



# EXAMINING UNDERGRADUATE STUDENTS' AWARENESS, ATTITUDES, AND ACTIONS TOWARD VOLUNTARY BLOOD DONATION

*Original Research*

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## ABSTRACT

**Background:** Voluntary blood donation is a critical component of healthcare systems, ensuring the availability of safe blood for transfusions and life-saving interventions. The World Health Organization recommends that at least 1% of a country's population should donate blood to meet the global demand. Despite this, low-income countries, including Pakistan, face acute shortages due to misinformation, cultural myths, and unfavorable attitudes that discourage participation. Understanding the awareness, perspectives, and behaviors surrounding blood donation among young adults is essential to address these challenges effectively.

**Objective:** This study aimed to evaluate the awareness, perspectives, and actual donation practices of undergraduate students regarding voluntary blood donation. It further sought to identify key factors influencing their participation and explore the relationships among awareness, attitudes, and behaviors to inform targeted interventions.

**Methods:** A cross-sectional study design was employed, involving 197 undergraduate students aged 17–35 years. Data were collected through an online questionnaire distributed across multiple academic departments to ensure a diverse sample. The questionnaire assessed awareness, perspectives, and behaviors related to blood donation. Descriptive statistics, correlation analysis, and hypothesis testing were performed using SPSS version 23 to analyze the data. Key variables were explored for their interrelationships, focusing on awareness levels, attitudes, and donation behaviors.

**Results:** The study revealed that 27.9% of participants (55 out of 197) had donated blood voluntarily. Awareness was generally high, with 85.8% knowing their blood group, while 10.2% were unfamiliar with it. However, only 42.6% were aware of the storage duration of blood, indicating knowledge gaps. Positive attitudes toward donation were evident, with 91.9% supporting the idea of blood donation and 82.7% expressing willingness to donate in the future. A statistically significant positive correlation ( $r = 0.257$ ,  $p < 0.01$ ) was found between awareness and attitudes, while awareness and actual donation behavior demonstrated a minimal correlation ( $r = 0.014$ ,  $p = 0.843$ ).

**Conclusion:** The findings highlight a significant gap between positive attitudes and actual donation practices among students. Targeted educational programs addressing misconceptions and logistical barriers, along with strategies to translate awareness into action, are essential to increase voluntary blood donation rates. These measures can support a sustainable and safe blood supply for healthcare needs.

**Keywords:** Awareness, Blood Donation, Cross-Sectional Studies, Pakistan, Students, Voluntary Blood Donation, Young Adults.

## INTRODUCTION

Blood is an irreplaceable resource that plays a critical role in saving lives during emergencies such as trauma, severe blood loss, or hemolytic diseases. The World Health Organization (WHO) emphasizes the necessity of voluntary blood donation, stating that at least 1% of a country's population must donate to meet the healthcare demands for blood and related products. Despite this global imperative, voluntary blood donation practices remain disproportionately low in low- and middle-income countries (1). With high-income nations contributing 40% of the 118.54 million blood donations annually, these regions face fewer shortages, while underdeveloped countries, including Pakistan, continue to grapple with acute deficits (2,3). The WHO's initiatives, such as the "Safe Blood Saves Lives" campaign in 2000, have sought to address this gap by promoting safe and voluntary blood donation. Yet, persistent challenges, including economic barriers, limited awareness, and cultural misconceptions, hinder progress in Pakistan, where a significant percentage of donations are still sourced from family replacements or paid donors (4,5).

In Pakistan, the voluntary blood donation rate remains alarmingly low, with only 10.6% of donors engaging voluntarily. This figure starkly contrasts with the WHO-recommended threshold and highlights the country's reliance on replacement donors, which poses a heightened risk of transfusion-transmissible infections (TTIs). Studies indicate that approximately 70% of donors testing positive for TTIs had previously donated blood, with Hepatitis B and Hepatitis C prevalence rates among donors at 2.04% and 2.44%, respectively (6,7). Misconceptions and fears surrounding the donation process further exacerbate the issue. For instance, nearly 62% of surveyed individuals in a national study believed blood donation could result in infections, while 59% attributed their hesitancy to fear of surgical procedures, perpetuating a cycle of negative attitudes and low participation (8,9). These barriers underscore the urgent need for targeted educational campaigns to dispel myths, build trust, and foster a culture of voluntary blood donation in the region.

Educational and socioeconomic factors play a pivotal role in shaping awareness, attitudes, and practices regarding voluntary blood donation. Among these factors, undergraduate students represent a critical demographic, given their accessibility, relatively high education levels, and potential to contribute significantly to the donor pool. Previous research has consistently shown that a lack of knowledge, coupled with mistrust of healthcare systems, fear, and cultural taboos, serves as significant deterrents to donation among young adults (10,11). Addressing these issues requires a nuanced understanding of students' perceptions and behaviors to develop interventions that encourage sustainable donor participation. Globally, efforts to enhance voluntary blood donation have achieved varied levels of success, with developed nations reporting donor participation rates as high as 60%, compared to significantly lower rates in underdeveloped regions, including Pakistan, Ethiopia, and Nigeria (12,13).

This study seeks to evaluate the awareness, attitudes, and actions of undergraduate students toward voluntary blood donation in Pakistan, providing a comprehensive analysis of the factors influencing their participation. By identifying barriers, addressing misconceptions, and proposing evidence-based interventions, this research aims to contribute to the development of strategies that increase voluntary blood donation rates among young adults. Ultimately, the findings will inform national policies and initiatives to strengthen the blood supply system, ensuring a sustainable and safe resource for the healthcare sector.

## METHODS

The study employed a cross-sectional design to examine the awareness, perspectives, and behavior of undergraduate students toward voluntary blood donation. A structured research timeline was followed, starting with an extensive literature review conducted over 29 weeks. The proposal for the study was prepared, reviewed, and submitted in the initial four weeks, followed by approval procedures from weeks 6 to 9. The proposal was subsequently presented to the supervisor during weeks 11 to 14. Data collection occurred between weeks 15 and 20, while data analysis commenced in week 19 and concluded in week 22. The research chapters were written sequentially, with chapters one through five completed during weeks 21 to 27, and the final formatting, editing, and proofreading were conducted in week 28. The project culminated in week 29, with the submission of the final report and defense of the study findings.

The study employed a convenient sampling technique, whereby participants were selected based on their accessibility and willingness to participate. Participants were provided with an online Google Form, which they voluntarily completed. Undergraduate students, regardless of gender, who expressed willingness to participate were included in the study. Those unwilling to participate or with severe

illnesses were excluded. To ensure an adequate sample size, the formula for calculating the sample size for a population with an unknown proportion was applied, using a 95% confidence level, a 5% margin of error, and an estimated prevalence of 15.4%. This calculation yielded a sample size of 197 participants. A structured questionnaire served as the research tool, adapted from the study by Anwer et al. (2016), which investigated attitudes toward blood donation among medical and non-medical students in Karachi. The questionnaire comprised two main sections. Section A collected demographic data, including gender, age, contact information, academic background, health status, and extracurricular activities. Section B assessed awareness, perspectives, and behavior related to blood donation. The awareness subsection included seven questions evaluating participants' knowledge of blood safety and donation practices. The perspectives subsection contained five questions exploring participants' beliefs and attitudes toward blood donation, while the behavior subsection included a single question targeting specific behavioral aspects of interest.

Data were collected via an online survey link distributed to participants, and responses were recorded directly using Google Forms. The collected data were analyzed using descriptive and inferential statistical methods with the Statistical Package for the Social Sciences (SPSS) software, version 23. A significance level of 0.05 was used to interpret the results. Ethical considerations were rigorously adhered to throughout the study. Participants were provided with informed consent forms detailing the study's purpose, procedures, and voluntary nature. Confidentiality was maintained by anonymizing participant data, and participants were assured of their right to withdraw from the study at any stage without any repercussions. The research protocol emphasized the absence of risks or negative consequences for participants, ensuring their rights and privacy were protected.

## RESULTS

The study included 197 undergraduate students, of whom 115 (58.4%) were male and 82 (41.6%) were female, with ages ranging from 17 to 35 years. The mean age of participants was 21.904 years, the median age was 22 years, and the mode was 23 years, indicating that a significant proportion of participants were in their early twenties. This broad age range provided diverse insights into the awareness, perspectives, and behaviors regarding voluntary blood donation. The demographic distribution suggested an adequate representation of young adults, who are a critical group for voluntary blood donation campaigns. The findings revealed that 85.8% of participants were aware of their own blood group, while 54.3% were cognizant of blood shortages in their city, reflecting moderate awareness of local challenges. Regarding blood donation eligibility, 69.5% were knowledgeable about the minimum age for donation, and 68.5% understood the recommended frequency for donating blood. However, only 42.6% were aware of the duration for which donated blood can be stored safely, and 75.1% were informed about the screening tests conducted on donated blood. The study also highlighted that 81.2% anticipated an increase in future blood demand, showing awareness of the growing healthcare needs.

In terms of perspectives, 91.9% believed that people should donate blood, and 82.7% expressed willingness to donate in the future. While 58.9% were concerned about potential infection risks during donation, 88.3% were willing to donate blood to family or friends, and 81.7% expressed readiness to assist strangers in need. Despite these positive attitudes, only 27.9% of participants had donated blood voluntarily, while 55.8% had never donated, and 16.2% were uncertain about their donation history. A significant positive correlation was observed between awareness and positive attitudes ( $r = 0.257$ ,  $p < 0.01$ ). However, a negative correlation between attitudes and actual blood donation behavior ( $r = -0.257$ ,  $p < 0.01$ ) suggested that positive perspectives do not always translate into action. Minimal correlation ( $r = 0.014$ ,  $p = 0.843$ ) was observed between awareness and actual blood donation practices, indicating that other factors likely influence the behavior of voluntary blood donation.



Figure 1 Gender Distribution

The study included 197 students, with 115 (58.4%) being male and 82 (41.6%) being female, as indicated in Figure 1. The range of ages was 17-35 years, with the mean age being 21.904 years, as indicated in the Figure 2. The distribution of age among study participants, where the total sample size consists of 197 individuals. The participants mean age is 21.904 years, signifying the typical age of the group. The middle value, or median age, stands at 22.000 years when all ages are sorted in ascending order. The mode, which reflects the most common age, is 23.0 years, indicating that a considerable number of participants fall within this age category. The age range covered in the study spans from 17.0 to 35.0 years, displaying the diversity of ages in the group. The youngest observed age was 17.0 years, while the oldest was 35.0 years, outlining the age spectrum of the participants in the research.

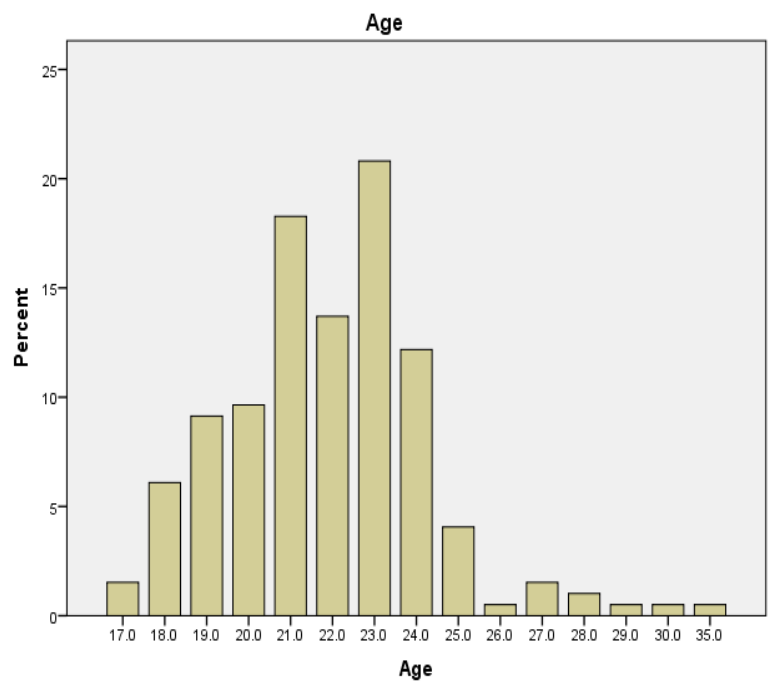


Figure 2 Average Participants Age

**Table 1: Awareness of Blood Safety and Donation**

Awareness	Yes%	No %	Not Sure%
Do you know your own blood group?	85.8%	10.2%	4.1%
Are you aware of blood shortage in the city?	54.3%	29.4%	16.2%
Do you know the minimum age of blood donation?	69.5%	9.1%	21.3%
Do you know how long the blood can be stored safely?	42.6%	19.8%	37.6%
Are you aware of the test performed on donated blood?	75.1%	15.7%	9.1%
Do you think demand of blood will increase in future?	81.2%	7.6%	11.2%
Do you know how frequently a person can donate blood?	68.5%	14.2%	17.3%

The results of the study on Awareness among 197 participants reveal several key findings. Firstly, a majority of participants (85.8%) reported knowing their own blood group, indicating a high level of awareness about this basic aspect of blood donation. Additionally, over half of the participants (54.3%) were aware of the blood shortage in their city, reflecting a moderate level of understanding of the local blood supply situation. Concerning specific knowledge about blood donation, 69.5% of participants was aware of the age requirement for blood donation, indicating a reasonably good awareness of eligibility criteria. However, knowledge about the storage duration of blood was relatively lower, with only 42.6% of respondents knowing how long blood can be safely stored. Regarding the tests performed on donated blood, a significant majority (75.1%) were aware of these procedures, highlighting a generally informed understanding of the screening processes involved in blood donation. Looking towards the future, a substantial proportion of participants (81.2%) believed that the demand for blood would increase, indicating a perception of ongoing or anticipated challenges in meeting blood supply needs. Finally, regarding the frequency of blood donation, 68.5% of respondents knew how often a person can donate blood, suggesting a reasonable level of awareness regarding the recommended intervals between donations.

**Table 2: Perspectives of Study Participants about Blood Donation**

Perspectives	Yes%	No %	Not Sure%
Do you think that people should donate blood?	91.9%	5.1%	3.0%
Would you like to donate blood in future?	82.7%	11.7%	5.6%
Do you think one can get infected while donating blood?	58.9%	25.4%	15.7%
Would you like to donate blood to only family members and friends?	88.3%	6.1%	5.6%
Would you like to donate blood to strangers in need of blood?	81.7%	11.2%	7.1%

The 197 participants' views on blood donation were largely positive, as seen from the survey results. The majority (91.9%) supported the idea of donating blood, showing strong support for engaging in voluntary blood donation. Furthermore, a sizable proportion (82.7%) stated a readiness to donate blood in the future, indicating a favorable attitude towards participation in blood transfusion programs. In terms of concerns about infection, slightly more than half of the respondents (58.9%) believed that there was a risk of infection when donating blood, indicating a moderate level of apprehension or uncertainty concerning the safety of the contribution process. Concerning the recipients of donated blood, a vast majority (88.3%) were willing to donate blood to their relatives and friends, demonstrating a sense of altruism and readiness to assist loved ones. Additionally, a considerable proportion (81.7%) showed a favorable attitude towards donating blood to strangers in need, highlighting a broader commitment to aiding individuals outside immediate social circles.

**Table 3: Behavior Relating to Blood Donation**

Behavior	Yes	No	Not Sure
Have you ever donated blood voluntarily?	27.9%	55.8%	16.2%

The study conducted with 197 participants revealed that 27.9% had previously donated blood voluntarily. This suggests that while a considerable number of individuals have participated in voluntary blood donation, a significant majority of 55.8% have not done so, and 16.2% are uncertain about their donation history.

**Table 4: Correlations among Study Variables**

		Knowledge	Attitude	Practice
Awareness	Pearson Correlation	1	.257**	.014
	Sig. (2-tailed)		.000	.843
	N	197	197	197
Perspective	Pearson Correlation	.257**	1	-.257**
	Sig. (2-tailed)	.000		.000
	N	197	197	197
Behavior	Pearson Correlation	.014	-.257**	1
	Sig. (2-tailed)	.843	.000	
	N	197	197	197

\*\* Correlation is significant at the 0.01 level (2-tailed).

Initially, there existed a statistically significant positive relationship ( $r = 0.257$ ,  $p < 0.01$ ) between awareness about blood donation and holding favorable attitudes towards it. This suggests that there is a need to enhance the awareness of students towards blood donation; their perspectives tend to become more positive. Subsequently, a statistically significant negative correlation ( $r = -0.257$ ,  $p < 0.01$ ) is found between attitudes towards blood donation and the actual practice of voluntary blood donation. This indicates that while positive attitudes are linked with knowledge, they may not always result in actual actions like voluntarily donating blood. Nevertheless, the association between Awareness about blood donation and practical application is minimal ( $r = 0.014$ ) and not statistically significant ( $p = 0.843$ ), implying that awareness alone may not directly impact the voluntary blood donation practices among students.

The analysis of the correlation showed that there is no evidence to reject the null hypothesis, indicating that there is no significant direct relation between awareness of blood donation and the actual practice of voluntary blood donation among students. At the same time, the alternative hypothesis is somewhat supported, revealing a clear favorable relationship between awareness of blood donation and positive perspectives toward it, as well as a significant negative relationship between attitudes towards blood donation and the actual implementation of voluntary blood donation. This thorough explanation brings attention to the various interactions found in the study, indicating that factors other than awareness and perspectives may also be utilized in determining the practice of voluntary blood donation.

## DISCUSSION

The findings of this study provide an in-depth understanding of the awareness, perspectives, and behavior of undergraduate students concerning voluntary blood donation. The results revealed that a substantial proportion of participants demonstrated high awareness of their own blood group (85.8%), which aligns with prior studies indicating strong baseline knowledge among university students (15). However, awareness about critical aspects such as the safe storage duration of blood was limited to 42.6%, highlighting a gap in more specific and technical knowledge (16-18). This finding underscores the need for targeted educational initiatives that address these gaps and enhance awareness, particularly regarding the safety and management of donated blood. Comparatively, the study's awareness levels align with similar findings in Pakistan but remain lower than reports from Chennai, India, where 78.8% of participants exhibited higher levels of knowledge about such technical aspects (19, 20).

In terms of perspectives, the study revealed a strong positive attitude toward blood donation, with 91.9% of participants supporting the idea that people should donate blood, and 82.7% expressing willingness to donate in the future. These favorable attitudes were consistent with previous research conducted in Pakistan and North India, where positive perspectives were widely reported among university students (18). However, concerns about the risk of infection while donating blood were prevalent among 58.9% of participants, suggesting the persistence of misconceptions and a lack of trust in the safety of the donation process. These apprehensions have also been observed in other studies, emphasizing the critical importance of addressing myths and misconceptions through transparent communication and public awareness campaigns (4). Such interventions could help align positive attitudes with actual practices.

Behavioral findings indicated that only 27.9% of participants had donated blood voluntarily, reflecting a gap between the strong positive perspectives and actual participation in donation activities. Similar findings were observed in studies conducted in Lahore, North India, and Northwest Ethiopia, where despite favorable attitudes and awareness, voluntary blood donation rates remained comparatively low (9). This discrepancy highlights the role of logistical, institutional, and personal barriers, such as limited access to donation centers and fears regarding the process, which continue to impede participation. Addressing these structural and behavioral challenges through improved accessibility to blood donation centers, simplification of donation procedures, and the introduction of motivational incentives such as recognition events or certificates could bridge the gap between willingness and actual donation practices (19).

The study had several strengths, including its comprehensive assessment of awareness, perspectives, and behaviors within a representative undergraduate student population, which provides valuable insights into the factors influencing voluntary blood donation. However, its limitations must be acknowledged (20). The cross-sectional design restricted the ability to observe changes over time, and the reliance on self-reported data could introduce reporting biases. Additionally, the sample size, although sufficient for this study, may limit generalizability to the broader student population across various regions. Nonetheless, the findings contribute to the growing body of evidence highlighting the need for multifaceted interventions targeting knowledge, attitudes, and behavior. The study demonstrated that undergraduate students possess strong positive attitudes and reasonable awareness regarding blood donation, but significant barriers hinder their actual participation. Addressing these barriers through education, improved infrastructure, and motivational incentives could enhance voluntary blood donation rates and ensure a sustainable blood supply for healthcare needs. Expanding the study to include multiple universities and diverse populations would provide deeper insights into broader patterns and inform more effective policy-making and practice in this critical area (18, 20).

## CONCLUSION

The study concluded that undergraduate students exhibited a reasonable level of awareness and positive attitudes toward voluntary blood donation, reflecting their understanding of its significance and willingness to participate in the future. However, there remains a substantial gap between their favorable perspectives and their actual donation behavior, primarily influenced by misconceptions about safety, lack of detailed knowledge, and logistical barriers. These findings underscore the importance of targeted educational programs, improved accessibility to donation facilities, and initiatives that address fears and misconceptions, aiming to bridge the gap between knowledge, attitudes, and practical engagement in voluntary blood donation. By addressing these challenges, the study highlights the potential to foster a culture of regular, voluntary blood donation among young adults, contributing to a sustainable and safe blood supply for healthcare systems.

## Author Contribution

Author	Contribution
Amish Chauhan*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Abu Anas	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Faisal Nadeem	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Warda Tu Nisa	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Jerry Zahid	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published

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