



## Knowledge, Attitudes, and Practices toward Blood Donation among University Students in Rawalpindi

Afshan Sohail<sup>1</sup>, Maria Yaqoob<sup>2</sup>, Anam Sohail<sup>3</sup>, Jamil Akhter<sup>4</sup>

<sup>1</sup> Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan.

<sup>2</sup> Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan.

<sup>3</sup> Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan.

<sup>4</sup> Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan.

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### ABSTRACT

Blood donation is a need of public health; however, voluntary participation in blood donation is limited in many developing countries, even in Pakistan, where most donors are replacement donors. This study discusses the knowledge, attitude and practice of blood donation among university students of Rawalpindi and develops the factors affecting the willingness to donate. A quantitative survey was carried out among 130 students of PMAS Arid Agriculture University with the help of a structured questionnaire and the reliability analysis was verified using Cronbach's Alpha. (0.82). Results showed that 77.7% never donated blood and 22.3% donated blood at least once. Although students showed generally positive attitudes and awareness, misconceptions about eligibility, health risks and frequency of donation remained. Fear of weakness, infection and lack of motivation were major barriers. Strengthened awareness programmes and student-oriented interventions are suggested to facilitate voluntary blood donation.

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Corresponding Author's Email: mariayaqoob8@gmail.com

## 1. Introduction

Blood is a vital component of the human body, essential for sustaining life by transporting oxygen and nutrients to tissues. Every year, millions of lives are saved through timely blood transfusions, yet a severe shortage of safe and adequate blood supply persists globally. The World Health Organization (WHO) emphasizes that at least 1% of a nation's population should donate blood annually to meet national demands. However, developing countries, including Pakistan, struggle to meet this standard due to low voluntary blood donation rates and misconceptions about the process. A large number of breathes are protected every year from side-to-side blood transfusions, yet the quality and wellbeing of blood transfusion is as yet a worry especially in the emerging nations. Near 5% to 10% of different HIV diseases international are spread over and done with risky blood transfusions. The purpose behind this incorporates blood gathering since hazardous givers, deprived lab methods plus lacking analysis of blood. Blood will be protected uncertainty there is a broadly planned blood transfusion administration, gathering of blood just on or after deliberate non-compensated contributors, analysis of blood for transfusion infectious disease and by transfusion of the exact blood to the exact persistent over and done with the suitable medical utilization of blood (Spiess, 2001). These days, blood transfusion is as yet one of the principal segments considerations also cure to patient in critical situations, for example, injury, significant surgeries procedures, chemotherapy, and patients needing long lasting therapies. However, issues in regards to a continuous lack of blood is seen in blood services everywhere throughout the world. The main source of blood will be blood donation, notwithstanding, enlistment of voluntary, non-compensated blood donors postures real difficulties to transfusion benefits all through the world (Safizadeh et al., 2009).

The requirement for blood is around the world; there is a noteworthy imbalance among developing and developed nations with regards to the dimension of utilization and access to safe blood. Likewise, the act of voluntary blood donation, is higher in created nations than in creating nations (Bantayehu, 2015). Accessibility of safe blood and blood items is a crucial segment for improving medicinal services framework. A large number of lives are spared by blood transfusions every year all through the world, yet there is issue in regards to the quality and wellbeing of blood transfusion especially in the creating nations (Roberts et al., 2016). Young and educated individuals are viewed as more secure blood donor since the lingering danger of transfusion-transmitted diseases are supposed to be minor in the populace. Regardless of the way that the gave blood dependably experiences broad suitable testing according to proposals by the World Health Organization, the leftover danger of transfusion-transmissible diseases is constantly present. This is for the most part because of the window time frame, i.e., the period among disease and location of the infection by research facility tests. For instance, Human Immunodeficiency Virus (HIV) might be spread by transfer of blood regardless of whether the blood components negative test intended for Human Immunodeficiency Virus (HIV), it's to a great extent because of a space time during which antibodies against Human Immunodeficiency Virus (HIV) is not obvious (Ward et al., 1988). Self-revealed motivators and barriers of blood donation, and announced that blood donors who knew about the medical advantages of blood donation were all the readier to give blood later on. Different examinations have additionally inspected the elements impacting and foreseeing blood donation and even created instruments to research these elements (Majdabadi et al., 2018). Attitudes towards blood donation have evoked been enthusiasm for the most recent decade, therefor; planned to decide the mental, social variables and other persuading factors that avoid or cutoff the ability of students to take an interest effectively in blood donation in routine and crisis circumstances subsequently, it is imperative to decide prescient elements related with the choice to give blood among university students (Anwer et al., 2016).

University students represent a potential donor base due to their youth, health, and exposure to educational campaigns. Understanding their knowledge, attitudes, and practices (KAP) toward blood donation is crucial for developing strategies that encourage regular voluntary donors. This study explores the awareness, perceptions, and behaviors of university students in Rawalpindi regarding blood donation. Blood donation is part and parcel of effective provision of health services and the provision of safe blood is way below the need of the country in Pakistan. Although there have been a number of awareness campaigns, there are yet to be aware of the misconceptions, fear of adverse health effects, and lack of motivation which are particularly common with the youth. Replacement donors, rather than voluntary donors, remain the dominating factor in blood supply system and there is the concern of adequacy, safety and sustainability. Another segment which is very important but underused in this case is university students who are a relatively healthy and educated group of society. Their lack of involvement adds to the shortages in blood supply and the necessity of a deeper insight into their attitudes and behavior concerning blood donation. In this connection, there is a need to conduct systematical research on the existing level of knowledge, attitude, and practice among the students of universities regarding blood donation. Knowledge of the amount of awareness they possess, readiness to give to the needy, and the psychological/social obstacles could help to answer the question of why the voluntary rates of donation are low. It is of special importance to identify some factors that can either promote or deter donation behavior of this group to donate voluntarily blood, as their contribution can contribute significantly to the enhancement of voluntary system of blood donation to an enormous scale and ensure the national blood supply is more secure. The outcomes of such a study are of significant policy and practical value. Detecting the gap between the knowledge and the actual practices of donations, this study can assist policymakers, healthcare institutions, and universities to develop more specific and effective interventions. The developed insights can be used to inform the creation of targeted awareness campaigns, inclusion of blood donation education into the educational environment and encouragement of student-led blood donation campaigns. In the end, making voluntary and free blood donation a more common practice among university students can instill the culture of social responsibility, enhance the healthcare apparatus and help to make the blood supply in Pakistan more stable and safer.

## **2. Literature Review**

Blood donation as a practice is a backbone of modern healthcare systems, which helps in providing timely treatment to victims of trauma, people undergoing major surgeries, those

suffering from chronic illnesses, and women experiencing complications during childbirth. Despite its crucial role, many countries still have serious shortages in safe, voluntary blood supply. The World Health Organization recommends that at least one percent of a nation's population gives blood every year in order to ensure there is a sufficient and secure supply, but many developing nations fall far short of this goal (World Health Organization, 2020, 2022). A very large part of the world's blood supply still comes from replacement and paid donors, a trend that increases health risks and compromises transfusion safety. Studies have consistently shown that voluntary non-remunerated blood donation is the safest and most sustainable model, but due to low awareness and socio-cultural barriers and mistrust in medical systems, it is often difficult to motivate people to participate regularly (Mohammed & Essel, 2018; Roberts et al., 2016). These ongoing deficits emphasize the importance of research examining levels of knowledge, attitudinal orientation and behavioral determinants of blood donation, especially in young populations who form the most appropriate blood donor base.

In South Asia and specifically in Pakistan, the demand for an adequate and safe supply of blood continues to grow, as a result of increasing population, expansion of healthcare services and rising burden of disease. However, consistent information in the literature suggests Pakistan has a high dependence on replacement donors, especially friends and family members, as opposed to voluntary donors (Waheed et al., 2015). Bilal et al. (2015) documented that over 90 percent of the blood transfusions in Pakistan have been met by replacement donors, indicating poor institutional donor recruitment systems and lack of awareness initiatives. Similar outcomes have been reported from neighboring and analogous developing situations. Studies conducted in Ethiopia and Nigeria show that despite the fact that the youth are known to express socially desirable attitudes towards blood donation, actual participation is low because of misconceptions, lack of correct medical knowledge and fear of adverse health outcomes (Tadesse et al., 2018). Research from Saudi Arabia, India and Malaysia has shown similarly that students, despite being relatively educated and aware of the social value of donation - do not routinely engage in voluntary blood donation due to fear, logistical barriers, and insufficient motivation (Bilal et al., 2015; Dewanarayana et al., 2023; Siromani et al., 2016). In Pakistan specifically, (2014) found that despite medical students in the country having high levels of awareness, they tended not to translate their knowledge into regular voluntary donation practices, and this further supports the argument that awareness alone is not enough to make behavioral engagement happen.

A considerable amount of research has been conducted on the Knowledge, Attitude and Practice (KAP) dimensions of blood donation behavior with the aim of finding out this gap between awareness and actual participation. Many people understand the humanitarian value and the societal importance of donating blood but, unfortunately, have a poor knowledge about the eligibility criteria and safe interval of donation and the potential health benefits (Dorle et al., 2023). Some students have wrong assumptions; they think donation will cause them to become weak in the long run, prone to diseases or not able to bear children, and some students think they are not medically fit to donate. (Safizadeh et al., 2009) and recent studies demonstrated that misconception and fear of pain are the most common psychological deterrents. This contradiction (the co-existence of favorable attitudes and low participation) has prompted researchers to turn to theoretical behavioral explanations, most notably the Theory of Planned Behavior (TPB). According to TPB, attitudes concerning blood donation, the perceived social expectations and the perceived behavioral control together determine the intention of an individual to donate (Ajzen, 1991). (Masser et al., 2008), however, emphasized that despite altruistic attitudes, there are significant behavioral barriers that restrict actual donation including limited access to donation facilities, safety concerns, and lack of confidence. University students, despite being a young, healthy and socially conscious demographic, therefore remain under-engaged a lot of the times due to lack of structured opportunities, institutional encouragement and consistent awareness reinforcement (Nigatu & Demissie, 2014).

Beyond the psychological determinants, a number of socio-demographic variables have been found to have a significant impact on blood donation behavior. Gender differences have been widely expressed where males have been reported to donate more often than females due to cultural norms, health concerns such as anemia and family restrictions, especially in South Asian cultural situations (Bani & Giussani, 2010). Prior donation experience has also

been found to increase confidence and propensity to donate again, and first-time donors often need more institutional and social encouragement. Accessibility to donation centers, trust in healthcare services, and quality of donor experience are also important. Research from different developing nations suggests fear of infection, fear of fainting, mistrust in medical procedures and perceived inconvenience are among the top deterrents in participation (Alfouzan, 2014). On the contrary, altruism, civic responsibility, religious stimulus, peer influence, and emotional satisfaction are good motivations (Agbovi et al., 2006). More recently research has focused on the role of digital communications and social media awareness campaigns, and it has been noted that online platforms play an important role in shaping the formation of attitudes and building motivation in youth populations (Duh & Dabula, 2021; Harrell et al., 2022). Universities that coordinate routine on-campus blood drives, offer structured awareness programs and publicly recognize donors have shown increased student participation and improved donor retention rates (Rizwan et al., 2025).

Taken together, the reviewed literature suggests that knowledge and attitudes are key predictors of voluntary blood donation behavior. However, gaps remain between the level of awareness and the level of practice, due to misconceptions, fear, lack of perceived control and a lack of institutional support. University students are a strategic donor group, the potential of which is barely tapped in Pakistan. Therefore, this study aims to empirically determine the knowledge, attitudes, and practices of university students towards blood donation and to determine whether the increased awareness and positive attitudes significantly improve their probability for voluntary participation in blood donation. On the basis of the theoretical and empirical evidence, the following hypothesis is proposed for the study:

H1: There is a significant relationship between positive attitudes and higher levels of awareness and participation on voluntary blood donation.

Correspondingly, the null hypothesis is that there is no such significant relationship.

### **3. Methodology**

This study was carried out in Pir Mehr Ali Shah (PMAS) Arid Agriculture University, Rawalpindi, a large-scale public-sector institution, which is representative of a very diverse student population from different academic disciplines. The university was chosen purposefully because it offers access to a large number of young adults who are considered a highly appropriate age group to be eligible to voluntarily donate blood as they are estimated to have a relatively better health condition and potential to contribute regularly to the blood supply system. The academic environment and student community provided a suitable setting for knowledge, attitudes and practices about blood donation to be assessed in an ordered and controlled setting. The target population of the study was undergraduate and postgraduate student enrolled in the university. Given the size of the student body, simple random sampling was used in order to ensure that each student in the population had an equal chance to be selected, which would reduce selection bias and increase representativeness. A total of 130 students took part in the study. Although no national sampling frame was required for this institutional study, the sample size selected was adequate for quantitative analysis and hypothesis testing, and therefore meets minimum requirements for small-scale behavioral research suggested by Andrade (2020). The sample was also deemed to be adequate to perform descriptive analysis and inferential interpretation in the context of a university-based study.

Data were gathered by questionnaires, self-administered and structured based on the previously validated questionnaires for Knowledge, Attitude, and Practices (KAP) studies on blood donation. The questionnaire was adapted to the local sociocultural realities and institutional context. It comprised four parts: demographic data (age, gender, academic level and history of previous blood donation); knowledge about blood donation, including eligibility and health implications; attitudes related to blood donation, including the perception, willingness and motivation factors; and practice related variables, including past behavior in terms of blood donation and future intentions for blood donation. Attitudinal and behavioral intention items were assessed by using a five-point Likert scale from "strongly disagree" to "strongly agree," and thus permitting detailed evaluation of respondent psychological dispositions about blood donation.

Prior to the main survey, a pilot study, involving 20 students, was carried out in order to assess the clarity, relevance and comprehension of questionnaire items. Minor edits were made for better wording and organization. Reliability analysis, tests of Cronbach's Alpha, was 0.82 indicating the instrument has strong internal consistency. Content validity was ensured through expert review by academic supervisors and consultation of relevant empirical literature, to ensure that study objectives and measurement items matched. Construct validity was supported by the theory underlying the Theory of Planned Behavior through which questionnaires were developed. Data collection was conducted for the roughly a month with an on-campus distribution strategy. Prior to the start of each class, students were approached in common areas and classrooms with the prior permission of faculty and administrative authorities. The purpose of the study was clearly explained and the participants were informed about confidentiality and anonymity. Participation was voluntary and all respondents provided informed consent. No identifying information was collected, ensuring it is ethical. Of the distributed questionnaires, a total of 130 completed and valid answers were received and subsequently included in the analysis. Data were coded and processed using appropriate statistical techniques to produce descriptive as well as inferential results that are in line with the study objectives.

#### 4. Results

This section presents the results of the empirical findings of the study in the form of demographic characteristic, blood donation behavior, and the level of knowledge, attitude, and awareness about blood donation among university students. These results directly address the study objectives: (i) to find out the students' knowledge about blood donation, (ii) to assess the attitude and behavior of students, and (iii) to find out the factors that can motivate or discourage students to donate. The findings further help to understand why, despite awareness and good perceptions, voluntary blood donation is limited in regards to university students.

**Table1: Demographic Characteristics and Donation Behavior (N = 130)**

Variable	Category	Frequency	Percentage (%)
Age Group	18-25 years	109	83.8
	Above 25 years	21	16.2
Gender	Male	65	50.0
	Female	65	50.0
Residence	Urban	85	65.4
	Rural	45	34.6
Blood Donation Status	Ever donated blood	29	22.3
	Never donated	101	77.7
Type of Donor	Voluntary/ regular	29	22.3

Table 1 shows that a large majority of respondents (83.8%) were between 18-25 years of age which is the ideal donor age group but only 16.2% were older than 25 years of age. Gender was equal between males and females making up 50% each with no bias in the presentation. Most of the students (65.4%) were from urban settings while 34.6% were from rural settings, showing relatively better exposure of healthcare information among the sample. However, even though they belong to a young, educated demographic, only 22.3% of the students stated that they had ever donated blood with a shocking 77.7% of students stating that they had never donated blood. This clearly demonstrates a major gap between the potential donor capacity and actual practice. Even within the group who had donated most were voluntary/regular donors, but again this was very small in proportion to the total sample. These results support the argument that despite being a potentially promising pool of donors, university students have yet to be utilized, and thus create a need to understand the attitudinal and psychological barriers which limit participation.

**Table2: Summary of Knowledge, Attitudes, and Awareness Regarding Blood Donation**

Variable	Key Findings	Interpretation
Knowledge of Blood Donation	75% knew their blood group, but only 35% knew eligibility and donation interval.	Moderate awareness; technical knowledge gaps exist.
Attitude Toward Donation	Over 70% agreed donation is beneficial and a moral responsibility.	Positive attitude, but not reflected in behavior.

Awareness of Blood Drives	93% reported awareness of university donation camps.	High institutional engagement, but low participation.
Common Barriers	Fear of weakness/infection and lack of motivation.	Psychological and informational barriers persist.
Motivating Factors	Desire to help others and civic responsibility.	Emotional appeal can be leveraged for recruitment.

Table 2 further describes the student's knowledge, attitudes and awareness of blood donation. While 75% said that they knew their blood group, only 35% showed correct knowledge about eligibility criteria and recommended donation intervals. This implies that while students have some basic awareness, there are important gaps in technical knowledge, which may account for uncertainty and hesitancy. Attitudinally, more than 70% had agreed that blood donation is beneficial, and it is a moral and social responsibility. This suggests a mainly positive perception towards donation and is in line with the premise that there is a conceptual value in donating blood as perceived by students. However, this positive attitude is not translated into their actual donation behavior as apparent in Table 1, again indicating the attitude-behavior discrepancy. Awareness about institutional efforts was significantly high as 93% of the respondents had awareness about the blood donation camps organized within the University. This indicates the presence of logistical opportunities to donate, and well-informed students. Yet, participation is still low, indicating that awareness is not enough to motivate action. The most often cited barriers were fear of weakness, fear of infection and lack of motivation. These reflect psychological, emotional and informative issues that compromise the perceived ability of students to make confident donations. Conversely, important factors which served as motivators were the desire to help other people and a sense of civic and humanitarian duty, showing strong altruistic inclinations that could be strategically used on donor recruitment campaigns. Overall, the results show that although students have positive attitudes and moral awareness and they are adequately exposed to the opportunities for donation, their participation is limited by the misinformation and fear-based misconceptions and limited confidence in safety and personal capability aspects of blood donation. These results support the need for specific awareness, confidence-building, and motivational interventions aimed at converting positive attitudes to actual voluntary behavior of donation and support the hypothesis of the current study that positive knowledge and positive attitudes relate to the participation in donation.

## 5. Discussion

This study focused on the knowledge, attitudes and practices of university students with regard to blood donation and identified a significant gap between knowledge and behavior as donors. Although most of the respondents recognized the importance of blood donation and showed positive attitudes, only 22.3 percent had ever donated. This finding is similar to the results from Pakistan, India and other developing contexts, where voluntary blood donation is limited despite generally positive perceptions (Waheed et al., 2015). Similar results have been reported by global and regional studies, strengthening the case for stating that attitudinal positivity does not necessarily contribute to behavioral engagement (Tadesse et al., 2018; World Health Organization, 2020). Knowledge levels of the students were moderate with many students knowing their blood group and general benefits of donation but not having precise information about eligibility criteria, safe interval of donation and health implications. Comparable knowledge gaps have been documented by (Ahmed et al., 2014) and (Tadesse et al., 2018) who determined that even educated youth often have incomplete biomedical knowledge which hampers their confidence and willingness to donate. This reveals the need for organized educational interventions aiming to clarify misconceptions especially regarding risks to health, frequency of donation, and eligibility. Despite the limitations, attitudes toward blood donation were generally positive with many students seeing blood donation as a moral obligation and a social responsibility. Similar attitudinal orientations have been observed in Saudi Arabia, Ethiopia and Malaysia where altruism and humanitarian values were strongly motivating (Nigatu & Demissie, 2014). These attitudes are however not often translated into a habitual donation behavior and this is simply due to psychological inhibitors like fear of being weak, fear of being infected, low level of motivation, and lack of confidence among others. The Theory of Planned Behavior (Ajzen, 1991) offers an useful guide to explain such discrepancy: Although attitudes and social norms are relatively positive, the perceived behavioral control, or the conviction of a person that she can safely and conveniently donate, is low. (Masser et al.,

2008) also concluded that confidence, perceived safety and convenience are essential factors of donation behavior.

Another factor that became significant is institutional influence. The awareness of blood donation campaign in the campus was quite high indicating that the institutions reached out well. Nonetheless, there is a lack of participation, which appears to imply that there is no sufficient awareness. It has also been emphasized by other studies that the process of management should be based on sustained interaction, systematic recruitment of donors, and recognition, which is a crucial factor to turn knowledge into action (Gammon et al., 2023; Kaltenbrunner & Scheibmayr, 2025). Mechanisms of recognition, peer encouragement and facilitation of donations might be significant contributors to involvement in voluntary activities. There were also gender dynamics. The sample was gender balanced although males were relatively more inclined to donate, which is also in line with the outcomes of Bani and Giussani (2010) and Alfouzan (2014), who explained by a low rate of female donation by cultural norms, physiological factors, and incorrect beliefs about female health. This underlines the role of gender-sensitive awareness programs that are dedicated to female health issues in terms of the fears and the cultural perception. The implication of these findings on the health perspective of the population is that, it is important to design specific strategies to transform the positive attitudes and awareness into a long-term voluntary behavior of donating blood. Universities and health authorities and policy makers need to collaborate to initiate all round programs, which may include education campaigns, confidence building practices and frequent donation opportunity. It is essential to increase the feeling of behavioral control by dealing with fear or the sense of safety and encouraging supportive social engaging accompaniments. Finally, the development of the culture of voluntary donation among young people may become one of the determinants of a more reliable and safe system of national blood supply (World Health Organization, 2022).

## **6. Conclusion, Policy Implications, Limitations, and Future Research Directions**

The findings of this study indicate that the students of the university in Rawalpindi are generally positive about the blood donation and are aware of the humanitarian and social health significance of blood donation. Nevertheless, this awareness has not changed the fact that the regular voluntary participation is restricted. Most of the students have never donated blood and this indicates that there is always a gap between a willingness to do the act and actually doing it. This gap can be significantly attributed to the fact that people have wrong perceptions about what may happen when they do not give blood, fear of being infected or being physically weak, and lack of motivation or confidence to engage in voluntary donation. Taken through the prism of the Theory of Planned Behavior, the study leads to the fact that attitudes and subjective norms are not bad, but perceived behavioral control remains weak, in other words, not everyone feels safe and capable to donate and supported. The psychological barriers should therefore be addressed; confidence should be increased and institutional support mechanisms reinforced to convert the positively perceived individuals into regular and consistent donation behaviors. The implications of these findings to universities, health authorities and national blood services are important both in policy and practice. Institutionalization of regular blood drives, awareness campaigns and the inclusion of the concept of health education and civic responsibility into the academic and extra-curricular curriculum can all become central to the universities to implementation of the culture of voluntary donation.

Mechanisms of recognition such as certificates, volunteer credits or public recognition can also be used to further encourage the participation; but there are gender sensitive mechanisms which can treat cultural and physiological problems of female students. On a national scale, organized collaboration between educational establishments, medical organizations, and non-profit donor agencies can result in the creation of more sustainable methods of recruiting donors and provide a more secure and dependable blood supply. The study, however, has limitation on the sample size and the single institution setting, which could be a limitation to generalizability. Future studies ought to involve greater sample sizes and more different universities and cities, involve longitudinal or intervention-based designs, and explore psychological determinants further; they ought to explore the issue of trust in the healthcare systems, dynamics of social influence and the influence of digital media in

determining the behavior of the donors. Through progressive evidence-based knowledge, upcoming studies can enlighten more on how to produce a strong generation of voluntary blood donors to serve significantly in establishment of resilience in the development of public health, as well as sustainable development of health care in Pakistan.

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