Knowledge, perceptions, and practices of blood donation among undergraduate students at Gulf Medical University, United Arab Emirates: a cross-sectional study

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ABSTRACT

Ensuring safe and effective blood transfusion is essential for improving healthcare and preventing the spread of blood-borne diseases worldwide. Medical students are a potential key resource for voluntary blood donation, particularly in medical college hospitals, which can help alleviate the shortage of blood products. Additionally, they have the potential to inspire a wider segment of the population to donate blood, thereby narrowing the gap between blood supply and demand. This study aims to evaluate the knowledge, perceptions, and practices related to voluntary blood donation among undergraduate medical students at Gulf Medical University in Ajman, United Arab Emirates, and to identify the factors associated with these aspects. A cross-sectional, institution-based study was conducted among undergraduate medical students at Gulf Medical University. Data were gathered through a self-administered structured questionnaire and analyzed using the Statistical Package for Social Sciences (SPSS) version 27. Knowledge, perceptions, and practices related to blood donation among 301 participants were assessed. The findings revealed no significant association between knowledge levels and demographics such as gender, marital status, residence, college, or academic year. While most participants were aware of blood donation procedures and benefits, actual donation practices were low, with 84.4% rarely donating blood. Key barriers included fear of needle pain and time constraints. Health professionals and social media were the primary sources of information, indicating the need for targeted educational interventions to improve blood donation rates. Students at Gulf Medical University are well-informed about blood donation, with many willing to donate. However, fears like needle pain and time constraints limit participation. Educational efforts could help overcome these barriers.

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Introduction

Blood is an essential part of human life, and blood donation has become a necessity that every society must take into consideration.[1] Safe and effective blood transfusion is a vital component in improving health care delivery and preventing the spread of blood-borne diseases worldwide. Every year, millions of lives are saved through blood transfusion, yet the quality and safety of blood transfusion are still of interest, especially in hospitals in developing countries.[2,3] According to the World Health Organization recommendations, for any country to meet the minimum demand for blood, the donation should be at least 1% of the population.[4]

The United Arab Emirates (UAE) health authorities en-

courage blood donation. Blood donation drives are held several times throughout the year at several locations. In 2022, there were about 25,600 blood donors in Abu Dhabi, who contributed to providing 44,000 blood units to patients and injured people since the beginning of the year.[5] Medical college students can serve as a readily available pool of voluntary blood donors for the attached medical college hospitals and help reduce some of the scarcity of blood and blood products. Moreover, they can motivate a healthy population toward voluntary blood donation and thus substantially narrow the gap between demand and supply of blood.[6]

The students provide the safest blood, and the country's blood supply can be improved by recruiting and retaining student donors.[7]

Young populations are a crucial segment of the population, and they are the hope of present and future sources of safe blood supply. Part of the young population are health science university students who are healthy, active, dynamic, resourceful, and receptive and who may constitute a greater proportion of blood donation; they must be encouraged, inspired, and motivated to donate blood voluntarily.[8] This study aims to assess knowledge, perceptions, and practices concerning voluntary blood donation among undergraduate medical students at Gulf Medical University in the UAE and to determine the associated factors. This study focuses on healthcare professions students. Assessing awareness in them gives an insight into the level of awareness and the misbeliefs they may have. Moreover, since this study can help implement the appropriate strategies to improve knowledge and attitude, health science students will become not only future blood donors but also motivators and role models for the community.

Materials and Methods

Between March and July 2023, a cross-sectional study was conducted at Gulf Medical University in Ajman, UAE, to evaluate the knowledge, perceptions, and practices related to voluntary blood donation among 301 undergraduate medical students. Participants were selected using a systematic random sampling technique, including only those present on campus during the data collection period. A self-administered structured questionnaire divided into six parts, covering socio-demographic characteristics, knowledge, perceptions, and practices of blood donation, was used for data collection. Ethical approval was obtained from the GMU Ethical Committee. Data were analyzed using SPSS version 27 (IBM, Armonk, NY, USA), with quantitative data presented as means with standard deviations and qualitative data as frequency distributions. The Chi-square test was employed to compare proportions, with significance levels defined as insignificant ($p \geq 0.05$), significant ($p < 0.05$), and highly significant ($p < 0.01$).

Operational definition

Knowledge

A score of 1 is given for the correct response and 0 for the wrong response. Respondents who scored above the mean score are considered to have good knowledge, and the others are considered to have poor knowledge.

Perceptions

A score of 1 is given for each correct response and 0 for the wrong response. Respondents who score above the mean score are considered to have favorable perceptions, and the others are considered to have an unfavorable attitude.

Practice

It is measured by asking about the history of blood donation.

Results

Association of knowledge with demographics and academic factors

For what concerns gender, knowledge did not significantly differ between males and females ($p=0.775$). No significant association was found between marital status and knowledge ($p=0.323$). There was no significant difference in knowledge based on the emirate of residence ($p=0.885$) and no significant association was observed between knowledge levels and the college of study or academic year (*Supplementary Table 1*).

Health status of study participants

The health status of the 301 study participants reveals that 10.6% are smokers, while 5.3% have a hematological disease. A smaller proportion, 1.7%, reported having an immune disease, and 1.3% had either a metabolic syndrome or an infectious disease. Additionally, 13.3% of the participants have donated blood at some point. Overall, most participants reported no significant health issues, with only a minority experiencing conditions that could potentially impact their eligibility to donate blood (*Supplementary Table 2*).

Knowledge of blood donation

As far as awareness of blood donation locations is concerned, 63.1% of students knew that blood could be donated at blood banks. 60.8% correctly identified that an individual could donate blood every 3 to 6 months. 98.3% knew that any healthy adult could donate blood. 94.7% were aware of common blood group types and 96.3% knew that blood could be stored in a blood bank.

Regarding the benefits of blood donation, 80.4% agreed that blood donation has beneficial effects on the donor (*Supplementary Table 3*).

Figure 1 illustrates the distribution of participants' knowledge levels regarding blood donation, potentially showing that most participants fall into the "average" or "good" knowledge groups, with fewer in the "poor" knowledge group. This distribution would highlight the overall awareness level among the students in the study.

Benefits of blood transfusion

The study assessed participants' perceptions of the benefits of blood transfusion. A significant majority (77.7%) believe that blood transfusion activates blood circulation and renewal. 44.2% think it decreases heart and arterial diseases, and 46.2% believe it helps detect hidden diseases. Opinions were divided

on whether transfusion helps keep iron levels in check, with 47.2% agreeing. Additionally, 43.5% felt that it provides a mini health check-up, 37.5% noted an improvement in emotional well-being, and 35.9% felt that it fosters a sense of belonging and reduces isolation (*Supplementary Table 4*).

Perceptions of blood donation

58.5% expressed willingness to participate in a blood donation campaign in the future. 87% would tell others about their blood donation experience. 80.1% were willing to donate blood to anyone, while 10.6% preferred donating to family members. 51.5% would definitely donate blood again (*Supplementary Table 5*).

Practices of blood donation

84.4% rarely donated blood, while only 6.3% donated once a year. 53.2% of the 47 students who had recently donated did so at a blood bank. 78.7% of those who recently donated were motivated to donate again. Also, results show that the majority of respondents (53.2%) donated blood at a blood bank, with 78.7% feeling motivated to donate again after their last experience. Most participants (80.9%) reported no complications after donating, indicating generally positive experiences overall (*Supplementary Tables 6 and 7*).

Barriers to blood donation

33.2% cited fear of needle pain as a barrier. 19.3% reported a lack of time as a barrier and 16.9% expressed a desire to donate only to relatives (*Supplementary Table 8*).

Source of information

70.1% of students obtained information about blood donations from doctors, followed by social media (60.1%) and awareness campaigns (54.8%) (*Supplementary Table 9*).

Association of knowledge with demographics and academic factors

Knowledge did not significantly differ between males and females (p=0.775). No significant association was found between marital status and knowledge (p=0.323). There was no significant difference in knowledge based on the emirate of residence (p=0.885) (*Supplementary Table 10*).

College and academic year

No significant association was observed between knowledge levels and the college of study or academic year (*Supplementary Table 11*).

Discussion

The results of this study provide a detailed view of the knowledge, perceptions, practices, and barriers related to blood donation among the participants. The findings reflect a generally positive attitude toward blood donation and a high level of knowledge about the process. However, certain barriers and mixed perceptions about the benefits of blood transfusion persist.

Knowledge and demographics

Our study found no significant differences in blood donation knowledge based on gender, marital status, residence, college, or academic year. This is consistent with some studies that have reported no significant demographic variations in blood donation knowledge. For example, Feng *et al.* (2023) found that blood donation knowledge among university stu-

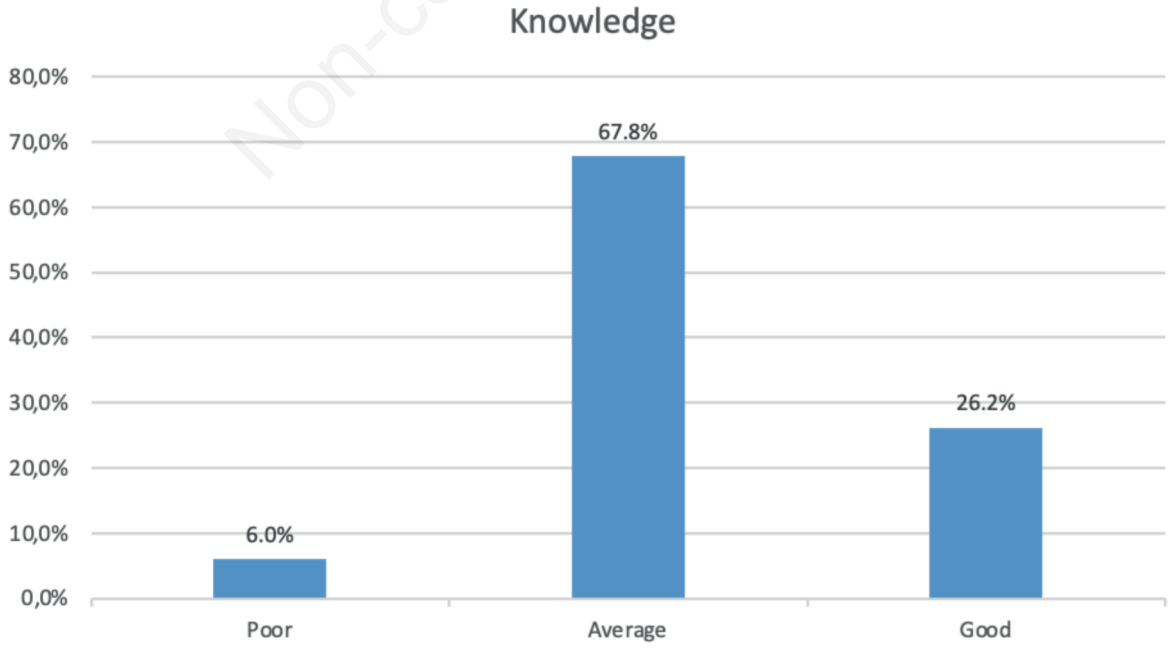

Figure 1. Distribution of knowledge grouping.

dents was uniform across different demographic groups, suggesting that basic educational interventions might have a uniform impact across diverse groups.[9] Conversely, other research suggests that demographic factors can influence blood donation knowledge. For instance, Misje *et al.* (2010) indicated that gender and educational background significantly affected knowledge levels about blood donation, with males and higher education levels being associated with better knowledge.[10] This discrepancy may be due to differences in study populations or methodologies, suggesting that local context and educational initiatives play a crucial role in shaping knowledge.

Health status and blood donation

The health status of the participants did not significantly affect their blood donation practices, which aligns with findings from similar studies. For instance, Ghosh *et al*. (2018) reported that health status does not always correlate with blood donation frequency, as individuals with minor health issues may still be willing to donate if they meet the criteria.[11] However, other studies highlight that health status can be a significant factor in blood donation. Katja, *et al.* (2017) found that individuals with chronic health conditions were less likely to donate blood due to concerns about their eligibility and potential health impacts.[12] This variation underscores the importance of tailored educational and support programs to address the specific concerns of individuals with health conditions.

Perceptions and benefits of blood donation

Our results show a high level of agreement among participants regarding the benefits of blood donation, particularly in terms of activating blood circulation and renewal. This is consistent with a study by Thorpe *et al.* (2024), which also found strong support for the positive effects of blood donation on donor health.[13] However, perceptions about benefits such as reducing heart disease and detecting hidden diseases were more mixed. Studies by Khaled *et al.* (2019) and Hasan *et al.* (2022) found that the perceived health benefits of blood donation can vary widely, with some donors attributing significant health benefits to their donation experience, while others view it primarily as a humanitarian act without direct personal health advantages.[14,15]

Practices and barriers

Our study observed that a significant number of participants rarely donate blood, with fear of needle pain being a notable barrier. This finding is consistent with research by Tran *et al*. (2021), which identified fear of needles and pain as major deterrents to blood donation.[16] Conversely, some studies, such as the one by Radwan *et al.* (2020), suggest that while fear of pain is a common barrier, lack of time and awareness about the need for regular donations are more significant factors.[17] This suggests that interventions aimed at reducing fear and increasing convenience could be more effective in encouraging regular blood donation.

Sources of information

The primary sources of information about blood donation doctors, social media, and awareness campaigns reflect a diverse approach to education. Our findings are in line with those of Smith *et al*. (2018), who found that multiple channels of information contribute to better knowledge and higher donation rates.[18] In contrast, studies such as those by Zhang *et al*. (2021) have highlighted that while social media and campaigns are effective, personal recommendations from family and friends can have a more immediate impact on individuals' willingness to donate.[19] This indicates that while institutional and media-based education is crucial, leveraging personal networks could enhance outreach efforts.

Study limitations

This study has several limitations. First, the sample size of 301 university students may not be representative of the general population, limiting the generalizability of the findings. Self-reported data can introduce biases such as social desirability, affecting the accuracy of responses. The cross-sectional design restricts the ability to track changes over time or establish causality. While the study identified primary sources of information about blood donation, it did not assess the effectiveness of these sources in depth. Barriers such as fear of needle pain were noted, but the specific nature of these barriers was not explored. Perceptions of benefits varied, and the impact of these perceptions on donation behavior was not fully examined. The study also did not delve into how specific health conditions might affect donation practices and was conducted within a specific cultural and geographical context, which may influence the results. Finally, the lack of differentiation in educational content related to blood donation across different disciplines may have impacted the observed knowledge levels.

Conclusions

The study reveals a generally high level of awareness regarding blood donation among students, with a significant portion willing to donate blood in the future. However, certain barriers like fear of needles and time constraints still exist, which could be targeted through educational campaigns to increase participation.

Recommendations

Future research should expand the sample size and include diverse demographics to improve generalizability. Employing mixed-methods approaches, including qualitative interviews, can provide deeper insights into barriers like fear of needle pain. Longitudinal studies would help track changes over time and establish causal relationships. Evaluating the effectiveness of various information sources can tailor educational strategies more effectively. Targeted interventions to address specific barriers and integrate blood donation education into academic curricula are recommended. Additionally, adapting campaigns to be culturally sensitive and promoting regular donations through incentives can enhance donor engagement and retention.

References

1. Alsalmi MA, Almalki HM, Alghamdi AA, Aljasir BA. Knowledge, attitude and practice of blood donation

among health professions students in Saudi Arabia; a cross-sectional study. J Family Med Prim Care 2019;8: 2322-7.
2. Sabu KM, Remya A, Vivek R. Knowledge, attitude and practice on blood donation among health science students in a university campus, South India. Online J Health Allied Sci 2011;10:6-7.
3. Siddiqui UF, Yasmeen A, Hina N, Alam SN. Who donates more; medical or non-medical students. J Dow Univ Health Sci 2013;10:16-7.
4. WHO, International Federation of Red Cross and Red Crescent Societies. Towards 100% voluntary blood donation. A global framework for action. Available from: https://iris.who.int/bitstream/handle/10665/44359/9789241599696_eng.pdf?sequence=1.
5. Department of Health. The Department of Health - Abu Dhabi honours humanitarian efforts of blood donors across the UAE. Available from: https://www.doh.gov.ae/en/news/doh-honours-humanitarian-efforts-of-blood-donors-across-the-uae.
6. Javaeed A, Kousar R, Farooq A, et al. Knowledge, attitude, and practice of blood donation among undergraduate medical students in Azad Kashmir. Cureus 2020;12: e7733.
7. Shama AT, Teka G, Lemu SY, et al. Assessment of blood donation practice and its associated factors among Wollega university undergraduate students, Ethiopia. J Blood Med 2022;13:711-24.
8. Melku M, Asrie F, Shiferaw E, et al. Knowledge, attitude and practice regarding blood donation among graduating undergraduate health science students at the university of Gondar, northwest Ethiopia. Ethiop J Health Sci 2018;28: 571-82.
9. Feng W, Yun W, Le W, et al. The influence of demographic and lifestyle factors on blood donation delay among student population: a retrospective study. Front Public Health 2023;11:1297472.
10. Misje AH, Bosnes V, Heier HE, Bjertness E. Gender differences in presentation rates, motives, and beliefs about blood donation: a population-based study in Norway. Vox Sang 2010;98:93-8.
11. Ghosh K, et al. Correlation of health status with blood donation frequency. Transfusion Med 2018;28:337-45.
12. Van Den Hurk K, Zalpuri S, Prinsze FJ, et al. Associations of health status with subsequent blood donor behavior—an alternative perspective on the Healthy Donor Effect from Donor InSight. PloS One 2017;12:e0186662.
13. Thorpe R, Masser B, Coundouris SP, et al. The health impacts of blood donation: a systematic review of donor and non-donor perceptions. Blood Transfus 2024;22:7-19.
14. Khaled MH, Al-Beladi MS. Health benefits of blood donation: a systematic review. J Clin Med 2019;8:1780-90.
15. Hasan MM, Hassan RM. Donor perceptions on health benefits of blood donation: an analysis. J Blood Med 2022;13:35-42.
16. Tran TT, Nguyen HT. Fear of needles and its impact on blood donation rates. Transfusion Apheresis Sci 2021;60: 114-121.
17. Radwan RA, El-Kady MH. Barriers to blood donation: a review of the literature. Health Policy Planning 2020;35: 721-30.
18. Smith RA, Brown SD. Information sources and blood donation knowledge: a comparative study. J Health Communication 2018;23:452-63.
19. Zhang Y, Liu J, Wang Z. The role of personal recommendations in blood donation: evidence from a community-based study. Blood Donation Collection J 2021;9: 197-205.

Online supplementary material:

Table 1. Sociodemographic characteristic.

Table 2. Heath status of study participants.

Table 3. Knowledge.

Table 4. The benefits of blood transfusion.

Table 5. Perceptions.

Table 6. Practices.

Table 7. Practices.

Table 8. Barriers to blood donation.

Table 9. Source of information about blood donation.

Table 10. Association of knowledge with gender, marital status, and residence.

Table 11. Association of knowledge with college and academic year.