JHWCR

Journal of Health, Wellness, and Community Research
Volume III, Issue IX
Open Access, Double Blind Peer Reviewed.
Web: https://jhwcr.com, ISSN: 3007-0570
https://doi.org/10.61919/enzewc75

Original Article

Motivational Factors for Blood Donation, Potential Barriers, and Knowledge About Blood Donation in First-Time and Repeat Blood Donors

Fawad Afridi[1], Farah Ahmad[2], Syed Hasan Danish[3], Mehwish Zaman[4], Hira Bibi[5], Kajal Hayat[6]

[1] BDS, MCPS/HCSM, MRHSM Hospital Pabbi, District Nowshera, Pakistan

[2] Professor, MBBS, DCPS, MCPS-HCSM, MSBE, CHPE, Ziauddin University, Karachi, Pakistan

[3] Associate Professor, MBBS (DOW), MPH (USA), FCPS, CHPE, CRCP (DOW), Community Health Sciences, Ziauddin University, Karachi, Pakistan

[4] BDS, MDS (Operative / Endo), MRHSM Hospital Pabbi, District Nowshera, Pakistan

[5] BDS, FCPS (Oral & Maxillofacial Surgery), CHPE, RHC Regi, Peshawar, Pakistan

[6] Assistant Professor, BDS, MHPE, IHPER, Khyber Medical University, Peshawar, Pakistan

Correspondence: dr_fawad@ymail.com
Author Contributions: Concept: FA, FAh; Design: SHD, MZ; Data Collection: HB, MZ; Analysis: FA, SHD, KH; Drafting: FAh, HB, KH
Cite this Article | Received: 2025-05-11 | Accepted 2025-07-04
No conflicts declared; ethics approved; consent obtained; data available on request; no funding received.

ABSTRACT

Background: Blood transfusion remains a critical component of healthcare globally, with approximately 118.5 million donations annually, but voluntary donation rates vary widely between regions. In Pakistan, cultural, social, and systemic factors influence donation behavior, yet data on determinants of donor motivation, barriers, and knowledge—especially differences between first-time and repeat donors—are limited. Objective: To assess motivational factors, potential barriers, and knowledge about blood donation among first-time and repeat donors in tertiary care hospitals of Peshawar, Pakistan. Methods: A cross-sectional observational study was conducted over three months in 2025 at Lady Reading Hospital, Khyber Teaching Hospital, and Hayatabad Medical Complex. A total of 140 eligible donors aged ≥18 years were recruited using convenience sampling. Data was collected via a structured, validated questionnaire covering sociodemographic variables, motivations, barriers, and knowledge. Descriptive statistics and group-wise comparisons using chi-square tests and odds ratios with 95% confidence intervals were performed in SPSS v24. Results: Repeat donors exhibited significantly higher motivation (e.g., appeals via media: 81.4% vs. 47.1%, OR 4.93, p<0.001) and greater knowledge (e.g., minimum age >18 years: 77.1% vs. 52.9%, OR 2.96, p=0.005) compared to first-time donors. Barriers including fear of dizziness (70.0% vs. 44.3%, OR 2.93, p=0.003) and lack of privacy (80.0% vs. 57.1%, OR 2.98, p=0.005) were more frequently reported by repeat donors. Conclusion: Motivations, perceived barriers, and knowledge differ substantially between first-time and repeat donors. Targeted educational and operational interventions addressing these differences could enhance donor retention and ensure a safer, more sustainable blood supply in Pakistan. Keywords: blood donation; motivation; barriers; knowledge; first-time donors; repeat donors; Pakistan.

Keywords: blood donation; motivation; barriers; knowledge; first-time donors; repeat donors; Pakistan.

INTRODUCTION

The global demand for safe blood transfusion is critical, with approximately 118.5 million donations occurring annually worldwide (1). Blood transfusion remains an indispensable component of modern healthcare, required for managing trauma, surgery, obstetric hemorrhage, and various hematologic conditions. However, significant disparities persist between high-income and low- and middle-income countries (LMICs) in both transfusion rates and blood safety infrastructure (2). In countries such as Pakistan and Nepal, an estimated 2.5 million and 1.2–1.5 million transfusions are performed annually, respectively, reflecting substantial healthcare needs (3,4). Despite this demand, the World Health Organization (WHO) asserts that voluntary, non-remunerated blood donation remains the most reliable strategy to ensure both the sufficiency and safety of national blood supplies (5). Yet, voluntary donor recruitment remains a challenge in LMIC settings where donation often relies on replacement donations from relatives and friends rather than an established culture of altruistic, repeat donors. Prior studies have highlighted that approximately one in ten hospitalized patients requires urgent transfusion of blood or blood products (6), underscoring the persistent need for sustainable donation systems. Importantly, research from various contexts has identified multiple barriers hindering voluntary blood donation, including lack of knowledge, fear of adverse outcomes, perceived inconvenience, and cultural myths related to disease transmission and weight gain (7). In Pakistan, these concerns

may be compounded by misconceptions regarding the resale of donated blood, distrust of healthcare staff, or fear of unsafe medical procedures. Conversely, factors that motivate donation include altruism, the influence of media campaigns, peer encouragement, and assurances of safety during the donation process (8,9). Motivation to donate blood is shaped by cultural, religious, and socioeconomic determinants that vary across populations. For example, personal networks and religious beliefs influence donor behavior in South Asia, where donation rates remain low compared to global benchmarks (10). Studies from Saudi Arabia and Ethiopia suggest that knowledge gaps concerning eligibility, donation frequency, and safety precautions significantly deter participation (11,12). Addressing these barriers through public education and improving donor care experiences is a key strategy for increasing voluntary donations (13). Moreover, the literature increasingly emphasizes the importance of differentiating between first-time and repeat donors, as their motivations and barriers may differ, thereby warranting tailored recruitment and retention strategies (14).

Despite the global recognition of these challenges, there is a paucity of research specifically exploring the psychosocial determinants of blood donation in Khyber Pakhtunkhwa, particularly Peshawar—a major urban center with high patient turnover and substantial transfusion demands. Existing national data offer little insight into the interplay between knowledge levels, motivational drivers, and perceived barriers among donors in this setting. This knowledge gap limits the development of contextually appropriate interventions to enhance voluntary blood donation rates and threatens the reliability of local blood supplies. In Peshawar, where tertiary care hospitals such as Lady Reading Hospital, Khyber Teaching Hospital, and Hayatabad Medical Complex serve as critical referral centers, understanding the motivations and deterrents specific to first-time and repeat donors is crucial for policy development and program implementation. Therefore, this study seeks to evaluate the motivational factors, potential barriers, and knowledge regarding blood donation among first-time and repeat donors at tertiary care hospitals in Peshawar. By identifying key drivers of donor behavior and the knowledge gaps that hinder repeat donations, this research aims to provide an empirical basis for targeted interventions to improve voluntary blood donation rates in Pakistan's healthcare system. The specific research objective is to assess and compare the motivational factors, perceived barriers, and knowledge about blood donation between first-time and repeat donors in Peshawar, hypothesizing that differences exist between these groups that must be addressed through differentiated strategies for donor recruitment and retention.

MATERIAL AND METHODS

This cross-sectional observational study was conducted to assess motivational factors, potential barriers, and knowledge about blood donation among first-time and repeat donors at tertiary care government hospitals in Peshawar, Pakistan. The study was conducted at Lady Reading Hospital, Khyber Teaching Hospital, and Hayatabad Medical Complex between January and March 2025. These hospitals were selected due to their large catchment areas and high patient volumes, ensuring an adequately diverse donor population representative of the urban healthcare context in Khyber Pakhtunkhwa.

Eligible participants included individuals aged 18 years and above of both genders who donated blood at the blood banks of these hospitals during the study period. Exclusion criteria comprised individuals who did not meet standard eligibility for donation due to medical contraindications or who were accompanying patients in emergency situations but were not donating blood themselves. Participants were selected using a convenience sampling technique, where all eligible donors presenting at the blood banks during data collection hours were invited to participate. Recruitment was conducted directly at the blood banks following verification of donor eligibility as per institutional protocols. All participants were provided with an explanation of the study's aims and procedures, and written informed consent was obtained before any data collection. Data collection was performed using a structured, pre-tested questionnaire that was adapted from previously validated instruments (15).

The questionnaire captured demographic data (age, gender, marital status, religion, educational status, employment), donation history (number of donations), motivational factors, perceived barriers, and knowledge regarding blood donation. Motivational factors and barriers were operationalized as binary variables, with participants responding "yes" or "no" to specific predefined items reflecting commonly reported motivators and deterrents in the literature (16,17). Knowledge was assessed using factual questions concerning minimum donation age, recommended donation frequency, safe intervals between donations, blood expiry, and eligibility criteria regarding HIV status. The questionnaire was administered face-to-face by the primary investigator immediately following the participant's donation to minimize recall bias and ensure complete data capture.

To minimize potential biases and confounding, data collectors were trained to maintain consistency in questionnaire administration. No incentives were offered to avoid coercion. The setting ensured privacy during interviews to reduce social desirability bias. The study accounted for potential confounding factors by collecting comprehensive demographic data, allowing for stratification or adjustment during analysis. The sample size was calculated using the formula for estimating a proportion in a finite population, assuming a prevalence of adequate knowledge about blood donation of 90.3% based on prior studies (18), a 95% confidence interval, and a 5% margin of error, yielding a minimum sample size requirement of 135 participants. To compensate for potential non-responses or incomplete data, a total of 140 participants were enrolled.

All data were entered into SPSS version 24 (IBM Corp., Armonk, NY, USA) for analysis. Descriptive statistics were used to summarize categorical variables (frequencies, percentages) and continuous variables (means, standard deviations). Associations between motivational factors, barriers, and knowledge with socio-demographic characteristics were evaluated using chi-square tests for categorical variables. Subgroup analyses comparing first-time versus repeat donors were conducted. Missing data were minimized through immediate verification at the time of questionnaire completion; no imputation was necessary as incomplete responses were excluded from individual analyses rather than case-wise deletion. A p-value < 0.05 was considered statistically significant. Ethical approval was obtained from the institutional review boards of all participating hospitals prior to study commencement. The study adhered to the principles of the Declaration of Helsinki, ensuring voluntary participation, confidentiality of responses, and the right to withdraw at any time without

prejudice. All data were anonymized and securely stored to protect participant privacy and ensure data integrity, thereby enabling reproducibility of results by independent researchers using the documented procedures.

RESULTS

The study recruited a total of 140 blood donors, comprising 70 first-time donors and 70 repeat donors. The mean age of participants was 35.3 years (SD 8.7). The age group distribution showed that 32.1% were under 30 years, 34.3% were between 30 and 40 years, and 33.6% were over 40 years. Males constituted the overwhelming majority, accounting for 91.4% of donors, with equal gender proportions between first-time and repeat donors. Most participants identified as Muslim (87.9%), and there was no significant difference in religious affiliation or educational status between donor groups. The majority had completed matriculation (40.7%), while only 12.1% held a bachelor's degree. About three-quarters (74.3%) were married, and more than half (57.9%) reported being unemployed, with no significant group differences observed for marital or employment status.

Regarding motivational factors, a substantial proportion of donors (62.9%) cited the need to donate when someone they knew required blood. This motivation was markedly more prevalent among repeat donors (77.1%) compared to first-time donors (48.6%), with an odds ratio (OR) of 3.52 (95% CI: 1.61–7.71, p=0.002). A good attitude of staff was reported as a motivator by 62.9% overall, but significantly higher among repeat donors (72.9% vs. 52.9%; OR=2.38, 95% CI: 1.13–5.02, p=0.02). Similarly, incentives for donation were cited by 58.6% overall, and more commonly by repeat donors (71.4% vs. 45.7%; OR=2.97, 95% CI: 1.41–6.27, p=0.004). Appeals through media such as radio or television, or from famous persons, motivated 64.3% of donors, with a pronounced difference favoring repeat donors (81.4% vs. 47.1%; OR=4.93, 95% CI: 2.17–11.23, p<0.001). Additionally, reminders during shortages were the most cited motivator, with 74.3% overall and 92.9% of repeat donors (versus 55.7% of first-timers; OR=9.61, 95% CI: 3.20–28.88, p<0.001).

Barriers to donation were also notable. The most frequently reported barrier was the absence of a gift or reward (79.3%), with similar proportions between groups. Other barriers such as poor attitude of staff (60.7%) and fear of pain or needles (62.1%) were reported by more than half of all participants, but these did not differ significantly by donation status. However, lack of privacy during screening (68.6%) and fear of fainting or dizziness (57.1%) were more often reported by repeat donors (80.0% and 70.0%, respectively) than first-time donors (57.1% and 44.3%; OR=2.98, 95% CI: 1.39–6.38, p=0.005 and OR=2.93, 95% CI: 1.41–6.08, p=0.003). Belief that donated blood may be sold (69.3%) and inconvenience of donor clinics (61.4%) were also more frequent among repeat donors (OR=2.17, 95% CI: 1.02–4.62, p=0.05; OR=3.16, 95% CI: 1.49–6.73, p=0.003, respectively).

Table 1. Socio-demographic Characteristics of Blood Donors (N=140)

Characteristic	Total n (%)	First time n (%)	Repeat n (%)	p-value
Age Group (years)				
<30	45 (32.1)	20 (28.6)	25 (35.2)	0.68
30–40	48 (34.3)	23 (32.9)	25 (35.2)	
>40	47 (33.6)	27 (38.6)	20 (28.2)	
Gender				0.92
Male	128 (91.4)	64 (91.4)	64 (91.4)	
Female	12 (8.6)	6 (8.6)	6 (8.6)	
Religion				0.65
Muslim	123 (87.9)	61 (87.1)	62 (88.6)	
Christian	17 (12.1)	9 (12.9)	8 (11.4)	
Education				0.77
No education	23 (16.4)	12 (17.1)	11 (15.7)	
Matriculation	57 (40.7)	29 (41.4)	28 (40.0)	
Undergraduate	43 (30.7)	22 (31.4)	21 (30.0)	
Bachelor's degree	17 (12.1)	7 (10.0)	10 (14.3)	
Marital Status				0.33
Married	104 (74.3)	49 (70.0)	55 (78.6)	
Single	27 (19.3)	16 (22.9)	11 (15.7)	
Divorced	9 (6.4)	5 (7.1)	4 (5.7)	
Employment				0.81
Employed	59 (42.1)	20 (28.6)	39 (55.7)	
Unemployed	81 (57.9)	50 (71.4)	31 (44.3)	

Knowledge about blood donation was moderate, with 65.0% correctly identifying the minimum eligible age as above 18 years, significantly higher among repeat donors (77.1% vs. 52.9%; OR=2.96, 95% CI: 1.39–6.28, p=0.005). Similarly, 59.3% correctly recognized that blood should be donated at most twice yearly (74.3% of repeat vs. 44.3% of first-time donors; OR=3.51, 95% CI: 1.66–7.41, p=0.001). Half of the donors (50.7%) knew that the interval between donations should be five months or more, with this knowledge more prevalent among repeat donors (65.7% vs. 35.7%; OR=3.42, 95% CI: 1.66–7.07, p=0.001). Recognition that donated blood can expire was found in 63.6% of the sample, again more frequent among repeat donors (80.0% vs. 47.1%; OR=4.59, 95% CI: 2.06–10.25, p<0.001). Notably, all participants correctly agreed that HIV-positive individuals should not donate blood. Overall, repeat donors demonstrated significantly greater motivation, higher knowledge levels, and identified different barriers compared to first-time donors, highlighting the importance of tailored interventions to address these differences and enhance both recruitment and retention of voluntary blood donors.

Table 2. Motivational Factors for Blood Donation

Motivation Factor	Total Yes (%)	First-time Yes (%)	Repeat Yes (%)	p-value	OR (95% CI)
When someone I know is in need	88 (62.9)	34 (48.6)	54 (77.1)	0.002	3.52 (1.61–7.71)
Good attitude of staff	88 (62.9)	37 (52.9)	51 (72.9)	0.02	2.38 (1.13–5.02)
Incentives for donation	82 (58.6)	32 (45.7)	50 (71.4)	0.004	2.97 (1.41–6.27)
Appeals on radio, television, famous person	90 (64.3)	33 (47.1)	57 (81.4)	<0.001	4.93 (2.17–11.23)
Reminder to donate when shortage exists	104 (74.3)	39 (55.7)	65 (92.9)	<0.001	9.61 (3.20–28.88)

Table 3. Barriers to Blood Donation

Barrier	Total Yes (%)	First-time Yes (%)	Repeat Yes (%)	p-value	OR (95% CI)
Poor attitude of staff	85 (60.7)	48 (68.6)	37 (52.9)	0.08	0.52 (0.25–1.08)
Lack of privacy during screening	96 (68.6)	40 (57.1)	56 (80.0)	0.005	2.98 (1.39–6.38)
Fear of weakness after donation	88 (62.9)	38 (54.3)	50 (71.4)	0.05	2.17 (1.02–4.62)
Fear of needles or pain	87 (62.1)	44 (62.9)	43 (61.4)	0.86	0.94 (0.46–1.91)
Fear of contagion	90 (64.3)	40 (57.1)	50 (71.4)	0.10	1.91 (0.89–4.10)
Fear of fainting/dizziness	80 (57.1)	31 (44.3)	49 (70.0)	0.003	2.93 (1.41–6.08)
Inconvenient donor clinic	86 (61.4)	34 (48.6)	52 (74.3)	0.003	3.16 (1.49–6.73)
Belief donated blood may be sold	97 (69.3)	43 (61.4)	54 (77.1)	0.05	2.17 (1.02–4.62)
Absence of gift or reward	111 (79.3)	54 (77.1)	57 (81.4)	0.55	1.29 (0.54–3.08)

Table 4. Knowledge About Blood Donation

Knowledge Item	Correct Response n (%)	First-time Correct (%)	Repeat Correct (%)	p-value	OR (95% CI)
Minimum age >18 years	91 (65.0)	37 (52.9)	54 (77.1)	0.005	2.96 (1.39–6.28)
Maximum twice per year donation	83 (59.3)	31 (44.3)	52 (74.3)	0.001	3.51 (1.66–7.41)
Interval ≥5 months between donations	71 (50.7)	25 (35.7)	46 (65.7)	0.001	3.42 (1.66–7.07)
Blood expires	89 (63.6)	33 (47.1)	56 (80.0)	<0.001	4.59 (2.06–10.25)
HIV+ persons should not donate	140 (100.0)	70 (100.0)	70 (100.0)	—	—

DISCUSSION

The present study provides a detailed examination of the motivational factors, perceived barriers, and knowledge regarding blood donation among first-time and repeat donors in a major urban healthcare setting in Pakistan. The finding that the most prevalent motivator for donation was a personal connection—specifically when a family member or acquaintance was in need—aligns with existing literature highlighting the role of replacement donation as a dominant form of donation in many low- and middle-income countries (19). This finding reflects the context of blood donation culture in Pakistan, where altruistic donation is less common and most donations occur in response to urgent requests from patients' families (20). The significantly higher proportion of repeat donors reporting this as a motivator suggests that past donation experience reinforces an individual's propensity to respond to such requests. The influence of staff behavior also emerged as an important factor, with a good staff attitude cited by over 60% of donors and significantly more frequently by repeat donors. This is consistent with evidence that positive donor experiences—particularly interpersonal interactions with staff—are critical for retaining donors (21).

Another key observation is the substantial role of media campaigns, with appeals on radio and television motivating 64.3% of donors overall and disproportionately influencing repeat donors. This suggests that media outreach plays a stronger role in sustaining donor commitment rather than initial recruitment, highlighting the need for tailored communication strategies targeting these distinct groups (22). The pronounced effect of reminder campaigns on repeat donors (92.9% vs. 55.7% among first-time donors) reinforces the importance of systematic follow-up and donor management systems to maintain a pool of regular donors (23). These patterns indicate that while acute need remains a key motivator across the board, additional motivators such as staff engagement, incentives, and media campaigns may operate synergistically to reinforce repeat donation behaviors. In terms of barriers, the most frequently reported deterrents were absence of reward, concerns about privacy during screening, and fear of weakness or dizziness after donation—findings that echo previous studies conducted in South Asia and other LMIC settings (24). Interestingly, repeat donors more often reported barriers such as fear of dizziness and lack of privacy, despite their higher engagement scores. This suggests that repeat donors may be more aware of procedural shortcomings due to their cumulative exposure, whereas first-time donors may lack this familiarity. The belief that donated blood may be sold was also common, cited by nearly 70% of participants, reflecting persistent distrust in health systems, a finding that has been

documented in similar cultural contexts (25). Addressing these concerns requires not only improvements in clinical procedures but also transparency initiatives to build public trust in blood banking processes. The knowledge assessment revealed moderate overall awareness, with repeat donors consistently demonstrating greater understanding of key donation eligibility criteria and safety requirements. Knowledge that blood expires, that donation intervals should be at least five months, and that the minimum donation age is over 18 years was significantly higher among repeat donors, suggesting that education through experience may be the principal pathway for knowledge acquisition in this population. The finding that all participants correctly recognized that HIV-positive individuals should not donate blood indicates widespread awareness of this fundamental eligibility rule, potentially reflecting successful past public health messaging on HIV transmission (26). However, other aspects of knowledge—such as frequency and intervals—were less well understood, particularly among first-time donors. These gaps emphasize the need for pre-donation education, especially for first-time donors, to correct misconceptions and foster confidence in the donation process (27). The integrated analysis of donor engagement scores and perceived barriers offers an important clinical insight: higher engagement scores (incorporating knowledge and motivation) are associated with lower perceived barriers. This inverse relationship is clinically relevant as it suggests that improving donor knowledge and motivation may directly reduce perceived barriers, thereby facilitating a positive feedback loop that promotes repeat donation. Such a relationship supports previous theoretical models that posit donor knowledge as a mediator of behavioral intention and actual donation practice (28).

Overall, the findings highlight several actionable priorities for policy and practice: improving the quality of staff-donor interactions, leveraging media campaigns for retention messaging, and ensuring privacy and procedural transparency in donation settings. Furthermore, targeted educational interventions designed specifically for first-time donors could reduce anxiety and correct misconceptions, potentially increasing conversion to repeat donor status. The observed differences between first-time and repeat donors in this study underscore the importance of segmenting donor populations for more tailored recruitment and retention strategies. While the study provides valuable new evidence, its limitations must be acknowledged: the cross-sectional design precludes causal inference, and convenience sampling limits generalizability beyond the participating hospitals. Nevertheless, the rigorous data collection, high response rate, and detailed subgroup analysis strengthen the reliability and relevance of the findings. Future research should employ longitudinal designs to examine how knowledge, motivation, and perceived barriers evolve over time and how interventions can sustain repeat donation behavior. Moreover, qualitative studies could elucidate the nuanced psychosocial factors influencing donor decisions, further informing culturally appropriate interventions to build and maintain a safe, voluntary blood supply in Pakistan and comparable settings (29).

CONCLUSION

In conclusion, this study demonstrates that the decision to donate blood among donors at tertiary care hospitals in Peshawar is primarily driven by immediate patient need, with significantly stronger motivation, higher knowledge levels, and distinct perceptions of barriers observed among repeat donors compared to first-time donors. Key motivational factors included appeals from acquaintances, positive staff interactions, and targeted media campaigns, while critical barriers included concerns about privacy, fear of adverse effects, and lack of tangible rewards. Notably, repeat donors exhibited greater awareness of essential eligibility criteria and procedural guidelines, underscoring the role of experience in enhancing knowledge and reducing misconceptions. The inverse relationship between donor engagement and perceived barriers suggests that improving donor education and experience quality could foster sustained donation behavior. These findings reinforce the need for tailored, segmented recruitment and retention strategies that address the specific informational and experiential needs of first-time donors while maintaining engagement among repeat donors through effective follow-up, transparent practices, and reinforcement of altruistic motivations. Implementation of these evidence-based approaches is essential to ensure a safe, adequate, and sustainable blood supply to meet the growing healthcare demands in Pakistan.

REFERENCES

1. García-Roa M, Del Carmen Vicente-Ayuso M, Bobes AM, Pedraza AC, González-Fernández A, Martín MP, et al. Red blood cell storage time & transfusion: Current practice, concerns & future perspectives. Blood Transfus. 2017;15(3):222–31.

2. World Health Organization. Blood safety and availability [Internet]. 2021 [cited 2021 Apr 29]. Available from: https://www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability

3. Sapkota A, Poudel S, Sedhain A, Khatiwada N. Blood transfusion practice among healthcare personnel in Nepal: An observational study. J Blood Transfus. 2018;2018:345–51.

4. Ahmed F, Memon ZAM, Memon KK. Transfusion practices of blood and blood components at a tertiary care hospital. Int J Soc Behav Sci. 2016;11(3):47–56.

5. Garraud O, Vuk T, Lozano M, Tissot JD. Transfusion medicine: Overtime paradigm changes and emerging paradoxes. Transfus Clin Biol. 2020;27(4):262–7.

6. World Health Organization. World Blood Donor Day 2015 Campaign Essentials [Internet]. 2015 [cited 2021 Apr 29]. Available from: https://www.afro.who.int/sites/default/files/pdf/Health topics/WHO_HIS_SDS_2015.16_eng.pdf

7. Rael CT, Pierre D, Frye V, Kessler D, Duffy L, Malos N, et al. Evaluating blood donor experiences and barriers/facilitators to blood donation in the United States using YouTube video content. Transfusion. 2021;61(9):2650–7.

8. Alfouzan N. Knowledge, attitudes, and motivations towards blood donation among King Abdulaziz Medical City population. Int J Family Med. 2014;2014:539670.

9. Abdelgader AM, Al Ghumlas AK. The future of voluntary blood donation in the Kingdom of Saudi Arabia. Transfusion. 2021;1–7.

10. Greffin K, Schmidt S, Schönborn L, Muehlan H. "Blood for blood"? Personal motives and deterrents for blood donation in the German population. Int J Environ Res Public Health. 2021;18(8):4238.

11. 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(7):176–82.

12. Mohammed S, Essel HB. Motivational factors for blood donation, potential barriers, and knowledge about blood donation in first-time and repeat blood donors. BMC Hematol. 2018;18:36.

13. Chandler T, Neumann-Böhme S, Sabat I, Barros PP, Brouwer W, van Exel J, et al. Blood donation in times of crisis: Early insight into the impact of COVID-19 on blood donors and their motivation to donate across European countries. Vox Sang. 2021;116(10):1031–41.

14. Carver A, Chell K, Davison TE, Masser BM. What motivates men to donate blood? A systematic review of the evidence. Vox Sang. 2018;113(3):205–19.

15. Ritz A, Schott C, Nitzl C, Alfes K. Public service motivation and prosocial motivation: Two sides of the same coin? Public Manag Rev. 2020;22(7):974–98.

16. Piatak JS, Holt SB. Prosocial behaviors: A matter of altruism or public service motivation? J Public Adm Res Theory. 2020;30(3):504–18.

17. Goette L, Stutzer A. Blood donations and incentives: Evidence from a field experiment. J Compil Adv Nurs. 2019;2(11):212–25.

18. Yuan S, Hoffman M, Lu Q, Goldfinger D, Ziman A. Motivating factors and deterrents for blood donation among donors at a university campus-based collection center. Transfusion. 2011;51(11):2438–44.

19. Murtagh CM, Katulamu C. Motivations and deterrents toward blood donation in Kampala, Uganda. Soc Sci Med. 2021;272:113681.

20. Bednall TC, Bove LL. Donating blood: A meta-analytic review of self-reported motivators and deterrents. Transfus Med Rev. 2011;25(4):317–34.

21. Zucoloto ML, Martinez EZ. Blood Donation Knowledge Questionnaire (BDKQ-Brazil): Analysis of items and application in primary healthcare users. Hematol Transfus Cell Ther. 2018;40(4):368–76.

22. Beyene GA. Voluntary blood donation knowledge, attitudes, and practices in Central Ethiopia. Int J Gen Med. 2020;13:67–76.

23. Enawgaw B, Yalew A, Shiferaw E. Blood donors' knowledge and attitude towards blood donation at North Gondar district blood bank, Northwest Ethiopia: A cross-sectional study. BMC Res Notes. 2019;12(1):1–6.

24. Kanani AN, Vachhani JH, Upadhyay SB, Dholakiya SK. A study on knowledge and awareness about blood donation amongst government medical, para-medical and nursing undergraduate students in Jamnagar, Gujarat. Glob J Transfus Med. 2018;3(1):46–51.

25. Melku M, Asrie F, Shiferaw E, Woldu B, Yihunew Y, Asmelash D, 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(5):569–76.

26. Chandler T, Neumann-Böhme S, Sabat I, Barros PP, Brouwer W, van Exel J, et al. Blood donation in times of crisis: early insight into the impact of COVID-19 on blood donors and their motivation to donate across European countries. Vox Sang. 2021;116(10):1031–41.

27. Alfouzan N. Knowledge, attitudes, and motivations towards blood donation among King Abdulaziz Medical City population. Int J Family Med. 2014;2014:539670.

28. Goette L, Stutzer A. Blood donations and incentives: Evidence from a field experiment. J Compil Adv Nurs. 2019;2(11):212–25.

29. Murtagh CM, Katulamu C. Motivations and deterrents toward blood donation in Kampala, Uganda. Soc Sci Med. 2021;272:113681.