	No (%)			Volunteer (%)	Involuntarily (%)		
Health risk of blood donation								
Yes	77 (64)	43 (36)	22.56	<0.001	71 (59)	49 (41)	19.15	<0.001
No	117 (89)	14 (11)			110 (83)	21 (17)		
Side effects of blood donation								
Yes	37 (71)	15 (29)	1.40	0.23	34 (65)	18 (35)	1.48	0.22
No	157 (79)	42 (21)			147 (74)	52 (26)		
No need for blood donation								
Yes	63 (90)	7 (10)	8.96	0.002	58 (83)	12 (18)	1.71	0.19
No	131 (72)	50 (28)			136 (75)	45 (26)		

Once asked on willingness of blood donation in the future, almost all donors had the will to continue this thread completely in contrast to findings of Ethiopia.<sup>[16]</sup> In comparison, the will to donate blood in the future dropped among non-donors mostly influenced by health risk concerns regarding blood donation. In addition, this concern of blood donation risk was found to be affecting volunteer will of future blood donation. The study conducted in Ethiopia<sup>[16]</sup> illustrates knowledge regarding blood donation as one of the predictors of blood donation intention hence supporting this finding of our study. However, the will for blood donation in the future among non-donors was not influenced by the perception of non-donors on the side effects of blood donation in this study.

In addition, as anticipated, the prominence of male gender among donors is crystal clear similar to gender distribution of blood donors in Iran,<sup>[5]</sup> Ghana,<sup>[8]</sup> and Brazil.<sup>[17]</sup> Moreover, the higher number of volunteer donors found in this study was in contrast to that of Nigeria<sup>[14]</sup> and slightly differing from Burkina Faso.<sup>[18]</sup> Despite indicating single marital status as one of the strong associated factors behind blood donation intention in Ethiopia,<sup>[16]</sup> the findings of this study show the prominence of more married donors compared to single donors. This may result due to cultural differences in marrying ages in Afghanistan and Ethiopia. In addition, level of education was found to be non-influential in blood donation in this study similar to the illustration of mentioned factor among blood donors in South Africa.<sup>[19]</sup> The dominant channels of receiving information regarding blood donation found in this study were through close relatives followed by broadcasting media (e.g., television and radio). Elucidated informative channels found in this study can be supported by findings of studies conducted in Senegal<sup>[20]</sup> and Togo.<sup>[21]</sup>

Volunteer non-paid blood donation as an integral part of life-saving efforts in healthcare endeavors is motivated through various internal and external factors. To our knowledge, no study has been conducted in Afghanistan focusing on highlighting the motivator factors for volunteer non-paid donation and factors hindering this effort. The findings of our study not only established evidence on motivators and barriers of blood donation into two separate categories of donors and non-donors but also represented an overall picture of blood donation status in Afghanistan. In addition, findings of this study explore the motivators for regular repeated donors which has not been conducted in Afghanistan to date. However, these findings are limited to the context of Kabul. Therefore, to bring more clarity regarding motivators of blood donation in Afghanistan, nationwide survey is recommended considering the constant demand for blood products throughout the country. The religious bonded decisions among members of Afghan community have become more evident through the findings of this study. Therefore, it suggests the inclusion of religious leaders and figures in blood donation campaigns as well as enhancing communication approaches through

mosques (masjids). This approach can not only enhance the willingness of previous donors in repeated donations but also to persuade non-donors to take part in this selfless act. In addition, enhancing the knowledge of people through community approach (e.g., nationwide campaigns) and broadcasting medias as well as religious scholars may benefit the sustainable pool of volunteer remunerated donors in Afghanistan.

## CONCLUSION

Findings of this study reveal that majority of donors are male with an even number of repeated donors and slightly higher number of volunteers. Majority of donors selected altruistic factors as their motivators. Most of volunteer and repeated donors selected the Willingness of Allah as their motivating factor while repeated donation was found to be more prominent among those who believed rescuing someone's life as motivational factor. Hearing from relatives followed by broadcasting media led to the informative channel regarding blood donation among donors. Among non-donors, the will to donate blood in the future was lower than donors since it was influenced by the misconception of health risks of blood donation and not being requested to donate blood in the past. Inclusion of religious approaches in developing more volunteer network of blood donors is recommended based on established evidence of this study. In addition, enhancing community engagement and awareness may help health system to improve and sustain blood supply.

## Data availability

Data are part of repository in Afghanistan National Public Health Institute and Afghanistan Field Epidemiology Training Program. The corresponding author will facilitate access to the original data if such a request is coming.

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## Authors' contributions

KMIS, SN, MSH, KA, and EH: Conceptualization of the study; KMIS, SN, MSH, MHR, and KA: Selected and developed methodology section; KMIS and SN: Performed formal analysis; AWS, WAM, KA, EH, IZ AND MHR: carried out the investigation; KMIS and SN: Contributed to writing draft and original manuscript; KMIS: Funding acquisition.

### Ethical approval

The research/study approved by the Institutional Review Board at Afghanistan National Public Health Institute, number 20210707, dated 7th July 2021.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

### Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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