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FACTORS HINDERING DONORS' BELIEF FOR BLOOD DONATION AMONG PATIENT'S RELATIVES AND ATTENDANTS: A COMPREHENSIVE REVIEW

Comprehensive Review

Nargis Ikram[1], Haifa Tahir Khan[2]*, Abidullah[2], Dr. Saadullah Afridy[3], Ansa Tahir[4]

[1]Technologist, Pathology Rehman Medical Institute

[2]Senior Lecturer, Public Health, Sarhad Institute of Health Sciences, Sarhad University of Science and Technology

[3]Director Public Health, Sarhad Institute of Health Sciences, Sarhad University of Science and Technology

[4]Lecturer Public Health, Public Health, Rehman Medical Institute

Corresponding Author: Haifa Tahir Khan, haifa.sihs@suit.edu.pk, Senior Lecturer, Public Health, Sarhad Institute of Health Sciences, Sarhad University of Science and Technology

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ABSTRACT

Background: Blood donation is an indispensable component of modern healthcare, yet voluntary participation remains insufficient in many low- and middle-income countries, including Pakistan. Reliance on replacement donors continues to dominate, often influenced by sociocultural beliefs, misconceptions, and systemic challenges. Understanding the behavioral and perceptual factors affecting donation among patient relatives and attendants is essential for designing effective, context-specific interventions that promote safe and sustainable blood donation practices.

Objective: To investigate factors hindering blood donation beliefs and behaviors among patient relatives and attendants using the Health Belief Model framework.

Methods: A cross-sectional analytical study was conducted at the blood banks of two tertiary care hospitals in Peshawar over six months. A total of 384 participants were recruited through convenient sampling. Data were collected using a structured, self-administered questionnaire based on Health Belief Model constructs, including perceived susceptibility, severity, benefits, barriers, and cues to action, measured on a 4-point Likert scale. Statistical analysis was performed using SPSS version 22, applying descriptive statistics, frequencies, percentages, and composite scoring for each construct.

Results: The majority of participants were aged 29–39 years (32.6%), with males comprising 60.0%. Perceived benefits (mean 2.88 ± 0.73) and cues to action (mean 2.87 ± 0.76) demonstrated the highest scores. However, notable barriers were reported, including fear of needles (48.7%), concern about contracting diseases (48.1%), side effects affecting daily life (48.2%), and time constraints (47.9%). Perceived severity scored 2.69 ± 0.92, while perceived susceptibility was lowest at 2.53 ± 0.81. Only 34.6% expressed intention to donate blood, with higher willingness observed among males (39.1%) compared to females (28.6%).

Conclusion: Blood donation reluctance is driven by a combination of psychological fears, cultural perceptions, and system-related barriers. Addressing these factors through targeted education, improved donor experiences, and community-based strategies is essential to enhance voluntary blood donation practices.

Keywords: Blood Donation, Health Belief Model, Pakistan, Patient Relatives, Public Health, Transfusion Medicine, Voluntary Blood Donation

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INTRODUCTION

Blood donation remains a fundamental pillar of contemporary healthcare systems, sustaining a wide spectrum of life-saving interventions including trauma management, major surgical procedures, obstetric emergencies, oncological therapies, and the long-term care of hematological disorders. Despite remarkable advancements in medical science, blood and its components cannot be artificially synthesized, rendering voluntary human donation the only reliable source for transfusion services worldwide (1). Recognizing this critical dependency, the World Health Organization advocates for voluntary, non-remunerated blood donation (VNRBD) as the safest and most sustainable model, given its strong association with lower prevalence of transfusion-transmissible infections (TTIs) and improved donor retention. Nevertheless, global disparities persist in donor recruitment and retention, with low- and middle-income countries continuing to rely heavily on replacement or family-based donation systems, which often compromise both safety and adequacy of blood supply(2). Within the sociocultural landscape of Pakistan, blood donation practices are deeply embedded in kinship structures and influenced by complex social norms, beliefs, and healthcare experiences. The reliance on replacement donors, typically patient relatives or attendants, reflects both systemic limitations and prevailing mistrust in anonymous blood donation systems. Families often prefer known donors due to concerns about blood safety, while fears surrounding disease screening, stigma associated with potential diagnoses, and lack of transparent counseling further discourage participation. Cultural hierarchies and family dynamics also play a decisive role, where elders may oppose donation decisions, and women face disproportionate barriers due to misconceptions regarding physical weakness, reproductive health, and societal restrictions (3). These factors collectively contribute to a fragile donor pool and an inconsistent blood supply, particularly in emergency settings(4).

Compounding these challenges is the persistent burden of TTIs among blood donors in Pakistan, which undermines public confidence in transfusion services. Empirical evidence from tertiary care settings has documented notable prevalence rates of hepatitis C, syphilis, and HIV among donors, highlighting ongoing gaps in donor screening and selection processes. The situation is further exacerbated by the substantial demand for regular transfusions among patients with chronic conditions such as thalassemia, with over 100,000 registered cases nationwide requiring continuous blood support (5). This imbalance between supply and demand underscores the urgency of strengthening safe and voluntary donation practices while addressing the psychosocial and structural barriers that hinder donor participation(6). The challenges observed at the national level are particularly pronounced in regions such as Peshawar, where public sector teaching hospitals serve as major referral centers yet struggle with resource constraints and systemic inefficiencies. Facilities such as Lady Reading Hospital, Hayatabad Medical Complex, and Khyber Teaching Hospital frequently encounter blood shortages, compounded by fragmented, paper-based donor management systems and limited integration of digital health technologies. Screening data from these institutions reveal increasing rates of TTIs, including hepatitis B and hepatitis C, further intensifying concerns regarding transfusion safety and donor trust. In such environments, patient relatives and attendants often constitute the primary donor base, yet their willingness to donate is frequently hindered by a convergence of psychological fears, informational gaps, and systemic inadequacies(7, 8).

From a behavioral science perspective, blood donation is a complex health behavior influenced by cognitive, emotional, social, and contextual determinants. Theoretical frameworks such as the Theory of Planned Behavior highlight the interplay of attitudes, subjective norms, and perceived behavioral control in shaping donation intentions, with non-donors commonly citing fear, inconvenience, and lack of awareness as major deterrents (2, 9). Similarly, the Health Belief Model provides a comprehensive lens through which donor behavior can be understood, emphasizing constructs such as perceived susceptibility, severity, benefits, and barriers, alongside cues to action and self-efficacy. Evidence consistently demonstrates that perceived barriers—such as fear of pain, adverse reactions, or disease detection—and perceived benefits—such as altruism and social responsibility—are among the most influential predictors of donation behavior (10, 11). Studies conducted across diverse settings further indicate that enhanced awareness, media influence, and personal exposure to emergency blood needs can significantly strengthen donation intent and repeat behavior (12, 13). Cultural and religious interpretations add another layer of complexity to blood donation behavior, particularly in societies where blood is symbolically associated with identity, purity, and moral value. In many African, Asian, and Middle Eastern contexts, misconceptions regarding the permissibility and implications of blood donation persist despite religious teachings that emphasize the preservation of human life. Within Islamic societies, although saving a life is strongly encouraged, ambiguity regarding anonymous donation and concerns about bodily integrity may influence individual decisions. Psychological barriers, including fear of needles, pain, fainting, and anxiety about uncovering latent illnesses, further contribute to donor reluctance, while mistrust in healthcare institutions—especially among marginalized populations—remains a significant impediment. Gender disparities are also evident, with women consistently underrepresented in donor populations due to physiological concerns, sociocultural constraints, and limited targeted awareness initiatives(14, 15).

Despite a growing body of literature on blood donation practices, significant research gaps remain, particularly within the Pakistani and broader South Asian context. Current evidence highlights a continued reliance on replacement donation, limited participation of female donors, inadequate data systems for donor tracking, and insufficient exploration of ethical, legal, and policy frameworks governing blood transfusion services. Furthermore, there is a paucity of research focusing specifically on the beliefs, perceptions, and lived experiences of patient relatives and attendants, who constitute a critical yet understudied donor group (4). Addressing these gaps is essential for developing contextually relevant interventions that can enhance donor motivation, improve trust in healthcare systems, and transition toward safer, voluntary donation models(3). In this context, a comprehensive exploration of the factors hindering blood

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donation beliefs among patient relatives and attendants is both timely and necessary. By integrating insights from behavioral theories, sociocultural dynamics, and regional healthcare challenges, this review aims to provide a nuanced understanding of donor reluctance and identify potential pathways for strengthening blood donation practices in resource-constrained settings.

METHODS

A cross-sectional analytical study was undertaken to explore the factors hindering blood donation beliefs among patient relatives and attendants in tertiary care settings. The study was conducted over a six-month period, from May to October 2025, at the blood banks of two major teaching hospitals in Peshawar, namely Rehman Medical Institute and Hayatabad Medical Complex. These institutions serve as high-volume referral centers, catering to a diverse patient population, thereby providing an appropriate context for examining donor-related perceptions and behaviors in real-world clinical environments. The required sample size was calculated using the standard formula for prevalence studies, $n = Z^2p(1-p)/d^2$, assuming a 95% confidence level and 5% margin of error, which yielded a minimum sample of 384 participants. A non-probability convenient sampling technique was employed due to feasibility within the clinical setting and the accessibility of eligible participants. The study population comprised patient attendants and relatives visiting the blood banks who were identified as reluctant or hesitant to donate blood. Eligibility criteria included individuals aged between 18 and 65 years, reflecting the standard age range for safe blood donation. Participants with known medical contraindications to blood donation or those who had donated blood within the preceding three to four months were excluded to ensure safety considerations and minimize confounding factors related to recent donation experiences(16, 17).

Data were collected using a structured, self-administered questionnaire designed in accordance with the Health Belief Model framework, which is widely used to assess health-related behaviors and perceptions. The instrument consisted of two primary sections: demographic characteristics, including age, gender, education level, and relationship to the patient, and a series of items evaluating core HBM constructs, namely perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action. Responses to these constructs were measured using a 4-point Likert scale to capture the degree of agreement or perception intensity. Prior to data collection, the questionnaire was reviewed for content validity by subject experts and pilot-tested on a small subset of participants to ensure clarity, cultural appropriateness, and reliability(18). Data collection was conducted in a controlled manner within the blood bank premises, where participants were approached, informed about the study objectives, and invited to participate voluntarily. Written informed consent was obtained from all participants before questionnaire administration, and confidentiality of responses was strictly maintained by anonymizing identifiable information. Participants were also assured that their decision to participate or decline would not affect the care provided to their patients.

The collected data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 22. Descriptive statistical methods were applied to summarize the data, including frequencies, percentages, means, and standard deviations where appropriate. Cross-tabulations were performed to explore associations between demographic variables and HBM constructs, providing insight into patterns of reluctance across different subgroups. Where applicable, inferential statistical tests were considered to assess the significance of observed relationships, with a predefined level of statistical significance(19, 20). Ethical approval for the study was obtained from the institutional review board of the Sarhad Institute of Health Sciences, ensuring adherence to established ethical standards for human subject research. The study was conducted in accordance with the principles of the Declaration of Helsinki, emphasizing respect for participant autonomy, beneficence, and confidentiality throughout the research process.

RESULTS

A total of 384 participants were included in the analysis, representing patient attendants and relatives identified as reluctant blood donors. The age distribution demonstrated that the largest proportion belonged to the younger age groups, with 32.6% aged between 29–39 years and 29.1% between 18–28 years, followed by 22.9% in the 40–49 year group and 15.4% aged above 50 years. Males constituted the majority of the study population (60.0%, n=230), while females accounted for 40.0% (n=154), reflecting the gender imbalance commonly observed in blood donation-related contexts. Educational status varied, with 29.2% having intermediate education, 25.5% holding a bachelor's degree, 23.2% educated up to matric level, 13.3% postgraduates, and 8.8% identified as illiterate. In terms of occupation, 40.9% were employed, 28.1% were students, 21.6% were unemployed, and 9.4% fell into other occupational categories. Assessment of Health Belief Model constructs revealed notable patterns in perceived susceptibility and severity. A considerable proportion of participants expressed concern regarding potential adverse effects of blood donation, with 49.0% agreeing that they might develop bruising due to phlebotomy-related errors. More than half of the respondents reported apprehension about dizziness, infections, and other adverse reactions following donation. Regarding perceived severity, 56.1% agreed or strongly agreed that the possibility of acquiring infections and associated complications was serious and frightening, indicating a substantial level of risk perception that may negatively influence donation behavior.

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Perceived barriers emerged as one of the most influential deterrents to blood donation. Fear-related concerns were prominent, with 48.7% reporting fear of needles, 48.1% expressing concern about contracting diseases during donation, and 45.3% perceiving a risk of infection. Additionally, 48.2% believed that potential side effects could interfere with their normal daily activities, while 47.9% considered the donation process time-consuming. These findings collectively highlight a multidimensional barrier profile encompassing psychological fears, perceived health risks, and logistical constraints. In contrast, perceived benefits were relatively well recognized among participants. Approximately 63.0% acknowledged that blood donation plays a crucial role in saving lives during emergencies. Furthermore, 58.8% valued the opportunity to know their blood group, and 58.6% believed that blood donation contributes to physiological benefits such as cellular replenishment. These findings suggest that while awareness of benefits exists, it may not be sufficient to overcome the prevailing barriers and fears.

Cues to action demonstrated moderate influence on participants' willingness to donate. Personal requests were identified as a strong motivator by 57.8% of respondents, closely followed by emergency situations (57.5%) and social media campaigns (57.1%). Religious group appeals were also influential, with 54.9% indicating that such cues could encourage donation. These results underscore the importance of interpersonal, situational, and community-based triggers in shaping donation behavior among this population. Composite analysis of Health Belief Model constructs revealed that perceived benefits (mean 2.88 ± 0.73) and cues to action (mean 2.87 ± 0.76) had the highest scores, followed by perceived severity (mean 2.69 ± 0.92) and perceived barriers (mean 2.68 ± 0.77), while perceived susceptibility demonstrated the lowest mean score (2.53 ± 0.81). The median values for most constructs ranged between 2.50 and 3.00, indicating moderate agreement across domains. Despite relatively higher perceived benefits, the simultaneous presence of substantial perceived barriers likely contributed to the overall reluctance observed in the study population.

When assessing behavioral intention, only 34.6% of participants expressed willingness to donate blood, indicating a considerable gap between awareness and actual intent. The highest intention was observed among individuals aged 29–39 years (41.6%), followed by those aged 18–28 years (35.7%). Gender-based differences were also evident, with males demonstrating a higher intention to donate (39.1%) compared to females (28.6%), reflecting persistent gender-related disparities in donation behavior. Reliability analysis of the measurement instrument revealed low Cronbach's alpha values across all constructs, ranging from −0.04 to 0.17, indicating poor internal consistency. This suggests potential limitations in the questionnaire design and highlights the need for refinement and validation of measurement tools in future studies to ensure more robust and reliable assessment of behavioral constructs.

Table 1: Demographic Characteristics of Participants (n = 384)

Variable	Category	Frequency (n)	Percentage (%)
Age	18–28 years	112	29.1%
	29–39 years	125	32.6%
	40–49 years	88	22.9%
	≥50 years	59	15.4%
Gender	Male	230	60.0%
	Female	154	40.0%
Education	Matric	89	23.2%
	Intermediate	112	29.2%
	Bachelor	98	25.5%
	Postgraduate	51	13.3%
	Illiterate	34	8.8%
Occupation	Student	108	28.1%
	Employed	157	40.9%
	Unemployed	83	21.6%
	Others	36	9.4%

Table 2: Perceived Barriers to Blood Donation

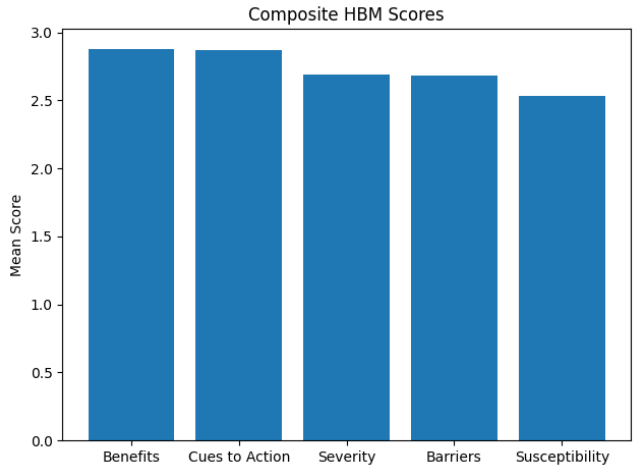
Barrier	Agree/Strongly Agree (%)
Fear of needles	48.7%
Concern about contracting diseases	48.1%
Side effects interrupting normal life	48.2%
Time consumption	47.9%
Infection risk	45.3%

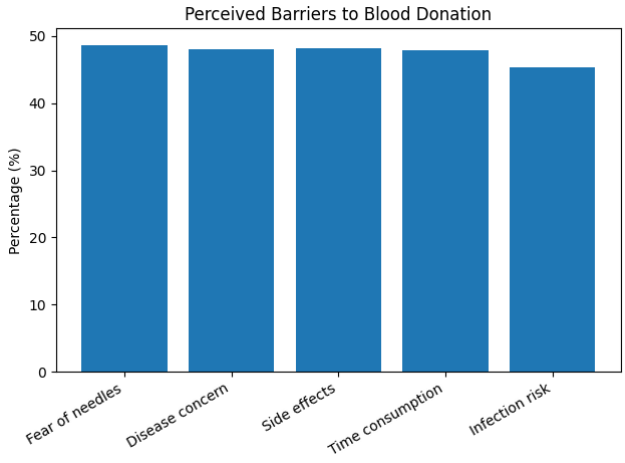
Table 3: Cues to Action for Blood Donation

Cue	Agree/Strongly Agree (%)
Personal requests	57.8%
Emergency situations	57.5%
Social media campaigns	57.1%
Religious group requests	54.9%

Table 4: Composite Health Belief Model (HBM) Scores

Construct	Mean	Median	Standard Deviation (SD)
Perceived Benefits	2.88	3.00	0.73
Cues to Action	2.87	3.00	0.76
Perceived Severity	2.69	2.50	0.92
Perceived Barriers	2.68	2.64	0.77
Perceived Susceptibility	2.53	2.50	0.81





DISCUSSION

The present study provided a comprehensive insight into the multifactorial determinants influencing blood donation beliefs among patient relatives and attendants in a tertiary care context. The demographic profile indicated that the majority of participants were young to middle-aged adults, with the highest representation in the 29–39 year age group, alongside a predominance of male participants. This distribution reflected prevailing sociocultural patterns in South Asian settings, where men are more actively involved in healthcare decision-making and external interactions with healthcare facilities. Similar demographic trends have been reported in other low- and middle-income settings, where willingness to donate may be relatively high among working-age populations, yet actual donation

practices remain constrained by competing responsibilities and systemic barriers (21). These findings suggested that demographic readiness alone was insufficient to translate into consistent donation behavior, highlighting the need to address underlying perceptual and structural factors. The analysis of Health Belief Model constructs demonstrated that perceived benefits of blood donation were relatively well acknowledged, with a substantial proportion of participants recognizing its life-saving role in emergency situations. The highest composite mean score for perceived benefits indicated a general awareness of the positive impact of donation. However, this awareness did not correspond proportionally with behavioral intention, as overall willingness to donate remained modest. This divergence aligned with evidence from other regions where individuals acknowledged the importance of blood donation yet continued to harbor significant apprehensions, particularly related to infection risk and procedural safety. Such findings reinforced the notion that cognitive recognition of benefits alone is insufficient to overcome deeply rooted fears and misconceptions(1, 22).

Perceived barriers emerged as a critical determinant influencing reluctance, with nearly half of the participants reporting fear of needles, concerns about contracting infections, and apprehension regarding disruption of daily activities. These concerns were consistent with findings from multiple international contexts, where fear of pain, infection, and time constraints were repeatedly identified as major deterrents to blood donation (14, 23). The persistence of these fears, despite advances in screening and safety protocols, suggested a gap between medical practice and public perception. In this context, the results highlighted the importance of targeted educational interventions and transparent communication strategies to bridge this gap and build trust in healthcare systems(24). Cues to action demonstrated a comparatively strong influence on participants' perceptions, with personal requests, emergency situations, and community or media-driven appeals serving as significant motivators. This finding was consistent with prior research indicating that direct solicitation and contextual triggers play a crucial role in activating latent willingness to donate. The reliance on interpersonal and situational cues suggested that donation behavior in this population was more reactive than proactive, emphasizing the need for structured and sustained engagement strategies to foster habitual donation practices(13).

Gender-based differences further illuminated important sociocultural dimensions of blood donation behavior. Male participants exhibited relatively lower hesitation and higher intention to donate, whereas female participants faced layered barriers, including concerns about physical weakness, anemia, and sociocultural restrictions related to privacy and autonomy. These findings were in agreement with regional evidence demonstrating significantly lower participation rates among women, often influenced by both physiological misconceptions and societal expectations. The underrepresentation of women in the donor pool not only reflected gender inequities but also indicated a missed opportunity to expand the donor base through inclusive and gender-sensitive strategies(5). From an interpretative perspective, the findings underscored the complex interplay between knowledge, perception, and behavior. While awareness of benefits and exposure to cues to action were relatively strong, persistent perceived barriers and moderate levels of perceived susceptibility and severity appeared to limit the translation of intention into action. This pattern aligned with established behavioral theories, suggesting that perceived barriers often exert a stronger influence on health behavior than perceived benefits. The study also highlighted the contextual influence of healthcare system factors, such as waiting times, counseling practices, and trust in institutional processes, which may further shape donor experiences and decisions(25).

The study possessed several strengths, including the application of a well-established theoretical framework to systematically assess behavioral constructs, the inclusion of a relatively adequate sample size, and the focus on a critical yet underexplored population group comprising patient relatives and attendants. Conducting the study in high-volume tertiary care hospitals enhanced the relevance of the findings to real-world clinical settings. However, certain limitations warranted careful consideration. The cross-sectional design restricted the ability to infer causality, and the use of convenient sampling may have introduced selection bias, limiting the generalizability of the findings beyond the study setting. Additionally, reliance on self-reported data raised the possibility of social desirability bias, particularly in responses related to altruistic behavior. Notably, the low Cronbach's alpha values across constructs indicated poor internal consistency of the measurement tool, suggesting the need for further refinement and validation of the instrument to ensure more reliable assessment in future research(26). These findings carried important implications for both practice and research. At a practical level, there was a clear need to strengthen counseling services within blood banks, focusing on addressing specific fears related to needles, infection, and post-donation weakness through evidence-based communication. The development of gender-sensitive services, including the availability of female staff, private screening areas, and culturally appropriate educational materials, could help mitigate barriers faced by women. Streamlining donation processes to reduce waiting times and improve overall donor experience was also essential. Community engagement strategies, particularly those involving religious leaders, educational institutions, and digital platforms, could enhance awareness and normalize voluntary donation behavior. Furthermore, establishing follow-up systems to provide feedback, test results, and appreciation messages may help build trust and encourage repeat donations.

From a research perspective, future studies should prioritize the development of more robust and culturally adapted measurement instruments, incorporating cognitive testing and pilot validation to improve reliability. Expanding theoretical frameworks to include constructs such as moral norms, donor identity, and trust in healthcare institutions may provide a more comprehensive understanding of donation behavior. Multi-center studies across diverse geographic and institutional settings would enhance generalizability and allow for comparative analysis between public and private sectors as well as rural and urban populations. Additionally, interventional research evaluating the effectiveness of strategies such as digital reminders, fast-track donation systems, and gender-specific interventions would provide valuable evidence for policy and practice. Qualitative approaches exploring the lived experiences and decision-making processes

of reluctant donors could further enrich understanding and inform more nuanced, context-specific interventions. Overall, the study highlighted that improving blood donation practices requires a multifaceted approach that addresses not only knowledge deficits but also psychological, cultural, and systemic barriers. The findings reinforced the importance of aligning healthcare practices with community perceptions and expectations to foster trust, enhance participation, and ultimately ensure a safe and sustainable blood supply.

CONCLUSION

The study concluded that blood donation reluctance among patient relatives and attendants is shaped by a complex interaction of psychological fears, sociocultural beliefs, informational gaps, and systemic challenges within healthcare settings. Misconceptions regarding safety, fear of adverse effects, limited awareness of the significance of donation, and logistical inconveniences collectively hinder the translation of willingness into actual practice. These findings highlight the need for a more patient-centered and culturally sensitive approach to blood donation, emphasizing clear communication, trust-building, and improved donor experiences. Strengthening counseling services, addressing gender-specific concerns, and implementing community-driven awareness initiatives are essential to fostering positive attitudes and sustained participation. Overall, the study underscores the importance of integrating behavioral insights with practical healthcare strategies to enhance voluntary blood donation and ensure a safer and more reliable blood supply.

AUTHOR CONTRIBUTION

Author	Contribution
Nargis Ikram	Conceptualization, Methodology, Formal Analysis, Writing - Original Draft, Validation, Supervision
Haifa Tahir Khan	Methodology, Investigation, Data Curation, Writing - Review & Editing
Abidullah	Investigation, Data Curation, Formal Analysis, Software
Dr. Saadullah Afridy	Software, Validation, Writing - Original Draft
Ansa Tahir	Formal Analysis, Writing - Review & Editing

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