EVALUATING THE IMPACT OF UPDATED STRATEGIES TOWARDS BLOOD DONOR RECUIRETEMENT, RETENTION AND CHALLENGES IN THE SOUTH PUNJAB, NEED TO MOTIVATE THEIR HEARTS AND A PAT ON BACK

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ABSTRACT
Introduction: Blood donation is the very important therapeutic solution in modern era across the world specially the area where the technology and awareness are in limited step like different cities Pakistan. It faces challenges like socio-cultural misconceptions, motivational barriers, and infrastructural limitations. The study is design to investigate the factors influencing blood donation.
Methodology: The study is comprised of total 120 participants which include 90 survey respondents and 30 structured interviewed which contain healthcare professionals, representatives of blood organizations, and community leaders. Quantitative data contain donor behavior, motivational factors, and demographic characteristics, while qualitative data, gathered through semi-structured interviews, examined socio-cultural and logistical barriers. Different statistical analysis performed including chi-square tests, t-tests, and logistic regression. Thematic analysis was also performed **Results:** The results from the respondents include 53.4% were regular donors, with saving lives 47.8% as the primary motivation. Educational level is the key component influenced donor awareness significantly ($p < 0.05$). Regular donors had higher motivational scores than first-time donors confrm through t testing. Logistic regression finds that higher education and recognition programs is the key player. In thematic analysis show the cultural stigmas, myths, and inadequate infrastructure are the major barriers.
Conclusion: Education, Awareness and motivational support strongly impact the donor's population. Educational awareness program and infrastructural development are essential to address barriers. Future strategies should prioritize culturally tailored interventions to improve donation rates in the rural areas.

Keywords: Blood donation, socio-cultural barriers, motivational factors, educational campaigns, Pakistan, healthcare systems, donation predictors.

INTRODUCTION

Blood donation is an essential part of modern healthcare, enabling crucial medical and surgical care, ranging from trauma care to cancer therapy and supporting many lifesaving procedures. The critical role played by blood transfusions is well recognized, yet, the challenge of sustaining a consistent and adequate blood supply poses significant challenges in the world, especially in the developing parts of the globe such as Pakistan, Pakistan. Unique challenges for optimal donor recruitment and retention exist within this space, due to the socio-economic and cultural makeup of the area [1]. Although voluntary, non-paid blood donation is the universally accepted paradigm for maintaining an adequate and safe blood supply 1, Pakistan is an area that largely relies on replacement donations 2, indicating the absence of effective voluntary donor programs. Moreover, the demand for blood continues to rise due to population growth, improvements in medical care and an increasing burden of disease associated with a need for transfusion [2].

Socio-cultural issues in Pakistan have a major effect on blood donation practices. The challenge enables the unique knowledge to the action of blood donation has a number as myth/misconception/religious beliefs limited and or lack of awareness about blood donation, infrastructure barriers (low store, training, less skilled manpower, and a logistic problem) [3]. There is a need for culturally sensitive and region specific strategies to address these issues. Although they have donor's altruism as the principal motivating element, sustaining would require systematic donor retention strategies such as communication, recognition initiatives and positive donor experience. The criteria for promoting the culture of voluntary blood donation is an essential step in attaining a dependable blood supply [4]. Public awareness campaigns focused on dispelling common misconceptions and fears around blood donation are critical. Campaigns that educate people about the safety of the donation process and the benefits it brings to communities, particularly if backed by leaders in those communities, can change behavior. Evidence based strategies are needed particularly for Pakistan as there is a dearth of research on blood donation in this region of Pakistan. To address this gap, and to better understand the socio-cultural, motivational and infrastructural characteristics of blood donation in the Caribbean region while offering actionable insights to improve recruitment, retention and system efficiency, is the purpose of this study.

SIGNIFICANCE OF THE STUDY

The importance of this study is that it can play a key role in improving public health in Pakistan and around the country. By providing region-specific insights into the practices, opportunities and challenges of blood donation, it addresses an important gap in the literature. There are many works on blood donation worldwide but less on the issue peculiar to Pakistan socio-economically and culturally. This study addresses that gap with evidence-based recommendations that are appropriate for the local context. Second, the study underlines the key role of motivation and recognition for donors, which stand as two essential components that contribute to effective blood donation strategies. The words "motivating their hearts and giving a pat on the back" highlight that the emotional attachment also involve in blood donation. Amplifying a sense of community appreciation will help to secure stronger and potentially longer-lasting donor retention for blood donation organizations. This strategy improves not only blood donor retention but also promotes voluntary blood donation in the country, contributing to an optimal blood supply. The trends and approaches taken by Pakistan can guide other areas in overcoming similar challenges. This research provides insights into enhancing the blood collection system and contributing to the global effort by sharing best practices, this study provides the overall strengthening health systems and equity. Access to a safe and adequate supply of blood is an essential part of universal health and sustainable therapeutic intervention. This study also aligns with broader global goals to improve blood banking healthcare system and donor availability by addressing the specific challenges of Pakistan.

OBJECTIVE OF THE STUDY:

This study is aim to check the factor that impact the newly donor recruitment and donor retention strategies in Pakistan. These strategies may include efforts such as community awareness campaigns, donor engagement activities, and other initiatives. This research aims to identify current barriers for the enhancement of blood donation systems in the region. Besides the main objective, this research focuses on the issues confronting blood donation organizations and health care providers in Pakistan. Such challenges are logistical, as well as in terms of limited resources and cultural perceptions of blood donation that may impact donor turnout." All these insights are critical to inform the development of targeted interventions that not only meet short-term goals but also help healthcare infrastructure sustain blood donation practices over the long term.

METHODOLOGY

The methodology of this study aim the capturing comprehensive and context-specific data developed in a rigorous manner. Based on mixed-methods design, quantitative and qualitative approaches were adopted to obtain a multidimensional insight on factors affecting recruitment and retention of the blood donors in Pakistan. Such framework enabled triangulation of data, thus increasing the validity and reliability of the results.

The study was conducted after approval of IRB ethical committee (SIMC/ET.C./00026/24) which contain over a three months of period (Nov to Jan 2024), targeting blood donation organizations, healthcare providers, and potential donors in Pakistan. We stratified districts by population size, healthcare system capacity, and blood donation activity and participants were selected through most convenient purposive sampling technique to capture diverse insights. Purposive sampling was used to select the participants in order to gain a variety of perspectives.

For quantitative Sampling: A structured survey was administered to 90 participants (regular and first-time donors) to obtain quantitative data. The sample size was calculated by using 65% knowledge of blood donation, taking 95% confidence interval and 10% margin of error [21]. The questionnaire was developed using items adapted from previously validated instruments [5] and included both quantitative and qualitative components. The quantitative section comprised closed-ended questions covering demographic information, awareness, educational level, knowledge, attitudes, willingness to donate, perceived barriers, and views on donor recognition programs.

A significant relationship between Awareness and educational level were assessed using structured, closed-ended dichotomous questions included in the questionnaire. Awareness was measured through different of questions designed to evaluate the participants' familiarity with key concepts related to the study topic. Each correct or positive response was assigned one point, while incorrect or negative responses received zero points. The total awareness score was calculated by summing the points from all relevant questions. and the scores could be further categorized into low, moderate, or high awareness based on predefined ranges i.e point scoring of positive score less than 30% are Low awareness, from 30% to 70% are moderate level and greater than 70% considered as high awareness level. Educational level, on the other hand, was determined through a demographic question asking participants to indicate their highest level of formal education. The motivational score in this study was calculated using participants' responses in the form of Likert-scale questions that assessed various reasons for donating blood. The individual scores from these items were summed to generate a total motivational score for each participant. Then compared the mean motivational scores between regular donors and first-time donors using an independent samples t-test. This data were analyzed using statistical software, employing both descriptive and inferential statistics. Frequencies, percentages, chi-square tests, t-tests, and logistic regression analyses were conducted to examine associations and predictors, with a significance threshold set at $p < 0.05$.

For the qualitative component, structured interviews were conducted with 30 participants, including healthcare professionals, representatives of blood donation organizations, and community leaders. These participants were selected through convenience sampling. The sample size was guided by the principle of data saturation rather than statistical calculation, ensuring that sufficient depth and

diversity of perspectives were captured. The close-ended interview questions containing dichotomous scale (Yes or No or neutral) explored socio-cultural barriers, Motivational factor and infrastructural availability were designed to provide rich, contextual insights that complemented the qualitative findings and the scores are categorized into low, moderate, or high motivational level (given numeric score number 1 till 10) based on predefined ranges i.e point scoring of positive score less than 30% are Low motivated, from 30% to 70% are moderate level and greater than 70% considered as high motivated level.. These findings were determined through the percentage of opinions of selected respondent. Thematic analysis was applied to the qualitative data. This involved iterative coding, categorization, and the generation of themes to identify socio-cultural, motivational, and infrastructural factors influencing blood donation behavior. To ensure methodological rigor, the qualitative instrument was reviewed and refined by subject experts prior to data collection.

Ethical considerations were integral to the study. Institutional review board approval was secured, and informed consent was obtained from all participants. Confidentiality and anonymity were maintained by assigning unique identifiers and securely storing data. Participants were informed of their right to withdraw at any stage without consequences.
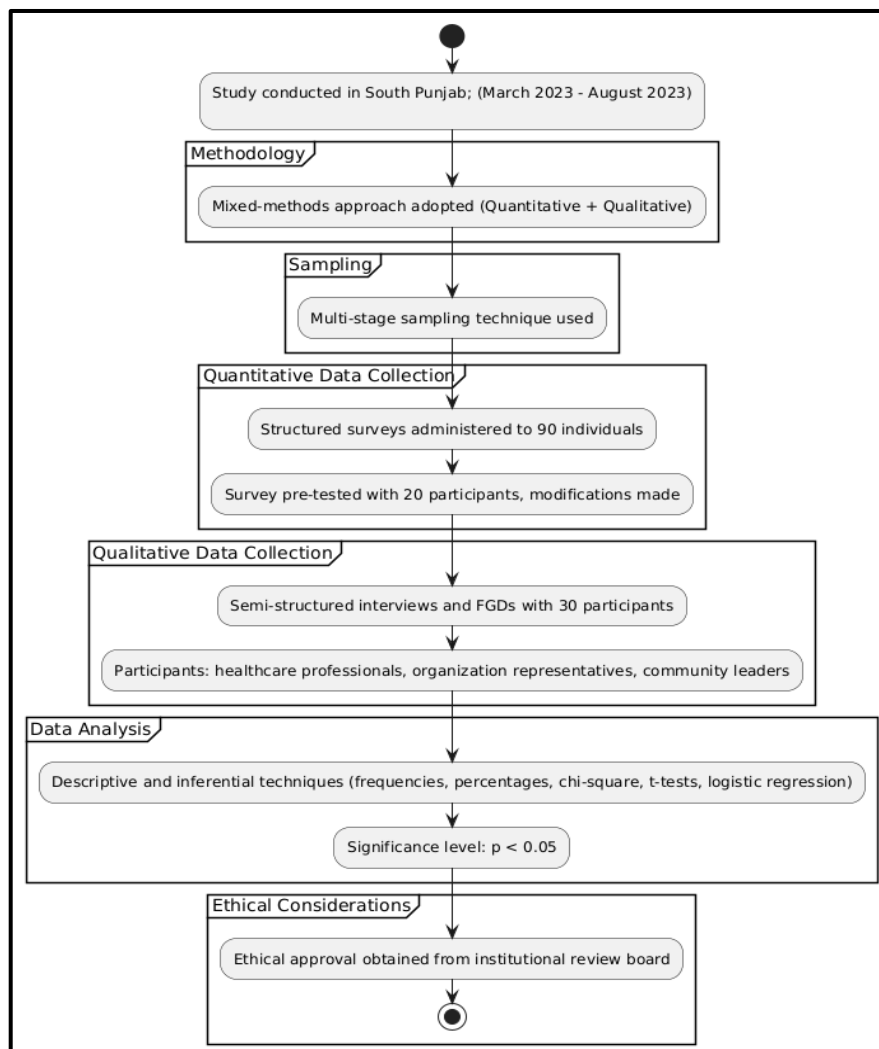

Figure 1: Methodological framework

RESULTS

Demographic Characteristics of Participants: The study included a total of 120 participants, comprising 90 survey respondents and 30 qualitative interviewees. Table 1 provides a detailed summary of the demographic characteristics of the survey respondents.

Table 1: Sociodemographic characteristic (n=90)

Demographic Characteristic	Frequency (n=90) (%)
Gender	
Male	56 (62.2%)
Female	34 (37.8%)
Age Group (Years)	
18-30	45 (50.0%)
31-45	32 (35.6%)
46 and above	13 (14.4%)
Educational Level	
Below Secondary	12 (13.3%)
Secondary	38 (42.2%)
Higher Education	40 (44.5%)

Blood Donation Behavior and Motivational Factors:

Among the blood donors, 53.4% were regular donors who had donated blood at least twice in the past year, indicating a majority of those who actively contribute to blood donation. The remaining 46.6% were first-time donors, showing a healthy influx of new participants. In terms of motivational factors, 47.8% of respondents said that "saving lives" was their primary reason for donating, underscoring the altruistic motivations. Additionally, 34.2% were influenced by community-based campaigns, highlighting the role of outreach programs. Finally, 18.0% participated due to personal requests from family or friends, showcasing the importance of personal connections in encouraging donation.

Table 2: Blood Donation Behavior and Motivational Factors (n=90)

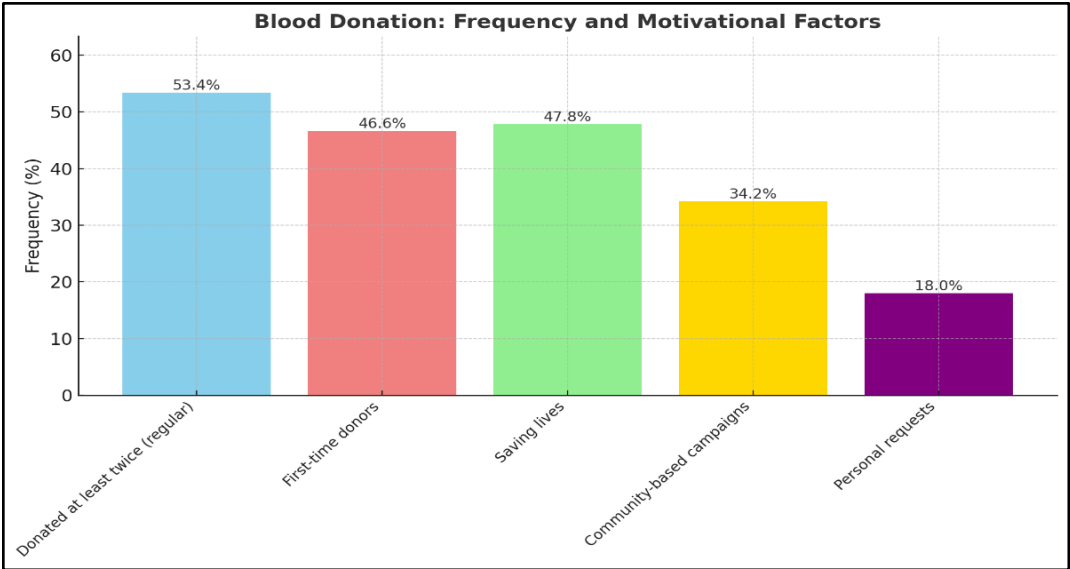| Category	Subcategory	Frequency (%)
Frequency of Donation	Donated at least twice (regular)	53.4%
	First-time donors	46.6%
Motivational Factors	Saving lives	47.8%
	Community-based campaigns	34.2%
	Personal requests	18.0%

Figure 1: Blood Donation Behavior and Motivational Factors (n=90)

Statistical Analysis
1. Chi-square Test
The chi-square test of independence revealed a statistically significant association between educational level and awareness of blood donation campaigns value of p is 0.0293 (significant values is $p < 0.05$).

Table 3: Chi-square Test of Independence

Variable 1	Variable 2	Test Statistic	p-value	Significance
Educational Level	Awareness of Blood Donation Campaigns	Chi-square	0.0293	Significant (p < 0.05)

2 Independent Samples t-Test
This effect was compared using independent samples t-tests and showed that motivational scores were significantly greater for regular donors between groups (M = 4.2, SD = 0.8) than first-time donors (M = 3.5, SD = 1.0). This difference was statistically significant (t = 3.4, $p < 0.01$).

Table 4: Independent Samples t-Test

Group	Mean Motivational Score	Standard Deviation	Test Statistic (t)	p-value	Significance
Regular Donors	4.2	0.8	3.4	< 0.01	Significant (p < 0.05)
First-time Donors	3.5	1.0			

2. Logistic Regression Analysis
Logistic regression analysis revealed that higher education (OR = 2.5, 95% CI: 1.2–5.1, *p* = 0.02) and participation in recognition programs (OR = 3.1, 95% CI: 1.3–7.2, *p* = 0.01) were significant predictors of regular blood donation behavior. Individuals with higher education were 2.5 times more likely to be regular donors, while those engaged in recognition programs were 3.1 times more likely to donate regularly. These findings indicate meaningful associations, further supported by the precision of the confidence intervals.

Table 5: Logistic Regression Analysis

Predictor Variable	Odds Ratio (OR)	95% Confidence Interval	p-value	Significance
Higher Education	2.5	1.2 – 5.1	0.02	Significant (p < 0.05)
Recognition Program Participation	3.1	1.3 – 7.2	0.01	Significant (p < 0.05)

Qualitative Findings
Thirty individuals consisting of health practitioners (n=12), blood donation organizations representatives (n=10) and community leaders (n=8) participated in the qualitative inquiry. Semi-structured interviews were carried out to explore informative socio-culture and logistical challenges of blood donation in Pakistan.

Demographic Characteristic	Frequency (n=30) (%)
Gender	
Male	22 (73.3%)
Female	8 (26.7%)
Age Group (Years)	
18-30	17 (56.7%)
31-45	10 (33.3%)
46 and above	3 (10.0%)

The interview was carefully crafted, including open-ended questions that would allow in-depth, nuanced views to emerge from the participants. This qualitative data provided rich, contextual insights expanding on the quantitative evidence.

Table 4: Number of participant for the interview

Category	Number of Participants (n)
Healthcare Professionals	12
Blood Donation Organization Representatives	10
Community Leaders	8

Key Themes Identified Through Thematic Analysis

Subsequently, when raw data was collected it was analyzed through coding process that provides the key themes using thematic analysis.

The qualitative data was analyzed using thematic analysis, which suggested 3 main themes:

- **Socio-Cultural Barriers:** Many socio-cultural barriers to blood donation were identified by the participants. These included misconceptions regarding the risks to health posed by donation, social stigmas that facilitated donation barriers, and gender-based norms that limited female participation. Myths persisted in many communities, with one, according to the leaders, being the belief that if a person donating blood does so too often, they become weak, leaving potential donors wary.

Socio-Cultural Barriers (N = 30)

Interview Question	Yes (%)	No (%)	Not Sure / Neutral (%)
1. Have you heard beliefs or myths about health risks associated with blood donation?	80% (24)	10% (3)	10% (3)
2. Do cultural or gender norms discourage specific groups (e.g., women) from donating?	73.3% (22)	16.7% (5)	10% (3)
3. Does social stigma or judgment affect your or others' willingness to donate blood?	66.7% (20)	20% (6)	13.3% (4)

- **Motivational Factors:** A strong motivational factor that emerged for regular donors was the altruistic goal to "save lives." However, many participants praised the lack of sustainable motivation from the first-time gifts, often explaining those gifts were not recognized or incentivized

commodified. Long-term donor engagement is achieved through community-centred campaigns and public recognition programmes, healthcare professionals have said.

Motivational Factors (N = 30)

Interview Question	Yes (%)	No (%)	Not Sure / Neutral (%)
1. Are you motivated to donate blood out of a desire to save lives (altruism)?	86.7% (26)	6.7% (2)	6.7% (2)
2. Would recognition or gifts encourage you to become a regular donor?	70% (21)	16.7% (5)	13.3% (4)
3. Do community-based campaigns influence your decision to donate blood?	63.3% (19)	20% (6)	16.7% (5)

- **Available Infrastructure:** During the study, underreported blood donation facilities especially in the rural areas of South Punjab were evident. Naushin Masum, a representative from blood donation organization, commented on the unavailability of mobile blood donation unit and lack of proper funds for the awareness drives. Those problems were exacerbated by irregular scheduling and a shortage of trained personnel, driving away donors even more.

Available Infrastructure (N = 30)

Interview Question	Yes (%)	No (%)	Not Sure / Neutral (%)
1. Are blood donation centers or mobile units easily accessible in your area?	33.3% (10)	53.3% (16)	13.3% (4)
2. Have you faced issues with poor scheduling or lack of trained staff during donation?	60% (18)	30% (9)	10% (3)
3. Would improved facilities or outreach motivate you to donate more frequently?	83.3% (25)	6.7% (2)	10% (3)

Thematic analysis was performed in a systematic manner. Transcripts had been read several times to get familiarized, meanwhile significant patters were identified and coded. Once codes were derived they were grouped into higher order themes so that this analysis could capture the richness and diversity of participants experiences. The qualitative findings supported the quantitative results, highlighting the socio-cultural and logistical factors influencing blood donation and the need for tailored interventions. And the quantitative analysis showed that higher the educational level and awareness campaign are strongly associated with high blood donor retention confrm through statically analysis.

DISCUSSION

Quantitative data were analyzed using statistical software, employing descriptive and inferential statistics. Frequencies, percentages, chi-square tests, t-tests, and logistic regression analyses were conducted, with a significance threshold of $p < 0.05$. In this study we contribute the blood donation practices in Pakistan by providing an in-depth exploration of the socio-cultural, motivational and infrastructural elements associated with donation behaviour using a diverse mixed-methodological framework. These findings enhance the literature on blood donation behaviour, especially in low-resource settings, by offering essential signals about the interaction of education, motivation and systemic support in the occurrence of donations.

We have determined that there was a significant $p < 0.05$ association between education and awareness of blood donation campaigns which would suggest that we really need to educate the public to get them to listen. Blood donation activity was significantly higher in participants with higher education.

This finding is consistent with several previous studies including that which further emphasize education as a major determinant in health-seeking behaviors and awareness of health interventions [6,7]. Additionally, researcher also identified education as a protective factor in the spread of false perceptions of blood donation [8,9]. In this study, such misperceptions were seen in less-educated and rural populations, which is similar to the barriers shown in studies conducted in other developing areas [10], where misperceptions extending from worries about health deterioration to cultural stigma still exist. Improve donor rates through culturally sensitive and context-specific educational campaigns [11].

They turned out to be powerful predictors of blood donation behavior. Regular donors (M = 4.2, SD = 0.8) were more motivated than first-time donors (M = 3.5, SD = 1.0; t = 3.4, p < 0.01). For habitual donors, altruistic motivations (to save lives) were the main reason for donating were researcher who found that altruism was the top reason for donor retention [12, 13]. Conversely, first-time donors were frequently motivated by direct appeals from friends or family, similar to the findings of studies by Trouern et al. [14] and Tomasulo PA et al. [15] which emphasized interpersonal influence as a facilitator of donating behaviors. In addition, community-based campaigns and public recognition programs appeared as external enablers of donor engagement, corroborating Ruetz PP [16] observations regarding the role of public acknowledgement and targeted campaigns on donor recruitment and retention. It also points out the infrastructural and logistical issues of Pakistan blood donation systems. Barriers to donation included limited access to blood donation centers, mobile units, and trained personnel, especially in rural areas. This is fucking with the previous study performed by Callero PL et al. [17] who found similar constraints in low-resource settings. Additionally, the implication of recognition programs as significant predictors of donation habits on a regular basis (OR = 3.1, p = 0.01) further emphasizes the utility of implementing systemic support mechanisms. Pindyck J et al.,[5] have demonstrated that structured initiatives, like donor appreciation events and incentives, improve donor retention. [18].

The association of education with regular donation behavior (OR = 2.5, p = 0.02) in the present study is also consistent with findings from other studies conducted in South Asia and even beyond. Sterner U et al. [19] found that educated donors are more likely to take their donating habits to the next level and have a grow in passion for the social cause and an understanding of how important it is to donate regularly. While previous studies documented that education promoted donor retention, our research extends and highlights the compounding nature of this relationship with systemic interventions, utilizing recognition programs as an example. A synergistic approach that integrates educational outreach with targeted, regulated motivational techniques will be particularly beneficial in historically underserved or rural areas. Methodologically, the mixed-methods approach used in this study — combining a quantitative examination of motivational and behavioral factors with qualitative data on socio-cultural and logistical barriers — is a particular strength. Hurdles such as misbeliefs, infrastructural barriers, and socio-cultural milieu, as highlighted through thematic analysis, continue to be the key obstacles that limit the betterment of blood donation rates. These results complement quantitative findings and help to present a more comprehensive picture of the antecedents of donation behavior. But the study also has its limitations. The findings may have a limited generalizability due to the relatively small sample size and geographic focus. Further research is required to validate these results in larger and more diverse populations and to explore the longitudinal effects of targeted interventions on donor retention. Our findings indicate a complex web of factors influencing blood donation behavior in South Punjab, reflecting the interplay of socio-cultural, motivational and systemic elements. This study determined the barriers preventing fathers from using their potential and revealed that educational interventions and motivational strategies are important, along with systematic support mechanisms, to remove these barriers. These results are consistent with the body of literature from this population and others [20]. and promote holistic strategies for strengthening blood donation systems. This knowledge enables them to formulate and translate evidence-based approaches to increase donation rates in response to the growing demand for blood in health-services.

CONCLUSION & FUTURE RECOMMENDATION

This study provides a comprehensive examination of the socio-cultural, motivational, and infrastructural factors influencing blood donation behavior in Pakistan, integrating quantitative and qualitative methodologies. The findings highlight the critical role of education, motivation, and systemic support in shaping donation behaviors. Participants with higher educational attainment demonstrated significantly greater awareness of blood donation campaigns and a higher likelihood of regular donation, corroborating prior research that links education with increased health literacy and proactive health behaviors. Misconceptions and cultural stigmas, particularly prevalent among less-educated and rural populations, were identified as significant barriers to donation. These results align with studies conducted in similar low-resource settings, underscoring the need for culturally sensitive and community-targeted educational campaigns to dispel myths and improve participation. Motivational factors were found to be key predictors of donor behavior. Regular donors exhibited significantly higher motivational scores, primarily driven by altruism, aligning with global research identifying "saving lives" as the leading motivator. First-time donors, however, were more influenced by interpersonal requests, indicating a need for strategies to foster their transition into regular donors. Recognition programs and community-based campaigns emerged as effective tools for enhancing donor retention, consistent with studies emphasizing public acknowledgment and targeted interventions to sustain donor engagement. Infrastructural and logistical challenges, such as limited donation centers, insufficient mobile units, and inadequate staffing, were critical barriers identified in this study. These findings are consistent with research highlighting systemic inadequacies in blood donation infrastructure in resource-limited settings. The strong association between participation in recognition programs and regular donation behavior further emphasizes the importance of structured systemic support to enhance donor retention.

To address these barriers, future research should explore the longitudinal effects of targeted educational campaigns and recognition programs on donor retention. Policymakers should focus on expanding mobile blood donation units, increasing trained personnel, and incorporating technology-driven platforms, such as donor tracking apps, to enhance accessibility and engagement, particularly in rural areas. Collaboration between healthcare systems, community leaders, and blood donation organizations can facilitate sustained outreach and build trust within communities. These integrated approaches, supported by evidence-based strategies, can significantly improve donation rates and ensure a sustainable blood supply for healthcare systems.

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