

ORIGINAL ARTICLE

Blood Donation Knowledge Among Undergraduate Health Sciences Students at King Khalid University in Saudi Arabia

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SUMMARY

Background: Improving global access to secure blood holds paramount importance for supporting medical interventions vital to saving lives. As students and professionals in the medical field are pivotal in informing and motivating the public to donate blood, this study investigated the awareness of blood donation requirements and protocols among undergraduate health sciences students at King Khalid University.

Methods: A total of 106 students participated in the study. Google Forms was used to generate the survey and to collect data, and GraphPad Prism was used to visualize and analyze the data extracted from the form.

Results: The study population was predominantly male (63.2% male vs. 36.8% female). Participants demonstrated a good understanding on questions pertaining to blood storage, transmitted infections, and the minimum weight requirement for donation. Divergent responses were observed regarding the optimal age for donation, minimal blood volume, fasting requirements, and the minimum interval between donations.

Conclusions: The results of our study indicate a pressing need to enhance knowledge of blood donation among students in medical fields, particularly given the crucial role of health professionals in educating the public. Greater awareness will promote a greater frequency of donations and a wider dissemination of accurate information concerning blood donation protocols.

(Clin. Lab. 2024;70:xx-xx. DOI: 10.7754/Clin.Lab.2024.240128)

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KEYWORDS

knowledge, awareness, blood donation, undergraduate health students, KKU

INTRODUCTION

Blood is essential for mediating homeostasis, physiological processes, and other imperatives for human survival [1]. Accordingly, blood replacement is an absolute necessity for patient survival in certain medical conditions, emergencies, and during intensive interventions. However, provision of replacement blood is solely reliant on the supply provided by donation, as no artificial substitute is available. Thus, blood donation is a global necessity, and it is imperative to ensure the supply and the safety of donated blood [1].

In Saudi Arabia, according to the Centers for Disease Control and Prevention, the prevalent causes of mortality are ischemic heart disease and road traffic accidents,

which also cause the greatest need for blood replacement. In addition, genetic disorders including thalassemia (0.05%) and sickle cell disease (4.5%) occur at relatively high rates, and many patients with these disorders require frequent blood transfusions [2]. Notably, recent estimates highlight Saudi Arabia as having the most youthful population globally, with approximately 50% being younger than 25 years [2]. It is therefore imperative to promote blood donation among the youth, including university students, to ensure sufficient blood supply and preserve as many lives as possible.

Worldwide, an estimated 112.5 million blood donations are made per year, with high-income countries accounting for 50% of that number [3]. In developing nations, overall awareness of blood donation has been estimated at around 60%. In Saudi Arabia specifically, the prevalence of blood donation ranges from 45.8% to 53.3%, with Saudi males being more inclined to donate as compared to Saudi females [3]. Previous research has also indicated that the scope of blood donation education in Saudi Arabia is restricted, and a significant proportion of donors (60%) are replacement rather than voluntary donors [4-6]. Identifying and addressing the obstacles that may stifle willingness to donate blood is crucial to ensuring a sufficient blood supply. Factors that have been highlighted in the literature include fasting requirements, the minimum volume of blood needed for donation, restrictions based on age and weight, and the recommended interval between repeated donations. Inadequate knowledge regarding blood donation protocols may also discourage individuals from donating, while being well-informed may potentially increase the likelihood of donation. Medical students and professionals are pivotal in disseminating information to the public, including information about blood donation. Considering this role and the high proportion of youth in the Saudi Arabian population, this study aimed to evaluate the level of awareness regarding blood donation, specifically among undergraduate students enrolled in diverse medical fields at King Khalid University.

MATERIALS AND METHODS

A series of interrogative survey questions was developed and reviewed by a staff member affiliated with the Department of Medical Laboratory Sciences at King Khalid University. The questions were composed in Arabic, then later translated to English to facilitate research and reporting. The questionnaire was created in Google Forms; a software designed for survey administration, producing a valid and user-centric questionnaire. This questionnaire was administered to a total of 106 undergraduate health sciences students from King Khalid University. The opening of the survey provided a concise overview of the study and its goals. Demographic information was collected, including gender. All participants were informed that their participation was voluntary, and they had the option to withdraw at

any time.

This research was approved by the King Khalid University Ethical Committee for Scientific Research (HAPO-06-B-001 - ECM#2023-2212). It was emphasized to all respondents that their responses would be treated strictly as academic research.

The sample size was calculated using Calculator.net <https://www.calculator.net/sample-size-calculator.html>.

A study by Majdabadi et al. assessed knowledge levels of blood donation among students at the Semnan University of Medical Sciences, finding that only 15.5% participants had satisfactory knowledge [7]. With a prevalence of 15.5%, a confidence level of 95%, and a 7% margin of error, the required sample size was estimated to be 103 participants.

The Google Forms website was utilized to produce several graphical representations of the data. Upon completion of the data collection, the data were imported into GraphPad Prism (version 9.00 for Mac, GraphPad Software, San Diego, CA) for a subsequent analysis.

RESULTS

The current study aimed to investigate the knowledge of 106 undergraduate students enrolled in diverse medical fields, regarding blood donation. Participants were mostly male, comprising 63.2% males versus 36.8% females (Table 1). The first survey question concerned the participants' awareness of their own blood type, of which a significant number were aware. Participants were also asked about the sources from which they have obtained information concerning blood donation. A notable number exhibited only limited understanding of general knowledge on the subject. Others obtained information from diverse sources including relatives and friends, online platforms, personnel at blood banks, and social media platforms (Table 1).

The next questions related to specific aspects of blood donation, including the requisite amount of blood, the recommended donor age and weight, the fasting status, the length between repeated donations, and the blood screening and storage procedures. Participants indicated varying levels of knowledge (Figure 1), particularly concerning the quantity of blood required for a donation and the minimum duration between donations. With that said, a significant proportion did provide correct responses on those points. Importantly, participants showed a good awareness of the testing requirements and the blood storage capacity, despite the expectation of those aspects being less well-known. Thus, in some respects, participants' knowledge was commendable.

DISCUSSION

Global demand for blood donation is on the rise due to the growing population and the corresponding increase in people needing blood transfusions. Awareness and

Table 1. Participant demographic characteristics and knowledge of the eligibility criteria for potential blood donors (n = 106).

Variables	n	(%)
Demographic characteristics		
Gender		
Male	67	63.2
Female	39	36.8
Knowledge of the eligibility criteria for potential blood donors		
The age range allowed to donate blood		
18 - 35 years	11	10.4
18 - 45 years	23	21.7
18 - 65 years	55	51.9
I do not know	17	16.0
The minimum weight allowed to donate blood		
50 kg	79	74.5
60 kg	12	11.3
70 kg	02	1.9
I do not know	13	12.3
The source from which you obtained blood donation information		
Friends and relatives	26	24.5
Blood bank staff	17	16.0
TV	00	0
Social media	09	8.5
Internet search	20	18.9
Does not apply	34	32.1

understanding of blood donation are key considerations in ensuring an adequate blood supply and hence are of considerable research interest. Among individuals, the knowledge concerning donation is affected by several factors, including lack of information and whether they are engaged in the healthcare sector [6,8]. A study comparable to the present work assessed knowledge of blood donation among both medical and nonmedical students, and although the two groups showed broadly similar outcomes, the medical students exhibited an overall greater understanding [8]. Importantly, medical professionals are key in facilitating dissemination of knowledge to the broader community, not only through official channels, but by promoting awareness among their friends, family members, relatives, and other associates. By extension, insufficient knowledge of blood donation among current and future medical professionals is a cause for concern, as the broader public may be even less well-informed, potentially depressing the rate of donation.

The present study specifically examined knowledge among young individuals studying for degrees in the medical field. This demographic was selected due to them being in a transitional phase between high school education and an engagement in medicine, where they

may not possess detailed understanding of donation. Thus, the present findings are important for assessing the current understanding of blood donation within the medical student demographic and identifying areas where improvement is needed. In this study, participants demonstrated a good level of understanding in certain respects, but not all. This highlights the need to ensure that students in medical fields are fully informed regarding blood donation requirements and practices. Raising awareness among these students will not only positively impact their immediate social circles but will have ripple effects throughout their future healthcare careers.

Importantly, it has been observed that Saudi Arabian health science colleges have not effectively fulfilled their role in promoting blood donation among the public [9]. The observed heightened awareness of blood donation among medical professionals can be attributed to indirect promotion of donation within the community, complemented by their active involvement as intermediaries for information dissemination to the public. Medical schools, thus, have the potential to take up a pivotal function in informing future healthcare students and in enabling them to spread knowledge about the importance of regular blood donations to the public.

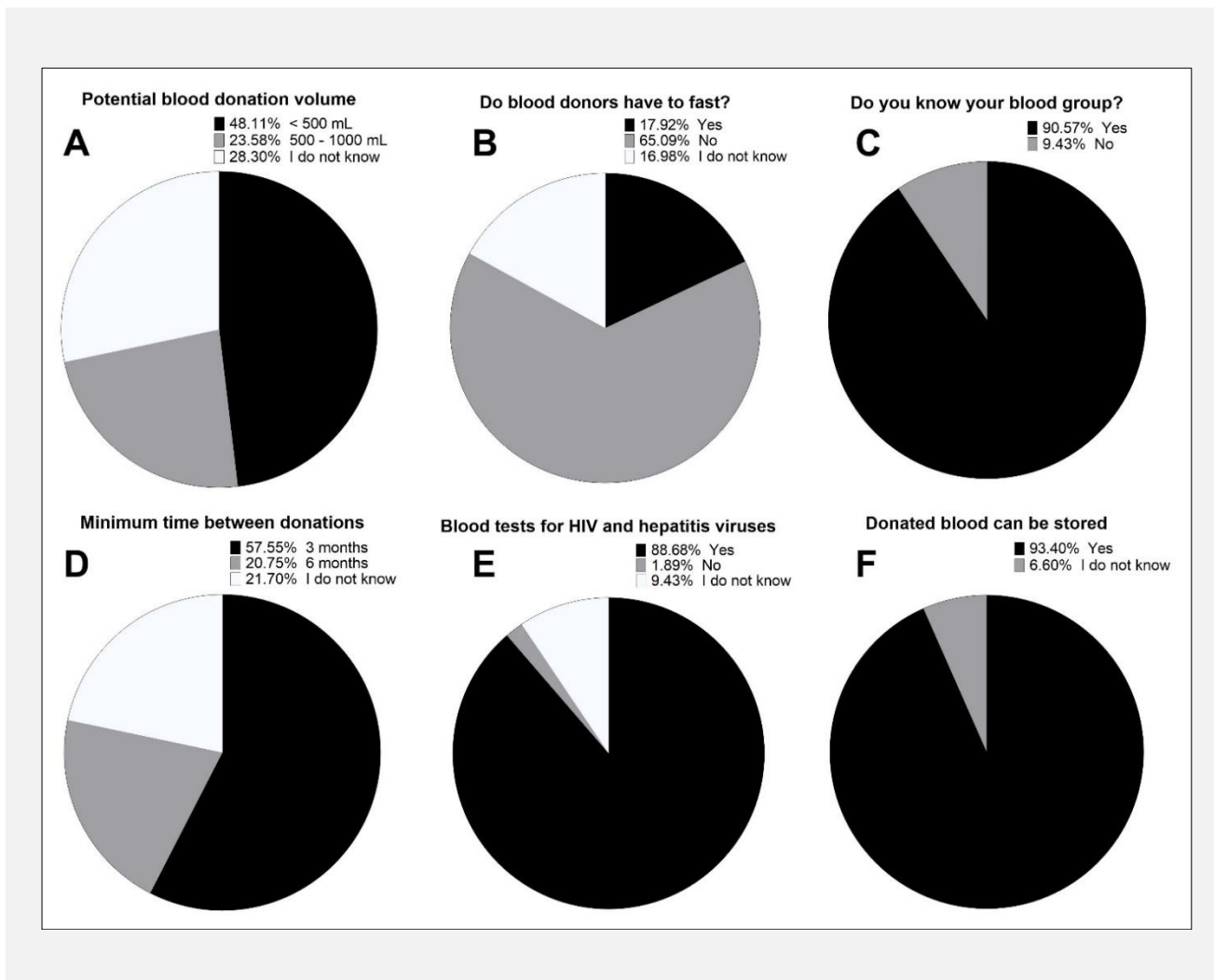


Figure 1. Blood donation knowledge among undergraduates in health sciences programs at King Khalid University.

The participants were asked a series of questions to assess their knowledge of blood donation, including A) the blood volume collected, B) fasting requirement, C) their own blood group type, D) the minimum duration between blood donations, E) virus testing to ensure safety of the donated blood, and F) the possibility of storing donated blood for future use.

One limitation of the present investigation is its sample size. To ensure the comprehensiveness of the results and the effectiveness of strategic efforts aiming to raise blood donation awareness and engagement among students in medical fields, it is imperative to follow up with a bigger sample. Additionally, the present study sample included a higher proportion of male than female participants. It has been observed that in Saudi Arabia women tend to abstain from donating blood and from related surveys. A previous study indicated several factors that potentially contribute to this reluctance among the females, including low hemoglobin concentration, challenges encountered during blood withdrawal, and heightened vulnerability to vasovagal reactions [10].

CONCLUSION

Our study emphasizes the necessity of disseminating knowledge among undergraduate students regarding the blood donation process and its requirements. As health-care professionals play pivotal roles in spreading awareness and knowledge of blood donation, ensuring those professionals are well-informed is a crucial element in encouraging the broader public to contribute to this vital cause and hence in elevating the future donor rate. It is advisable to conduct a subsequent study involving a similar cohort of students from universities across all regions of the Kingdom of Saudi Arabia. Doing so will help validate the present findings and determine if the results are consistent across different educational institutions.

Acknowledgment:

The authors extend their appreciation to the Deanship of Scientific Research at King Khalid University for funding this work through the Small Group Research Project under grant number RGP1/223/44 and would also like to thank SERVICESCAPE (www.servicescape.com) for the English language editing.

Source of Funds:

The project was funded by the Deanship of Scientific Research at King Khalid University through the Small Group Research Project program under grant number RGP1/223/44.

Declaration of Interest:

The authors declare no conflicts of interest.

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