

# Donor Recruitment and Motivation: A Cross-Sectional Study on Donors Attending Madina Regional Blood Bank

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## ABSTRACT

**Background:** Blood transfusion is a critical medical intervention that saves lives and treats emergencies such as bleeding injuries and anemias. Despite its importance, many regions, especially in low- and middle-income countries, face challenges in maintaining a sufficient and safe blood supply. In the Kingdom of Saudi Arabia (KSA), issues such as inadequate donor recruitment and retention exacerbate these challenges. This study aims to explore the factors influencing donor recruitment and the motivations behind blood donation, particularly in the region of Madinah, to enhance the effectiveness of blood transfusion services and contribute to a more sustainable blood supply system.

**Objectives:** The study aimed to assess the level of awareness and knowledge about blood donation among donors in Madinah-KSA, identify key motivations behind blood donation, explore barriers and challenges faced by donors, evaluate the impact of blood donation services on donor trust and loyalty, and propose evidence-based recommendations to enhance donor recruitment and retention strategies.

**Methods:** Conducted at the Madinah Regional Blood Bank between April 14 and May 9, 2024, this cross-sectional study involved 510 blood donors. Data were collected using a structured questionnaire that covered demographic information, awareness and knowledge about blood donation, motivations for donating, and perceptions of the blood donation process. The questionnaire assessed factors such as the influence of incentives, donor satisfaction, trust in safety and efficiency, and future donation intentions. Descriptive statistics analyses, including frequencies and percentages, will be calculated for categorical data.

**Results:** The study found that most participants were young males between the ages of 18 and 40, and most of them had only a high school education and bachelor's degree. This result shows that there is a shortcoming in the participation of females in the blood donation process. The study found high levels of awareness and knowledge among donors, primarily influenced by family, friends, and blood bank campaigns. Voluntary donation was the most significant motivation for donating blood, although personal health benefits and compensatory motivations also played substantial roles. Barriers to donation included inconvenient donation center hours, waiting time before donation and fear related to the donation process. Notably, the study recorded high satisfaction and trust in the safety and efficiency of the blood donation process, with most participants expressing willingness to donate again.

**Conclusions:** The findings underscore the importance of targeted educational programs, flexible donation center operations, and improved communication strategies to address donor fears and misconceptions. Enhanced community engagement and the strategic use of technology could further improve donor recruitment and retention. The study recommends expanding educational outreach, optimizing donation center hours, utilizing technology for better engagement and scheduling, and enhancing donor support at donation centers. The study also recommends focusing on supporting and motivating females to participate in blood donation operations. The study recommended developing a systematic plan to stimulate scheduled voluntary donations to organize the donation process and use incentives for donors. Policy advocacy and the integration of blood donation education into public health campaigns and universities' curricula are also advised to support a sustainable blood donation system in Madinah and potentially other similar regions

**Keywords:** Awareness and knowledge, blood donation, donors, Madinah, Saudi Arabia, motivations, barriers and challenges, donor trust, loyalty, retention strategies

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## **INTRODUCTION**

Blood transfusion is a significant medical intervention that saves the lives of a large number of people, and it also treats emergencies such as bleeding injuries, obstetric hemorrhage, and anemias [1]. Blood donation prevents critical shortages in blood supplies, ensuring that hospitals and clinics have the blood components needed for surgeries, emergency treatments, and chronic disease treatments. Regular donation is essential to maintaining a stable blood supply, preventing crises during disasters or disease outbreaks, and helping to manage daily medical needs efficiently.

However, blood availability for transfusions remains a major issue, especially in low- and middle-income countries [2]. While high-income countries have often simplified blood transfusions, most of the world's population faces barriers to accessing adequate and safe blood supplies. Voluntary blood donation remains the key to providing the blood quantities needed by healthcare systems, especially in ensuring adequate and safe blood supplies for medical emergencies. In Madinah, the demand for blood significantly exceeds current donations despite efforts by private and governmental organizations. This highlights the urgent need to increase voluntary donations. Active participation from these entities is essential for mobilizing resources, raising awareness, and promoting a donation culture. Effective collaboration can enhance communication and engagement strategies, improving blood donation campaign efficiency. Increasing voluntary donations is critical to meeting the needs of Madinah hospitals, improving emergency preparedness, and ultimately saving more lives.

Donor recruitment and retention play a crucial role in maintaining a stable blood supply. On the other hand, there are many challenges that blood transfusion centers and services face to strengthen the donor pool, especially in the context of non-profit organizations and the principles of New Public Management [3, 4]. The blood transfusion process also includes a focus on the concept of directing blood donors, and the importance of stakeholder participation, including beneficiaries, donors, employees, and volunteers [4].

The blood transfusion chain, which includes blood availability, processing, and delivery, relies on a complex system of interconnected steps, including infrastructure, logistics, human resources, and financial capital. The process begins with collecting blood from suitable donors, emphasizing the importance of recruiting healthy individuals through voluntary unpaid blood donation. Collected blood undergoes rigorous testing for blood grouping and transfusion-transmitted infections (TTIs), with global variations based on local disease prevalence [2, 5].

Despite the acknowledged necessity of blood donation, many countries, including KSA, face challenges in ensuring a sufficient and safe blood supply. This study aims to

address the problem of inadequate donor recruitment and retention in the region. Previous research has indicated various barriers to blood donation, such as poor public knowledge, unfavorable attitudes, and socio-economic constraints [6, 7, 8]. The problem is further compounded by the lack of comprehensive data on donor motivations and the effectiveness of existing blood donation practices in Madinah, KSA.

The motivation for this study arises from the critical need to understand and enhance blood donation practices, particularly in regions like Madinah, Saudi Arabia. Despite advancements in healthcare, blood transfusion remains a lifesaving intervention with significant challenges in availability and accessibility, especially in developing countries [2]. Furthermore, disparities in global blood collection, with high-income countries contributing disproportionately to the global blood supply, highlight the urgency of improving blood donation practices in other regions [2]. This study is motivated by the need to explore the factors that influence donor recruitment and the motivations behind blood donation in the specific context of Madinah-KSA, contributing to a more sustainable and efficient blood supply system.

## **Importance**

Recognizing the scarcity of research in this area, the current study aims to provide essential insights for policymakers to enhance blood transfusion practices, achieve self-sufficiency in safe blood products, and contribute to universal health coverage [11]. This study also paves the way for a detailed exploration of blood transfusion processes, challenges, and donor dynamics, drawing on diverse perspectives and global contexts to highlight the multifaceted nature of blood supply management.

This study on donor recruitment and motivations at Madinah Regional Blood Bank aims to address critical blood shortages in developing countries. By exploring factors influencing blood donation, it seeks to improve public health outcomes through better blood availability for emergencies and procedures. The findings will inform policy development and healthcare practices, providing insights into regional cultural and social dynamics. Additionally, the study promotes voluntary donation, community engagement, and sustainable health systems, enriching global discourse and academic literature on blood donation.

This cross-sectional study explores blood transfusion processes and investigates donor recruitment strategies and motivations. By examining factors influencing donor engagement, the study aims to provide insights into blood donation dynamics in the Madinah region. These insights will guide evidence-based strategies to enhance recruitment efforts, improve awareness programs, and promote a sustainable culture of voluntary blood donation. Additionally, the study addresses the social nature and altruistic or voluntary motives of blood donors. Emphasizing the role of employees in creating positive

donor experiences and loyalty, it calls for integrating social marketing strategies to improve attitudes toward voluntary blood donation and reduce donor attrition.

### Objectives

The main aim of this study is to comprehensively assess and understand the motivations behind blood donation, as well as the barriers and challenges faced by donors, at Madinah Regional Blood Bank. This study seeks to provide valuable insights into donor recruitment practices and donor behavior, with a focus on improving the effectiveness of blood donation services and enhancing donor retention and recruitment strategies in the region.

#### The objectives of this study are to:

1. Assess the level of awareness and knowledge about blood donation among donors in Madinah-KSA.
2. Identify the key motivations behind blood donation in the study's region.
3. Explore the barriers and challenges faced by potential and current blood donors.
4. Evaluate the impact of blood donation services on donor trust and loyalty.
5. Assessing participants' commitment to blood donation and their donation frequency over one year.
6. Propose evidence-based recommendations to enhance donor recruitment and retention strategies in Madinah, KSA.

Research indicates varying awareness and attitudes towards blood donation across different regions. Al-Haqqaan et al. (2016) observed low knowledge scores and significant gender differences in blood donation practices in Kuwait, suggesting a need for more community outreach programs [6]. Similarly, Alfouzan (2014) found that attitudes, beliefs, and level of knowledge significantly affect blood donation, with barriers such as time constraints and accessibility issues influencing individuals' willingness to donate [7]. In the Kingdom of Saudi Arabia (KSA), Abolfotouh et al. (2014) noted poor knowledge and unfavorable attitudes towards blood donation, underscoring the importance of educational initiatives to enhance public awareness and attitudes [8].

In terms of socio-economic determinants, it plays a crucial role in influencing blood donation practices. Mramba and Ismail (2018) identified gender, education level, health status, cultural and religious beliefs, and fear of HIV test results as key factors affecting blood donation in Tanzania [9]. These findings were echoed by Ibrahim et al. (2021), who highlighted barriers such as failing to meet requirements and a lack of awareness in Qatar. Mobarek Alanazi et al. (2023) further elaborated on barriers specific to the military population in Saudi Arabia, including unfounded fears and lack of information about donation sites [10].

Experiences from different regions demonstrate the potential for increasing voluntary blood donation. Abdelgader & Al Ghumlas (2020) highlighted successful blood donation drives in Saudi Arabia, emphasizing the untapped potential of voluntary donors. These experiences suggest that with proper mobilization and support,

voluntary blood donation can significantly contribute to the blood supply [1].

At the level of the Kingdom of Saudi Arabia, the evolving landscape of blood donation services in the Kingdom has become a subject of interest. Many previous studies have discussed the geographic, economic, and healthcare context of the Kingdom of Saudi Arabia, focusing on its transformation into a high-income economy with significant progress in healthcare. The study by Kabrah et al. (2023) explored the evolution of the blood donation system in Saudi Arabia, highlighting the shift from paid donors to voluntary donations and the role of alternative donations. It also provided a comprehensive examination of the quality of blood donation services in the Kingdom of Saudi Arabia and its relationship to the loyalty and trust of donors [11].

### Material and Methods

This section outlines the methodologies employed in conducting the study focused on donor recruitment and motivations for blood donation at the Madinah Regional Blood Bank in Saudi Arabia. The study aims to study the factors influencing donor behaviors and the effectiveness of current recruitment strategies.

### Study Settings

The study was conducted between April 14 and May 9, 2024, at the Madinah Regional Blood Bank in Saudi Arabia. This location was chosen for its crucial role in meeting regional blood supply needs and its ability to attract a diverse donor population. Serving a wide and varied population, Madinah is a major urban, cultural, and religious center, drawing both residents and pilgrims. This diversity allows for a comprehensive examination of donor backgrounds, including various nationalities, cultures, and socioeconomic statuses, offering valuable insights into donor motivations and behaviors.

### Study Design

The study utilized a cross-sectional descriptive design to assess the motivations and barriers related to blood donation among donors. This approach allowed for the collection of data at a single point in time, facilitating the analysis of various factors influencing blood donation behaviors.

### Study Population and Sample Size

The study included blood donors at the Madinah Regional Blood Bank during the study period, with a total of 980 donors. Of these, 510 voluntarily participated in the questionnaire. To ensure sufficient statistical power and practicality, the adequacy of the 510 participants was verified. The required sample size was calculated using approved statistical methods, confirming that 510 donors were sufficient for conducting the research.

### Sampling Technique

Stratified random sampling was employed to ensure the sample's representation of the diverse demographic

characteristics of the donor population at the blood bank. The sample size calculation, based on statistical principles, aimed to generate a dependable dataset. Considerations included the distribution of various population groups and the necessary level of accuracy for the study findings.

To achieve this objective, the sample size was determined using Raosoft [12], considering approximately 980 donors. The website suggested 277 individuals for a 95% confidence level and 5% margin of error. However, to strengthen validity, the study included 510 donors. The value of N can be calculated using the specified formula.

$$n = \frac{z^2 \times p \times (1-p)}{E^2}$$

Z represents the Z-score, indicating the confidence level at 95%. p denotes the estimated proportion of the population possessing the feature of interest, often assumed as 0.5 when the true proportion is unknown. The margin of error (E) is 5%.

The study included 510 donors to strengthen the reliability of the findings, exceeding the anticipated sample size. This enhances stability, particularly in subgroup analysis. Participants were recruited voluntarily, conducted face-to-face with definite consent obtained. Participants received detailed information ensuring confidentiality. After agreeing, donors scanned a QR code to access and complete the questionnaire online.

The questionnaire outlined study goals, emphasizing participation's significance and confidentiality. Explicit consent was sought before the online survey. Data collection spanned approximately a month until reaching the target sample size. This rigorous process ensured a comprehensive understanding of donor recruitment and motivations at the Madinah Regional Blood Bank.

**Data Collection**

Data were collected through a structured questionnaire administered to donor's post-donation. The questionnaire was divided into three parts: Demographic Information, Awareness and Knowledge about Blood Donation, and Motivations for Blood Donation. Demographic information included age, gender, education, and donation history. Awareness and knowledge about blood donation processes were assessed through self-assessed knowledge, awareness of benefits and risks, and eligibility awareness.

Motivations for blood donation were explored through factors such as motivations, satisfaction with the blood bank experience, trust in safety and efficiency, barriers to continued donation, and future donation intentions.

The questionnaire aimed to understand donor retention and the effectiveness of past recruitment efforts. It also assessed the influence of incentives, trust in safety and efficiency, barriers to continued donation, and future donation intentions to gauge the likelihood of donor return. The results provide valuable insights into donor retention strategies and the factors that motivate individuals to donate blood.

**Data Analysis**

Data from the questionnaires will be analyzed using SPSS software for quantitative analysis. Descriptive statistics, including frequencies and percentages, will be calculated for categorical data. For yes/no questions, "yes" answers will be scored as 1, while "no" and "I don't know" answers will be scored as 0.

Questions with multiple options on a five-point Likert scale will be analyzed accordingly, with scores ranging from 5 (strongly agree) to 1 (strongly disagree), Strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). Higher scores indicate a more positive attitude toward blood donation. The statistical analysis method will vary based on the question type, and detailed methods and key results will be presented in the results section.

**Results**

This section presents the results, focusing on the demographic characteristics of the participants, their Awareness & knowledge about blood donation, and their motivations for donating blood. These results provide insights into the effectiveness of current donor recruitment strategies and the factors influencing donor behavior.

**Demographic Characteristics**

Participants demographic characteristics can be described through the following table and figures

Category	Details	Participants	Percentage
Age Distribution	18 to 30 Y	226	44.3%
	31 to 40 Y	192	37.6%
	41 to 50 Y	61	12.0%
	51 to 60 Y	31	6.1%
Gender	Male	502	98.4%
	Female	8	1.6%
Educational Level	Postgraduate	47	9.2%
	Bachelor's	206	40.4%
	Diploma	33	6.5%
	High school	217	42.5%
	Other	7	1.4%
Previous Blood Donation	Yes	417	81.8%
	No	93	18.2%

Figure 1: Demographic characteristics. Age Distribution

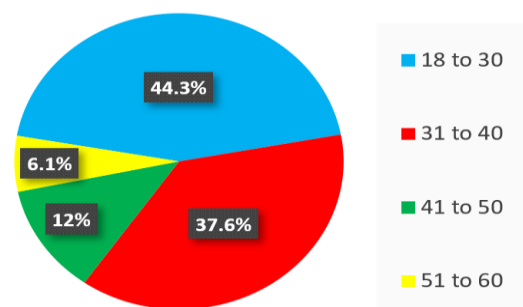


Figure 2: Demographic characteristics.

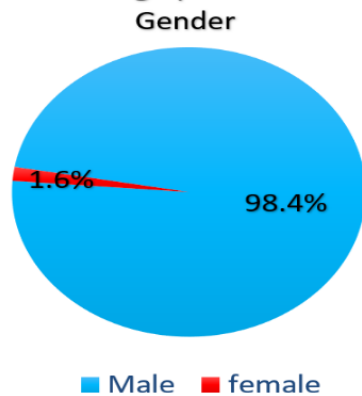


Figure 3: Demographic characteristics. Educational Level

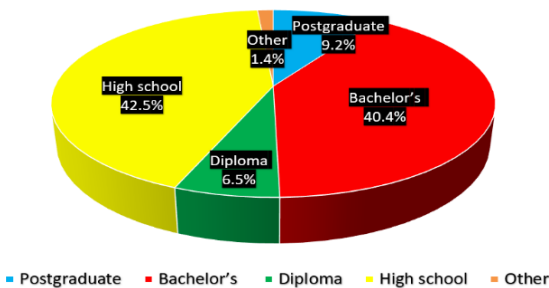
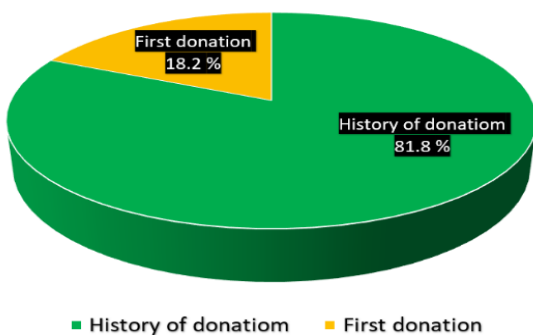


Figure 4: Demographic characteristics. Previous Blood Donation

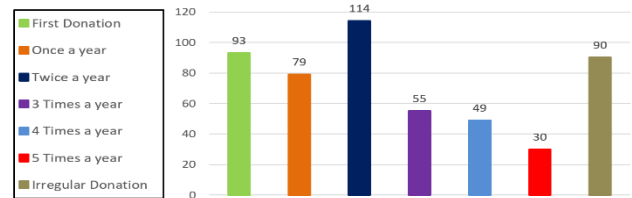


As Table 1 shows, most participants were young males aged between 18 and 30 years, 44.3% of whom were 98.4% male. Educational backgrounds varied: 42.5% had a secondary education, and 40.4% held a bachelor's degree. Notably, 81.8% had previously donated blood, indicating a significant presence of repeat donors. The demographic spread highlights a young, male-dominated donor base with a relatively high level of educational attainment, reflecting the active participation of this segment in blood donation activities in the region.

### 3.1.1 The number of blood donation frequency per year

Category	Participants	Percentage	Category	Participants	Percentage
First Donation	93	18.2%	4 Times a year	49	9.6%
Once a year	79	15.5%	5 Times a year	30	5.9%
Twice a year	114	22.4%	Irregular Donation	90	17.6%
3 Times a year	55	10.8%	-	-	-

Figure 5: Annual Blood Donation Among participants



The data in the table 2 shows, reflecting both regular and occasional donor behavior. The results showed that first-time donors constituted a significant portion of the participants, with 18.2% of the donors being first-time donors. This percentage indicates successful recruitment efforts but also emphasizes the need for strategies to convert these first-time donors into regular donors, ensuring a steady blood supply.

Another notable frequency among donors is regular donors, where the distribution shows a downward trend with increasing annual donations. Specifically, 15.5% donate once a year, 22.4% donate twice a year (the largest segment), 10.8% donate three times a year, 9.6% donate four times a year, and 5.9% donate five times a year. Irregular donors, comprising 17.6% of the sample, may be influenced by situational factors or specific motivations, this group presents an opportunity for targeted education and engagement strategies to increase their donation frequency and integrate them into regular donor programs

### 3.2. Awareness & Knowledge about Blood Donation

Participants' knowledge about blood donation was comprehensively assessed through their answers to questions regarding the donation processes, the benefits and risks associated with blood donation, and the criteria that determine donation eligibility. The study sought to understand where participants primarily obtain their information about blood donation and how they perceive their knowledge levels.

Question	Factors	Participants	Percentage
How did you first learn about the need for blood donation?	Family/Friends	320	62.7%
	Social media	73	14.3%
	School/university	35	6.8%
	Public Advertising Boards	16	3.1%
	Blood Bank Campaigns	137	26.8%
	Others	20	9.3%
How would you rate your knowledge about blood donation?	Low	28	5.5%
	High	110	21.6%
	Moderate	194	38%
	Very Low	10	2%
	Very High	168	32.9%

Figure 6 : First learn about the need for blood donation

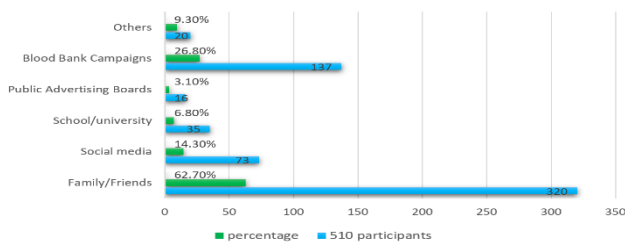
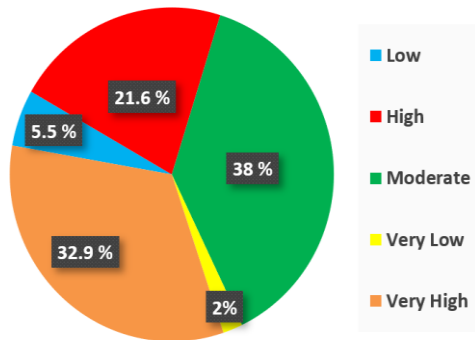


Figure 7: knowledge rate about blood donation



The data revealed that family and friends were the most important sources of information, mentioned by 320 participants (62.7%). This indicates a strong influence of word of mouth within communities. Blood bank campaigns were also a major source, with 137 participants (26.8%) indicating that they received information from these initiatives, highlighting the effectiveness of targeted campaigns by blood banks.

Social media also played a notable role, with 73 participants (14.3%) using it as a source of information, reflecting the growing influence of digital platforms in healthcare communications. University announcements and public advertising boards announcements were less influential but still prominent channels, with 35 (6.8%) and 16 (3.1%) participants respectively, showing a more formal educational communication. In addition, 20 participants (3.9%) mentioned various other sources, which could include healthcare providers or community events.

In assessing their knowledge of blood donation, a large portion of study participants rated their understanding positively. Specifically, 168 participants, representing 32.9% of the sample, reported a “very high” level of knowledge, while 110 participants (21.6%) rated their knowledge as “high.” In addition, the largest group, comprising 194 participants or 38.0% of the total, considered their knowledge to be at an “average” level. Conversely, only a minority of participants considered their knowledge to be insufficient, with 28 participants (5.5%) rating it as “low” and only 10 participants (2.0%) rating it as “very low.”

The following table shows the percentages of participants’ answers that indicate their awareness of the risk factors related to blood donation and their awareness of the problems that may prevent from donating blood:

Table 3B: Donor's awareness & knowledge about Blood donation risk factors

Question	Answer	Participants	Percentage
Are you aware of any health benefits or risks associated with donating blood?	Yes	417	81.8%
	No	93	18.2%
Can you identify any medical conditions or lifestyle factors that might prevent you from donating blood?	Yes	391	76.7%
	No	119	23.3%

Figure 8: aware of health benefits or risks associated with donating blood



Figure 9: Identify any medical conditions or lifestyle factors that might prevent from donating blood



The results reveal participants' awareness of health contraindications and risks associated with blood donation, as well as their understanding of conditions or lifestyle factors that could prevent them from donating. A significant majority, 417 participants (81.8%), confirmed their awareness of the health benefits or risks. This high level of awareness indicates effective educational efforts by blood banks and health campaigns, informing donors about both the altruistic benefits and personal health implications of blood donation.

On a related note, 391 participants (76.7%) reported that they could identify specific medical conditions or lifestyle factors that might prevent someone from donating blood. This awareness is crucial for ensuring donor and blood supply safety, as it reflects an understanding of donation

eligibility criteria. Such knowledge aids in self-examination before donating, simplifying the process and enhancing the efficiency and safety of blood collection operations. The presence of 119 participants (23.3%) unaware of disqualifying conditions or factors indicates room for improvement in educational outreach. Enhancing information dissemination regarding blood donation eligibility can reduce unnecessary postponements and improve the overall donor experience. Additionally, addressing the 93 participants (18.2%) unaware of health benefits or risks could encourage informed participation, potentially increasing donor retention and ensuring a stable blood supply. These findings underscore the importance of ongoing education and awareness efforts to maintain an informed donor base, essential for the effective operation of blood donation services.

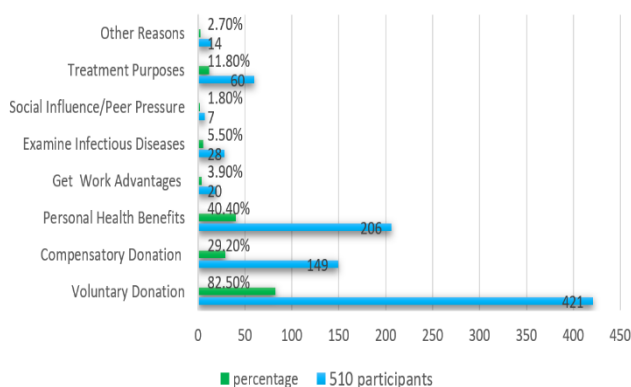
### 3.3 Motivations for blood donation

The motivations for blood donation were diverse, these are illustrated in the following table:

**Table 4: Blood donation Motivations**

Motivation for Donation	Participants	Percentage
Voluntary Donation	421	82.5%
Compensatory Donation (Relative/Friends)	149	29.2%
Donate for Personal Health Benefits	206	40.4%
To Get Advantages in My Work	20	3.9%
To Examine Infectious Diseases	28	5.5%
Social Influence/Peer Pressure	7	1.8%
Donate for Treatment Purposes	60	11.8%
Other Reasons	14	2.7%

**Figure 10 :Blood donation Motivations**



As shown in Table 4, the motives for donating blood among the study participants were diverse, including both voluntary reasons and self-interest. A large majority, 421 participants (82.5%), cited voluntary reasons as their

primary motivation, reflecting a strong sense of community service and a desire to help others.

Additionally, 206 participants (40.4%) were motivated by health benefits, indicating that personal health awareness plays a significant role in the decision to donate blood. Compensatory motives, such as helping friends or relatives, were noted by 149 participants (29.2%), showing a direct personal connection to the donation process.

Work-related benefits influenced 20 participants (3.9%), highlighting the impact of workplace cultures and incentives. Donating for treatment purposes, such as having high levels of hemoglobin, motivated 60 participants (11.8%). Social influence/peer pressure and other reasons were less prominent but still notable, with 60 (11.8%) and 14 (2.7%) participants, respectively.

A notable percentage of donors, 28 individuals (5.5%), donated blood to be tested for infectious diseases, highlighting a significant issue. This behavior stems from a fear of societal judgment, leading some to donate blood rather than seek direct testing for infections. This underscores the need to address and resolve the stigma associated with infectious diseases, encouraging proper testing and treatment in alignment with Saudi societal values.

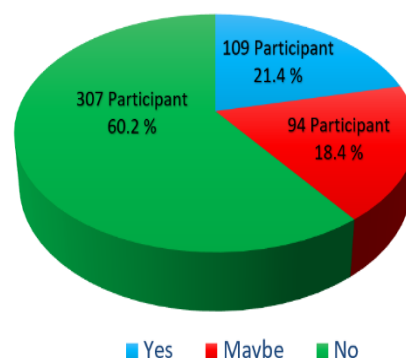
### 3.3.1 Safety, Incentives and Efficiency of The Blood Donation Process

This section describes the impact of safety, incentives, and efficiency of the blood donation process on participants' initiation and continuation of blood donation

**Table 5: safety, incentives, and efficiency of the blood donation process**

Question	Response	Participants	Percentage
Have incentives influenced your decision to donate blood?	Yes	109	21.4%
	No	307	60.2%
	Maybe	94	18.4%
How satisfied are you with the blood donation process at the Madina Regional Blood Bank?	Very Satisfied	413	81.0%
	Satisfied	77	15.1%
	Neutral	13	2.5%
	Dissatisfied	3	0.6%
Do you trust the safety and efficiency of the blood donation process at Madinah Regional Blood Bank?	Very Dissatisfied	4	0.8%
	Yes	490	96.1%
	No	0	0.0%
	Not Sure	20	3.9%

**Figure 11: The influence of incentives on the decision to donate blood**



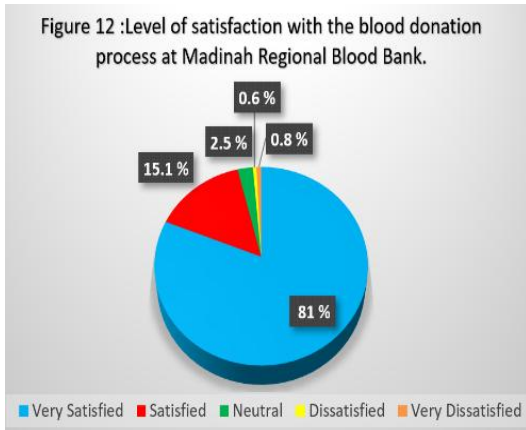
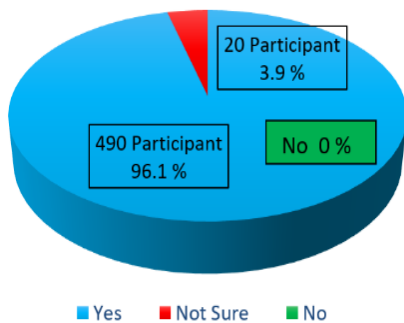


Table 5 shows that incentives influenced 109 participants (21.4%) to donate blood. However, the majority, 307 participants (60.2%), were not influenced by incentives, and 94 participants (18.4%) were likely to be influenced by incentives to donate blood. This suggests that while incentives can be a significant factor, they are not the main motivation for most donors.

Most participants (81.0%) were very satisfied, and 15.1% were overall satisfied with their experience, confirming the blood bank's successful management and operational procedures in meeting or exceeding donor expectations. Participant confidence in the safety and efficiency of the blood donation process was remarkably high, with 490 participants (96.1%) expressing confidence.

**Figure 13: trust the safety and efficiency of the blood donation process**



### 3.3.2 The Barriers and Challenges Faced by Potential and Current Blood Donors

This section outlines the barriers and challenges blood donors faced from their perspectives.

**Table 6: Challenges and Barriers of Blood Donation**

Statement	Participants	Percentage
Fear of blood donation in general.	46	9%
Fear of donating blood (needle, blood vision).	44	8.6%
Fear of adverse reaction & complications of donation.	23	4.5%
Donation center working hours.	96	18.8%
Behaviors of donation center staff.	14	2.7%
Difficulty in accessing the donation center.	30	5.9%
Donation process and procedures	4	0.8%
Waiting times before blood donation	56	11%
Lack of incentives to donate	39	7.6%
Lack of awareness of the importance of donation.	47	9.2%
Not knowing the benefits and importance of donating.	47	9.2%
My facility does not allow me to go out during work hours	41	8%
There is no reason prevent me to donate blood	245	48%

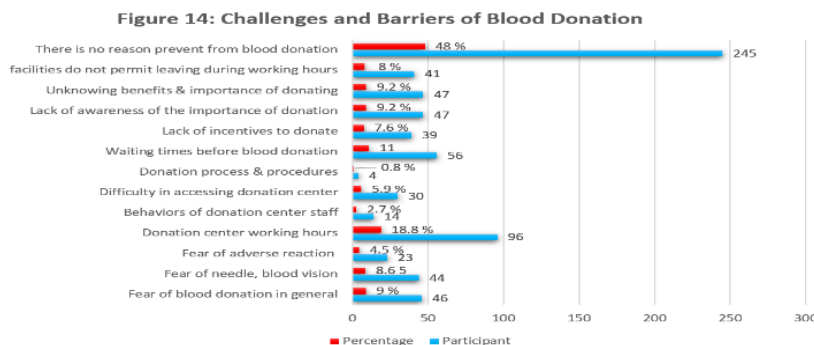


Table 6 highlights factors that might prevent participants from donating blood. Key concerns include donation center operating hours (18.8%), waiting times before donation (11.0%), and fears related to blood in general (9.0%), fear of needle (8.6%), and adverse reactions (4.5%). These

findings suggest the need for improved efficiency and better educational outreach at donation centers.

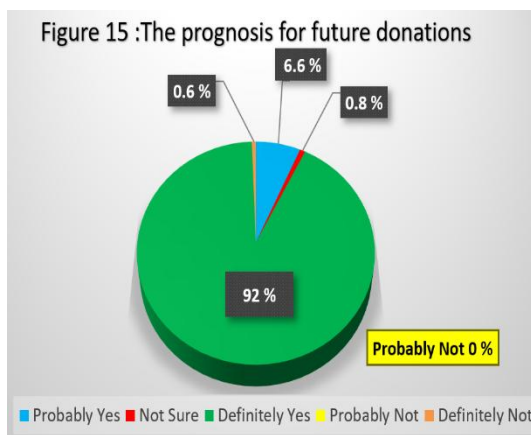
Accessibility issues and donation center staff behavior were lesser concerns, cited by 5.9% and 2.7% of participants, respectively. Notably, 48.0% of participants indicated no

reasons for discontinuing donations, showing strong commitment. Lack of incentives (7.6%), lack of awareness (9.2%), and workplace restrictions (8.0%) were also mentioned.

These findings highlight areas for improvement through motivational strategies and educational campaigns. Despite the mentioned obstacles, about half of the participants (48%) believe there is no reason to prevent them from donating blood now and in the future, which is a promising percentage.

**Table 7: The prognosis for future donations**

Question	Answer	Participants	Percentage
Are you likely to donate blood again in the future?	Definitely Yes	469	92%
	Probably Yes	34	6.6%
	Not Sure	4	0.8%
	Probably Not	0	0%
	Definitely Not	3	0.6%



prognosis for future donations is very positive, with 92.0% of participants stating they would likely donate blood again and an additional 6.6% probably willing to do so. This strong likelihood underscores a generally positive attitude toward blood donation despite perceived concerns, suggesting that while improvements can be made, the overall donor experience and commitment to helping others remain strong within this community.

**Discussion**

Conducted at the Madinah Regional Blood Bank, this study addressed key objectives to understand and improve blood donation practices in the region and assess the level of awareness and knowledge about blood donation among donors. It found that most donors have a moderate to very high knowledge level of blood donation processes, primarily informed by family, friends, and blood bank campaigns [6]. This confirms that educational initiatives by blood banks and related organizations have been effective in conveying important information about blood donation processes and their significance. This is likely influenced

by various information sources, including blood banks' direct outreach, social media campaigns, and interpersonal communications.

However, about 7.5% of participants reported low to very low knowledge levels, indicating a need to better target less informed segments of the population [8]. These findings underscore the importance of diverse education and outreach channels in informing and instilling confidence in potential blood donors. Effective communication strategies bridge the gap, providing essential knowledge for confident participation in blood donation activities.

AABB standards allow up to five donations per year, most donors exhibit irregular patterns, with the majority donating only twice a year [6]. This highlights the need to encourage more frequent donations and implement structured schedules with incentives. While the percentage of regular donors needs to increase, current efforts by governmental and private institutions, such as 24 hours rest after donation, awarding honorary certificates and medals, have had some success in motivating participation. To further enhance blood donation rates, focusing on promoting regular and voluntary donations through improved incentives and organized processes is essential.

Regarding the study's second objective, identifying main motivations for blood donation, results showed that voluntary donation was the primary motivation. Many donors were also influenced by personal health benefits and the desire to help friends or relatives. These findings align with literature suggesting that while voluntary motives dominate, personal and relational incentives significantly contribute to donor turnout [1]. Notably, Workplace benefits and social pressures had a smaller impact, indicating they are less effective in encouraging donations.

One motivation for donating blood was the shyness of some individuals to ask for testing for infectious diseases like sexually transmitted hepatitis and AIDS. Due to social restrictions and fear of societal judgment, some people chose to donate blood. Since a crucial stage of donation involves testing for infectious diseases, donors used this method to check for infections without embarrassment. The study found that about 28 donors resorted to donating blood instead of explicitly asking for testing, especially since their personal information was kept confidential and their identities were protected.

Regarding the study goal, that aimed to identify the obstacles and challenges faced by potential and current blood donors, the study revealed several logistical and psychological barriers. Key issues included inconvenient opening hours at donation centers and long waiting times, mentioned by many participants [9]. Furthermore, concerns such as fear of the needle and fear of adverse reactions highlight the need for improved communication strategies to reassure donors about the safety and comfort of the donation process [5].

To evaluate the impact of blood donation services on donor confidence and loyalty, the results showed high satisfaction rates: 81.0% of participants expressed strong satisfaction with their donation experience, and 96.1% indicated confidence in the safety and efficiency of the donation

process [11]. These metrics not only demonstrate effective operational management, but also indicate strong potential for high donor retention rates.

Strong confidence in the safety and efficiency of the blood donation process not only enhances donor satisfaction but also encourages repeat donations, as donors feel safe and well cared for during their experience. This element can be effectively leveraged to motivate donors to continue donating regularly.

The study succeeded in mapping donor awareness, motivations, barriers, and satisfaction in the context of Madinah. These insights are critical to formulating strategies that not only enhance donor recruitment and retention but also enhance the overall effectiveness and efficiency of the region's blood donation system. As evidenced by the data, promoting a deeper understanding of donor dynamics, and systematically addressing identified challenges will be essential in securing a stable and reliable blood supply for healthcare needs.

### Conclusions, Limitations & Recommendations

#### Conclusions

This cross-sectional study conducted at the Madinah Regional Blood Bank provided insightful findings on awareness, motivations, barriers, and satisfaction levels associated with blood donation in the region. The main conclusions of the study include:

1. Younger donors (18-40) with high school and bachelor's education levels demonstrated superior knowledge of blood donations and their benefits, actively participating in blood donations. This demographic was notably well-informed and engaged. Male donors reported greater participation than female donors, suggesting a higher representation of males in the study. This highlights significant deficiencies in female participation and motivation, indicating a need for targeted outreach and education efforts to address these gaps and encourage more women to become regular blood donors.
2. High level of awareness and knowledge: Most participants demonstrated a good understanding of blood donation processes, supported by effective dissemination of information through family, friends and organized campaigns. This highlights the critical role of community and institutional education in maintaining an informed donor base.
3. Diverse motives influence donor involvement: voluntary donation is the dominant motivating factor, with significant contributions from personal health benefits and the desire to help friends or relatives. These motivations reflect a complex interplay of personal, relational, and societal factors that drive blood donation behaviors.
4. Identified barriers impacting donor engagement: Logistical issues such as inconvenient donor center hours and long wait times were significant barriers. Psychological barriers, including fear of needles and negative reactions, also deter potential donors,

indicating a need for better support and communication strategies.

5. High levels of donor satisfaction and confidence: The vast majority of participants expressed high satisfaction with the donation experience and their confidence in the blood donation process. This demonstrates the effectiveness of blood bank management and operations, contributing to high donor retention rates.
6. Opportunities for Improvement: Despite high satisfaction, identifying specific barriers provides opportunities to make targeted improvements to further enhance donor recruitment and retention.

#### Study Limitations

Although this study provides valuable insights into the behaviors and motivations of blood donors at the Regional Blood Bank in Madinah, it faced some limitations that may affect the results of the study and its generalization and interpretation. The following are the most prominent potential limitations:

1. The design of the study is a cross-sectional study. The nature of this study design may limit the ability to establish causal relationships between the characteristics of donors and their donation behaviors. This design captures a snapshot in time and therefore cannot effectively track changes in donor behavior or motivation over time. Hence, there may be a need to conduct longitudinal studies to understand the dynamics of donor retention and the long-term effects of interventions on donor behavior.
2. Although the sample size of 510 donors provides a large data set, it may not fully represent the broader pool of potential donors in Madinah or other regions. In addition, the demographic skew toward young male donors may limit the applicability of the findings to other demographic groups, such as older individuals and women.
3. The study primarily uses descriptive statistics, which are useful for identifying characteristics and attitudes and measuring donor knowledge and motivations. But they do not provide depth in terms of understanding the complex interactions between multiple factors. More sophisticated statistical methods can reveal deeper insights into the factors that influence blood donation behaviors.
4. The potential for non-response bias exists if individuals who chose to participate in the study differed significantly from those who did not. If non-responders have different attitudes or behaviors regarding blood donation, this may bias the results.
5. Although the study identifies several barriers to donation, it may not include all potential barriers or the precise ways in which these barriers interact to influence donor behavior. Further research could explore additional barriers or facilitators to donating not covered in this study, by asking open-ended

questions that allow the respondent to identify a barrier they may have encountered.

Addressing these limitations in future research could include longitudinal designs, broader geographic sampling, and inclusion of more diverse demographic groups. Using mixed methods to enrich quantitative data with qualitative insights is another way to mitigate the effects of these limitations. By identifying and studying these limitations, researchers can work to mitigate them, by conducting further future research and the actions proposed in the next section, with the aim of enhancing understanding of blood donation behaviors and identifying more effective strategies for recruiting and retaining donors.

### Recommendations

Based on the results of this study, several evidence-based recommendations can be made to enhance the effectiveness of the blood donation system:

- 1- Expanding educational initiatives to address gaps in donor knowledge, particularly focusing on the health and safety benefits of blood donation. Increase efforts to educate the public about the importance of blood donation, especially focusing on addressing common fears and misconceptions. Tailored programs targeting specific populations, such as younger and less educated populations, can help demystify the process and alleviate common concerns.
- 2- Adjust donation center hours to accommodate the schedules of potential donors, especially those who work or have other daytime commitments. Reducing wait times and ensuring positive interactions with staff can significantly improve the donor experience, which can lead to increased repeat donors.
- 3- Develop communication strategies that specifically target common concerns and misconceptions about blood donation. Providing comprehensive support and counseling services at donation centers can help relieve anxiety and build donor confidence.
- 4- Implement advanced scheduling systems and mobile apps to allow donors to easily book and manage their appointments. Use social media and digital marketing to engage potential donors and keep them informed about the need and benefits of blood donation.
- 5- Encourage community engagement through partnerships with local organizations, universities, and businesses. Blood drives and community events can help boost regional blood supplies while enhancing public awareness.
- 6- Strategic use of incentives, although not the primary motivator, carefully chosen incentives can play a role in enhancing donor engagement, especially in target populations
- 7- Organize more frequent blood donation campaigns and community events to promote blood supply and raise awareness at the regional level. These initiatives can help educate the public about the importance of regular blood donation, address any misconceptions, and encourage more people to participate, thereby ensuring a steady and reliable blood supply.
- 8- Establish regular mechanisms to collect feedback from donors to continuously improve the donation process. Understanding donor experiences and expectations can provide important insights to improve strategies and operations.
- 9- Work with local and national health authorities to advocate for policies that support blood donation. This includes promoting the importance of blood donation through public health campaigns and integrating education about blood donation into university curricula

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