

# Exploring Blood Donation Awareness and Practices among Kampala International University Students at Fort Portal Regional Referral Hospital

Muhindo Benet

Faculty of Clinical Medicine and Dentistry, Kampala International University Western Campus Uganda

## ABSTRACT

A survey was conducted to evaluate the knowledge, attitudes, and behaviors regarding blood donation among Kampala International University (KIU) students at Fort Portal Regional Referral Hospital, Kabarole District. The study exclusively included adult KIU students aged 18 and above. Employing a case study approach, data collection took place at Fort Portal Regional Referral Hospital in Kabale District. From the sample group, 50 students participated by completing both open-ended and closed-ended questionnaires. Additional insights were drawn from textbooks and journals. Ethical protocols, including confidentiality and informed consent, were strictly followed throughout the study. Data analysis was conducted using Microsoft Excel, with findings presented through tables, graphs, and pie charts. The study timeframe was concise, yielding significant insights. Results indicated a higher participation rate among males (60%) compared to females (40%). Notably, all respondents demonstrated awareness of blood donation, with 60% acquiring information through educational institutions and 30% from media sources such as TV, radio, and newspapers. Furthermore, 94% were familiar with their blood group, with blood group O being the most prevalent (53.19%) and a positive Rhesus factor prevailing among 63.8% of respondents. Moreover, 90% of participants were aware of blood donation collection sites, predominantly identifying blood banks. Regarding the donation process, 40% estimated its duration to be between 20-30 minutes. While a majority (90%) exhibited positive attitudes towards blood donation, only 30% had previously donated blood, citing fear of needles (42.8%) as the primary deterrent. However, among donors, the primary motivation was to save lives. Interestingly, fear of needles emerged as the primary barrier preventing others from donating blood, highlighting the importance of addressing this concern. Suggestions for enhancing blood donation included widespread sensitization efforts to underscore its significance. Despite the favorable attitudes observed among KIU students, the practice of blood donation was suboptimal, indicating the imperative for comprehensive educational initiatives and enhanced measures to promote participation.

**Keywords:** Blood donation, Voluntary blood donor, Blood bank, KIU students, Males and females.

## INTRODUCTION

This study documented the assessment of the knowledge, attitude, and practices of blood donation among Kampala International University students at Fort Portal Regional Referral Hospital. Blood is collected from donors and screened, and up to 450 ml can be withdrawn for a maximum of three times a year [1, 2]. There are several ways of grouping blood, but the most commonly used ones are the ABO blood groups and the Rhesus D blood groups [3]. In the UK, the most common blood group is O, followed by A, then B, and the least common is AB. Rhesus positive is also more common than rhesus negative [4]. A safe supply of blood components depends on a well-organized system with regular donations by healthy individuals. For people to donate, they must know the right information sources and a good attitude towards it, and then they can practice by donating blood. In 1628, William Harvey, a physician, discovered the circulation of blood, and shortly after, blood donation and transfusion were attempted. The first blood transfusion was successful in 1818. In 1900, Karl Landsteiner discovered the blood groups A, B, and O, and later the group AB. In 1932, the first blood bank was established. In 1970, blood banks moved towards an all-volunteer donor base [5]. World Health Organization's (2014) report indicates that about 10,000 blood centers exist globally, with 83 million donations in 168 countries. In 1997, WHO set a goal that all blood donations come from unpaid volunteer donors, and by 2006, 49 out of 124 countries surveyed had established this. Based on samples of 1000 people, the blood donation rate is 32.1 in high-income countries, 14.9 in upper-middle-income countries, 7.8 in lower-middle-income countries, and 4.6 in low-income countries. Unpaid donors are the better option since the prevalence of bloodborne diseases is lower in this group. [6]. Understanding the knowledge and awareness of blood donation among potential donors in a population is important [7] did a similar study in Mbarara and discovered that the majority of the respondents were aware of blood donation and had a positive attitude towards it, but 60% had never donated blood. In the study, the majority of the respondents were

male. The most important reason for the blood donation given was to save lives. 90% of the respondents had a positive attitude towards blood donation, but 60% had never donated blood. In a study done among medical students in the Caribbean, i.e., Hossain et al. [8], it was discovered that the majority of the students had good knowledge about blood donation, based on the 90% of the respondents who knew their blood groups and knew who should donate. The attitude was also good considering 92% of the respondents said that blood donation was good, and the majority (71%) accepted that voluntary blood donors are the best source. But the study also showed a poor practice of blood donation in that only 17% of the respondents had ever donated blood, and the major reasons given for not donating blood were not being approached (76%), being unfit to donate (12%), and fear of needles (4%). Blood donation is the giving of blood by any person and collecting it at a given venue, for example, a hospital. Blood is obtained from the donor by either venesection for whole blood or collection of specific components by apheresis [9]. According to Alfouzan [10], people with a higher educational level, higher knowledge of blood donation, and a positive attitude towards blood donation are more likely to donate blood. Despite extensive and promising research, a true substitute for blood and blood components may not be available for many years [11]. A clear understanding of the knowledge, attitudes, and practices of a particular community can inform the design of behaviour change and communication campaigns to influence the donation of blood. In many hospitals the world over, there is a shortage of blood [12]. Adequate and safe blood has remained a challenge in developing countries [13]. It has been realised that there is a need for people to have knowledge, attitudes, and practices about blood donation [14]. This study questioned the extent to which KIU students at Fort Portal Regional Referral Hospital had the knowledge, attitudes, and practices of blood donation. Several studies have been done before assessing the knowledge, attitude, and practices of blood donation, but none among the KIU students at Fort Portal Regional Referral Hospital, which is the basis of this study. The study was designed to assess the knowledge, attitude, and practices of blood donation among Kampala International University students at Fort Portal Regional Referral Hospital.

## **METHODOLOGY**

### **Research Design**

The research was a case study focusing on the KIU students at Fort Portal Regional Referral Hospital. KIU students were interviewed to establish their knowledge, attitudes, and practices regarding blood donation. The respondents were given self-administered questionnaires written in English, and each questionnaire had a section on knowledge, attitude, and practices of blood donation.

### **Area of Study**

The study was conducted at the KIU teaching site at Fort Portal, a regional referral hospital located in Kabarole district in the Western Region of Uganda.

### **Study Population**

A study population is the aggregate from which the sample is chosen. The study population was 60 KIU students at Fort Portal Regional Referral Hospital who could donate blood.

### **Sample Size**

Using Krejcie and Morgan's table, a sample size of 50 out of 60 students. So in this study of the assessment of the knowledge, attitude, and practices of blood donation among KIU students at Fort Portal Regional Referral Hospital, a sample size of 50 students was used.

### **Sampling Procedure and Selection of Respondents**

Due to the small target population of 60 KIU students at Fort Portal Regional Referral Hospital, questionnaires were given to all the students.

### **Methods of Data Collection**

Quantitative research was used. The questionnaires were handed out to the KIU students to answer.

### **Instruments of Data Collection**

Data collection was done by the KIU students at Fort Portal Regional Referral Hospital using questionnaires. The filled-out questionnaires were then collected and later analysed. Questionnaires had both open-ended and closed-ended questions. They were given out to some of the KIU students at Fort Portal Regional Referral Hospital.

### **Ethical considerations**

Ethics are the well-founded standards of right and wrong prescribing what humans ought to do. Confidentiality and privacy: The KIU students were assured of confidentiality, and the questionnaires filled out did not require their names. The interviewer explained the purpose of the study, and the participants were allowed to ask questions when clarity was needed. They were also allowed to draw from the study at any time if that was what they wanted, although none did. The research was about blood donation, and there is currently a shortage of donated blood in the country. No KIU student was coerced into participating in the study.

### **Data Management and Analysis**

Data analysis started immediately after data collection and ended with the interpretation and processing of the data. The data was analysed using the Microsoft Excel computer program. Frequency tables were worked out

based on the data entered into Microsoft Excel. In these frequency tables, analysis was done with the corresponding percentage.

## RESULTS

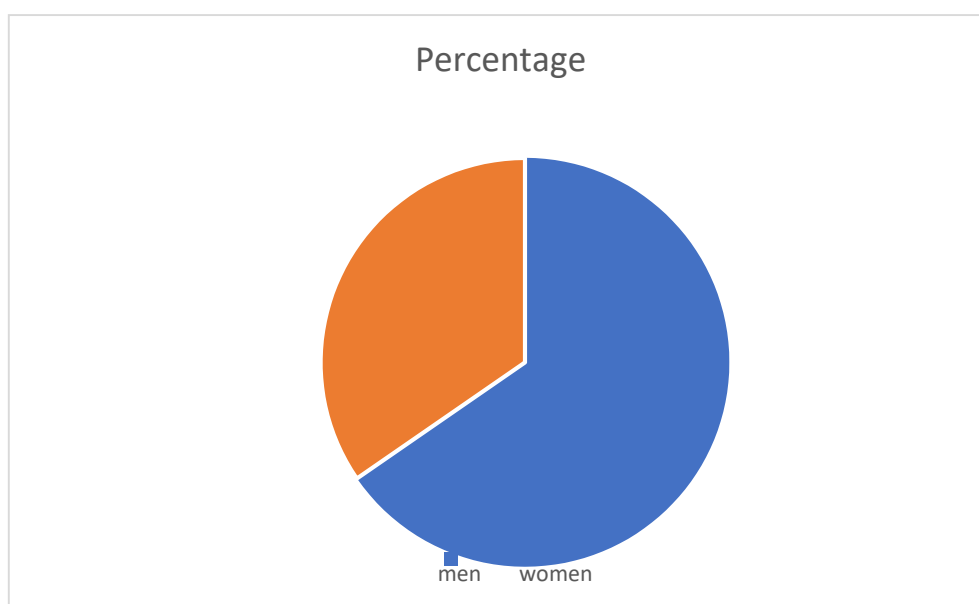
**Socio-demographic characteristics of the respondents**  
**Table 1: Showing the Gender of the respondents**

	Frequency	Percentage
Male	30	60
Female	20	40
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary data**

The total sample of 50 adult respondents was composed of 40% females and 60% males that is the majority of the respondents were male. All the respondents were from a higher institution of learning i.e. KIU.

**Figure 1: Showing the distribution by gender of the adult respondents**



**Source: Primary Data**

The figure above is the graphic representation of the gender distribution of the participants in the study that is 60% male and 40% female respondents. Showing more males participated in the study than females.

## Knowledge about blood donation

**Those who knew about blood donation**

**Table 2: Showing those who knew about blood donation**

	Frequency	Percentage
Yes	50	100
No	0	0
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

It was found that all the respondents knew about blood donation and 100% knew the different blood groups.

**Table 3: Shows the source of information**

Source of information	Frequency	Percentage
Media e.g. TV, radio and Newspapers	15	30
Friends	5	10
School	30	60
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

The above table shows that the majority of the participants knew about blood donation from school that is 60% of the participants.

**The participants who knew their blood groups****Table 4: Showing the respondents who knew their blood groups**

	Frequency	Percentage
Yes	47	94
No	3	6
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

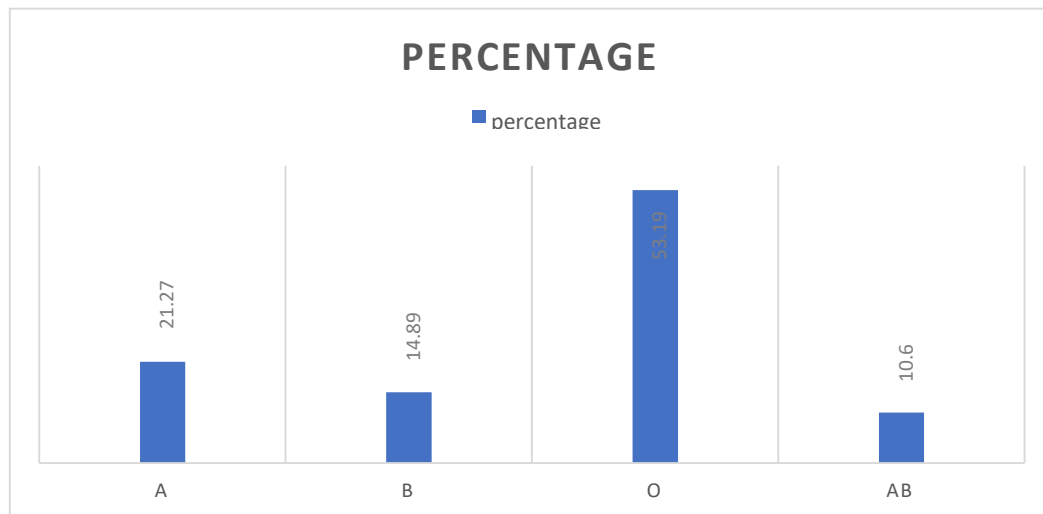
The above shows that the majority of the respondents (94%) knew their blood groups.

**The different ABO blood groups****Table 5: Showing the blood groups of the respondents**

Blood group	Frequency	Percentage
A	10	21.27
B	7	14.89
O	25	53.19
AB	5	10.6
<b>Total</b>	<b>47</b>	<b>100</b>

**Source: Primary Data**

The table above shows that 53.19 % of the respondents were blood group O and the minority were blood group AB. Consider the figure below which also emphasizes the distribution of blood groups.

**Figure 2: Showing the different blood groups of the Respondent****Source: Primary Data**

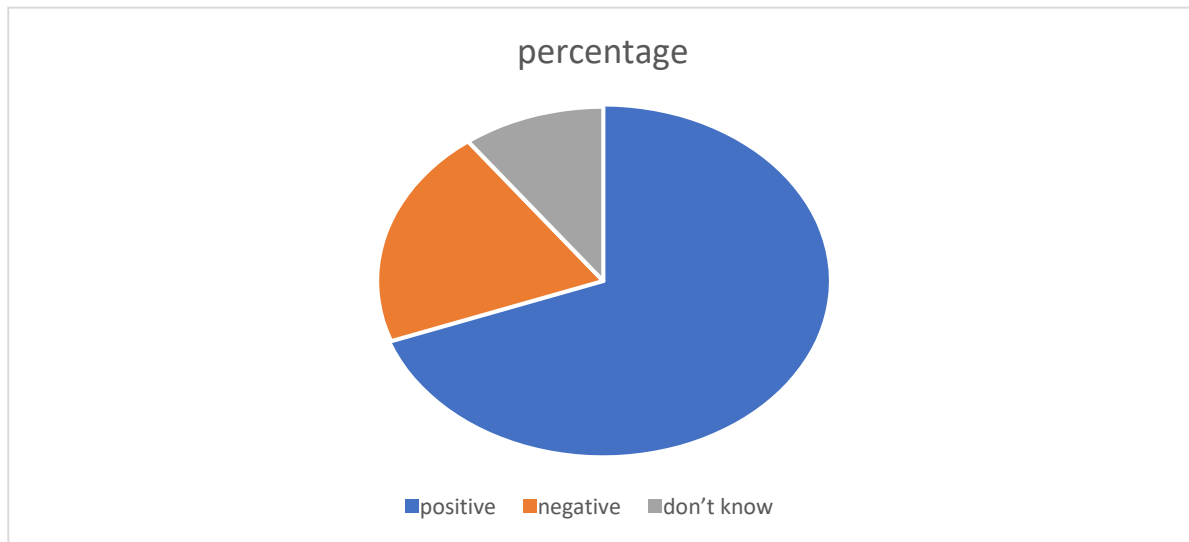
The figure above emphasizes the distribution of the different blood groups.

**Table 6: Showing the Rhesus groups**

Rhesus group	Frequency	Percentage
Positive	30	63.8
Negative	10	21.27
Don't know	7	14.89
<b>Total</b>	<b>47</b>	<b>100</b>

**Source: Primary Data**

The above table shows that the majority of the respondents (63.8%) were Rhesus factor positive. 21.27% were rhesus negative, while 14.89% did not know their Rhesus group. Consider the figure below.

**Figure 3: The rhesus groups of the respondents****Source: Primary Data**

The figure above shows the distribution of the different rhesus groups among the respondents.

**Table 7: Showing where donated blood goes**

	Frequency	Percentage
Yes	45	90
No	5	10
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

90% of the respondents knew where donated blood is taken which is the majority of the respondents. 10% do not have the knowledge where the blood goes.

**Table 8: Showing the Location where donated blood goes**

Site	Frequency	Percentage
Blood bank	45	90
Exported to other countries	0	0
Research on Africans	0	0
Don't know	5	10
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

90% of the respondents that answered the questionnaire, knew that the donated blood goes to the blood bank, 10% didn't have knowledge about where donated blood is taken.

**Duration of the Donation Process**  
**Table 9: Showing the duration of the donation process**

Duration	Frequency	Percentage
< 20 minutes	10	20
20-30 Minutes	20	40
> 30 minutes	5	10
Don't know	15	30
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

40% of the respondents said that the blood donation process lasts for 20-30 minutes.

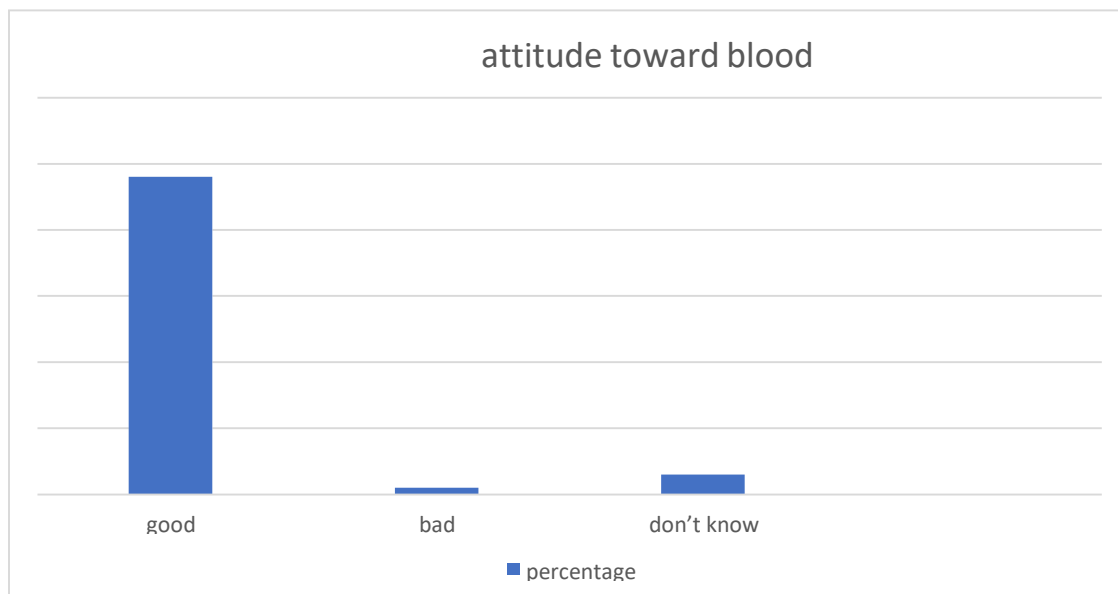
**Table 10: Attitude towards blood donation**

	Frequency	Percentage
Good	45	90
Bad	1	2
Don't know	4	8
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

Generally, there was a positive attitude towards blood donation as shown by the table above with 90% response being good. The figure below further demonstrates this.

**Figure 4: Showing the attitude towards blood donation**



**Source: Primary Data**

Majority of the respondents had a good attitude towards blood donation

**Table 11: Showing whether there would be Harm during or after blood donation**

	Frequency	Percentage
Yes	45	90
No	5	10
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

The table above shows that 90% of the respondents said something harmful can occur during the blood donation process. 10% said no harmful incidents could happen during the donation of blood.

**Table 12: Showing what can happen during and after the donation process**

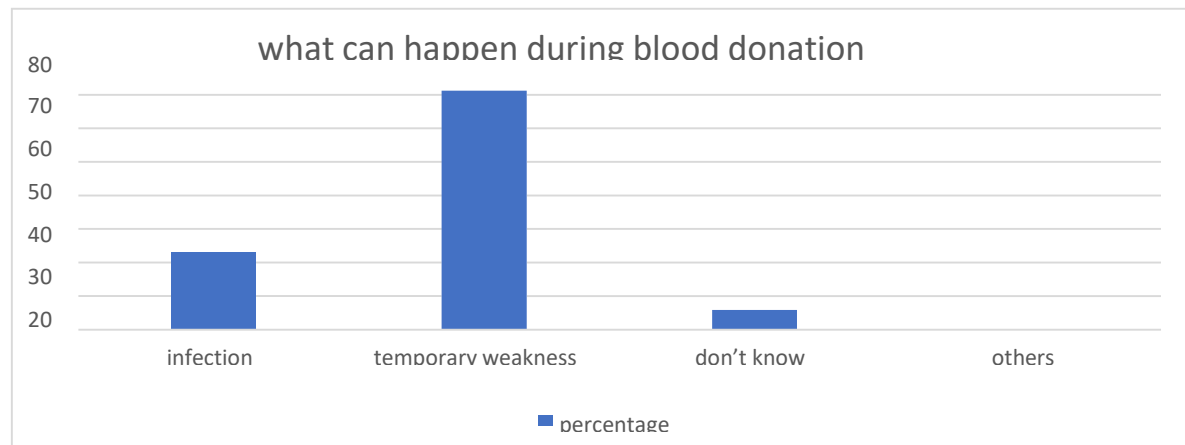
	Frequency	Percentage
Infection	10	20
Temporary weakness	35	70
Don't know	5	10
Others	0	0
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

The table above shows that 70% of the respondents said that one can get temporary weakness from donating blood. Consider the figure below.

**Figure 5: Showing what can happen during blood donation**

Figure 5 shows what the respondents answered about what could happen while donating blood. 70% of respondents believed that they would get temporary weaknesses.



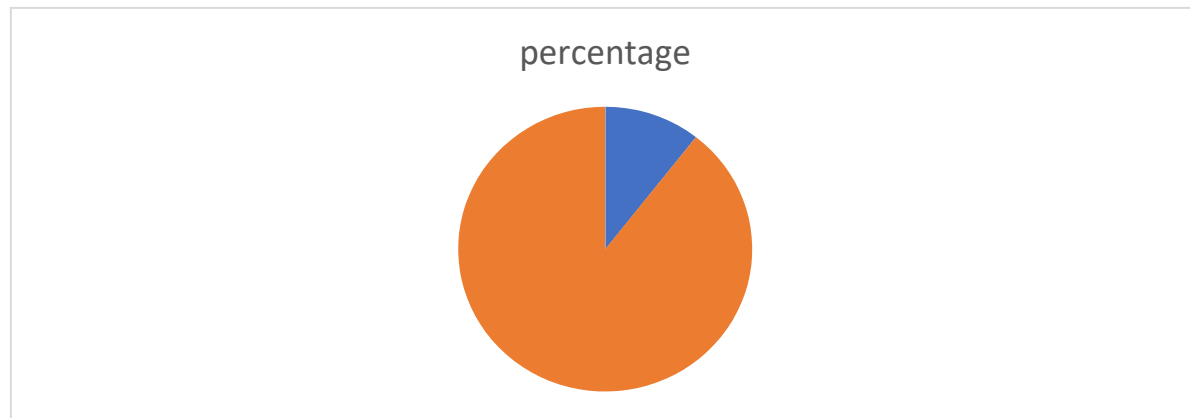


**Table 13: Showing the respondents who have ever donated blood**

	Frequency	Percentage
Yes	15	30
No	35	70
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Primary Data**

The table above shows that 30% have ever donated blood and 70% of the respondents had never donated blood.

**Figure 6: The Diagram showing the percentage of respondents who had and those who had not donated blood****Source: Primary Data**

Only 30% of the interviewed respondents had ever donated blood and 70% had never donated blood.

**Table 14: Showing why the respondents donated blood**

	Frequency	Percentage
Wanted to help people	13	86.66
Paid to donate	0	0
Friends were donating	2	13.33
Others	0	0
<b>Total</b>	<b>15</b>	<b>100</b>

**Source: Primary Data**

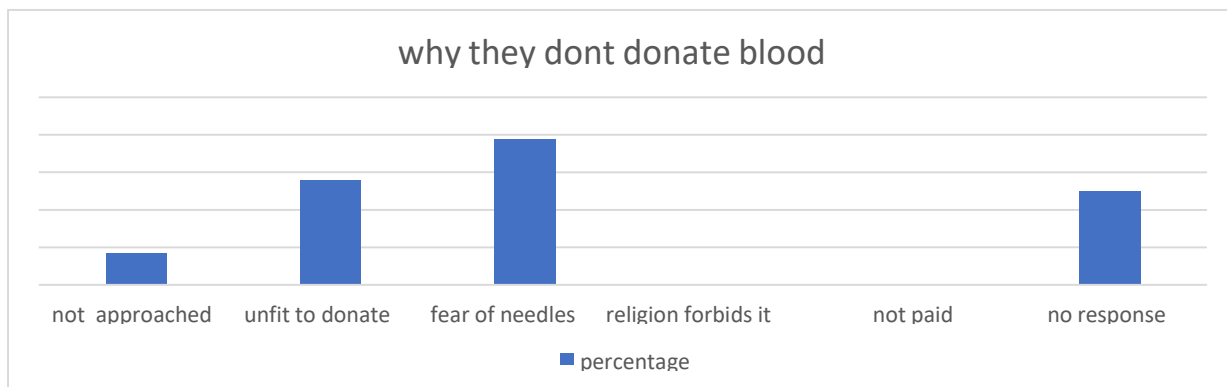
The above table shows why the respondents who had ever donated blood decided to donate their blood. 86.66% of the respondents donated because they wanted to help people while others were donating because their friends were donating blood i.e. 13.33%. There was no respondent paid to donate blood at zero per cent.

**Table 15: Showing why they do not donate blood.**

	Frequency	Percentage
Not approached	5	14.28
Unfit to donate	10	28.5
Fear of needles	15	42.8
Religion forbids it	0	0
Not paid	0	0
No response	5	14.28
<b>Total</b>	<b>35</b>	<b>100</b>

**Source: Primary Data**

The above table shows why the respondents who had never donated blood decided not to donate their blood. The figure below shows why respondents do not donate blood.

**Figure 7: Showing why the respondents do not donate blood**

**Source: Primary Data**  
**DISCUSSION**

It was discovered that the majority of the respondents were males (60%) and females (40%). It was discovered that all the respondents knew about blood donation and that school was the biggest source of information, i.e., 60%, followed by the media (TV, radio, and newspapers) at 30%, and friends at 10%. This shows that more information should be passed on through schools and the media. Most of the respondents (94%) knew their blood groups, and the majority were in blood group O (53.19%), followed by blood group A (21.27%), blood group B (14.89%), and the least in blood group AB (6%). The biggest percentage of the respondents was Rhesus factor positive 63.8% and the others were Rhesus factor negative 21.27%. The majority of the respondents knew where donated blood went, i.e., 90%, while only 10% did not, and all the ones who knew said that it was taken to the blood bank. The majority of the respondents said the donation process lasts for 20–30 minutes (40%). The respondents who think it lasts for more than 30 minutes (10%) are less likely to donate. The observed gender distribution among respondents may reflect existing trends in blood donation participation. Research indicates that men are more likely to donate blood than women due to various factors such as eligibility criteria, social norms, and fear of anemia post-donation [15, 16]. To address this gender gap, tailored recruitment strategies targeting women, such as educational campaigns addressing misconceptions and concerns, could be implemented. The dominance of schools as the primary source of information on blood donation highlights the importance of incorporating donation education into school curricula. Studies have shown that educational interventions in schools can positively influence donation knowledge, attitudes, and intentions among students [17]. Furthermore, leveraging the media's reach through targeted campaigns can enhance public awareness and engagement with blood donation initiatives [7]. The high level of awareness regarding blood groups among respondents suggests a fundamental understanding of the importance of blood typing in donation and transfusion processes. This aligns with findings from previous studies indicating a relatively high level of self-reported knowledge of blood types among the general population [18, 19].

However, ongoing education efforts are necessary to ensure accurate understanding and promote informed donation decisions. The widespread awareness of where donated blood goes underscores the effectiveness of existing communication channels in conveying this information. This aligns with the objectives of blood donation campaigns, which aim to inform the public about the journey of donated blood from collection to utilization in patient care [20]. Maintaining transparency and trust in blood collection and distribution processes is essential for sustaining donor confidence and participation. The perception that the donation process lasts between 20-30 minutes aligns with the typical duration of a blood donation session. However, the finding that some respondents believe it takes longer and are less likely to donate highlights the importance of managing donor expectations and addressing misconceptions. Providing accurate information about the donation process, including its duration and potential impact on donors' schedules, can help alleviate concerns and encourage participation [21]. There was generally a good attitude (90%) towards blood donation. These are more likely to donate blood. Only one respondent had a bad attitude towards it (2%) and 8% did not know what attitude they had towards blood donation. 90% of the respondents said one can get harmed during or after donating blood, and the majority (70%) said temporary weakness can happen, followed by infections at 20%, while 10% did not know what could happen. This can discourage the person from donating. 70% of the respondents had never donated blood, while 30% had. The majority of the respondents who had never donated blood said it was mainly due to fear of needles (8%), followed by 28.5% who said they were unfit to donate, 14.28% had no response, and 14.28% had never been approached. The respondents who had donated blood before did so mainly because they wanted to help people (86.66%) and also because their friends were donating (33%). Most respondents said they could donate blood if reminded to (80%), while 20% would. All the respondents said they would encourage others to donate blood, so more ways of reminding donors can be not having enough education about the blood donation process leads to false beliefs, e.g., thinking that they have little blood, thus mass sensitization is required. Fear of needles and the aftereffects of the donation process (e.g., weakness) some religions don't allow donating. Some of the people are not approached to donate blood. The reports in the media that blood is sold in hospitals discourage others from donating. Some of the people want to be paid to donate. Some people don't know where to go to donate blood. Mass sensitization about the blood donation process and its importance, especially via social media. Create permanent places where people can go to donate blood if they want. Put incentives, e.g., edibles and free health care, for donors. Encouraging relatives of the sick to donate blood. The high percentage (90%) of respondents with a positive attitude towards blood donation suggests a favorable predisposition towards the act. This is crucial as positive attitudes are often correlated with increased willingness to donate blood [22]. The perception of potential harm during or after donating blood, as indicated by 90% of respondents, can be a significant barrier to donation. The predominant fear of temporary weakness (70%) and concerns about infections (20%) highlight areas for targeted education and reassurance [23]. Fear of needles, feeling unfit, lack of approach, and religious beliefs are cited as reasons for not donating blood. Addressing these barriers through education, awareness campaigns, and personalized approaches can potentially increase donation rates [24]. The altruistic motive of wanting to help others (86.66%) is a strong driver for blood donation, indicating the importance of emphasizing the impact of donations on saving lives. Additionally, social influence, such as friends donating, also plays a role (33%) [25]. The majority of respondents (80%) express willingness to donate if reminded, suggesting that implementing reminder systems can be effective in increasing donation rates. Moreover, the unanimous agreement to encourage others to donate underscores the potential for peer influence in promoting donation behaviors [26]. Various barriers such as lack of education, fear, religious beliefs, and misinformation about blood donation exist. To address these, mass sensitization campaigns, education programs, and targeted interventions are needed [25]. Providing incentives such as edibles and free healthcare, establishing permanent donation centers, and encouraging family members of patients to donate can further facilitate blood donation [27]. In conclusion, addressing misconceptions, overcoming barriers, and implementing targeted strategies to promote blood donation can contribute to increasing donation rates and ensuring an adequate blood supply for those in need.

## CONCLUSION

In conclusion, the study assessing blood donation awareness, attitude, and behavior among KIU students at Fort Portal Regional Referral Hospital reveals a significant gap between knowledge and practice. While students demonstrate sufficient knowledge and positive attitudes toward blood donation, their actual engagement remains low, despite eligibility within the WHO's age range for donation. This underscores the urgent necessity for comprehensive education campaigns addressing misconceptions and promoting blood donation and transfusion. The findings highlight a clear relationship between knowledge, attitude, and practice among participants, emphasizing the need for targeted interventions to bridge this gap effectively.

## REFERENCES

1. Kyari, M., Garba, M.A., Lawal, B.K., Alewu, B., Yeldu, S., Mukhtar, M., & Gwarzo, U.S. (2018). The perception of individuals towards blood donation in some selected healthcare facilities in Maiduguri, Borno State – Nigeria. *J. Pharm. Allied Sci.* 15, 2820–2834.

2. Leticia, O., Andrew, A., Obeagu, E., Ifeoma, U., & Ugochukwu, A. (2014). The Effect of Viral Hepatitis ON APTT, PT, TT, Fibrinogen and Platelet among Blood Donors at FMC, Umuahia. *IOSR J. Dent. Med. Sci.* 13, 57–63. <https://doi.org/10.9790/0853-13855763>
3. Mitra, R., Mishra, N., & Rath, G.P. (2014). Blood groups systems. *Indian J. Anaesth.* 58, 524–528. <https://doi.org/10.4103/0019-5049.144645>
4. Jahanpour, O., Pyuza, J.J., Ntiyakunze, E.O., Mremi, A., & Shao, E.R. (2017). ABO and Rhesus blood group distribution and frequency among blood donors at Kilimanjaro Christian Medical Center, Moshi, Tanzania. *BMC Res. Notes.* 10, 738. <https://doi.org/10.1186/s13104-017-3037-3>
5. George, P.E., Vidal, J., & Garcia, P.J. (2016). An Analysis of and Recommendations for the Peruvian Blood Collection and Transfusion System. *J. Epidemiol. Public Health Rev.* 1, 10.16966/2471-8211.119
6. Mercy, O., Obeagu, E., Ccn, V., & Nnokam, N. (2020). Association of ABO Blood Group with HIV Infection. *J. Infect. Dis. Microbiol.* 1, 1–7. [https://doi.org/10.37191/Mapsci-JIDM-1\(1\)-001](https://doi.org/10.37191/Mapsci-JIDM-1(1)-001)
7. Elias, E., Mauka, W., Philemon, R.N., Damian, D.J., Mahande, M.J., & Msuya, S.E. (2016). Knowledge, Attitudes, Practices, and Factors Associated with Voluntary Blood Donation among University Students in Kilimanjaro, Tanzania. *J. Blood Transfus.* 2016, e8546803. <https://doi.org/10.1155/2016/8546803>
8. Hossain, M.S., Siam, Md.H.B., Hasan, M.N., Jahan, R., & Siddiquee, M.H. (2022). Knowledge, attitude, and practice towards blood donation among residential students and teachers of religious institutions in Bangladesh – A cross-sectional study. *Heliyon.* 8, e10792. <https://doi.org/10.1016/j.heliyon.2022.e10792>
9. Thorpe, R., Masser, B., Coundouris, S.P., Hyde, M.K., Kruse, S.P., & Davison, T.E. (2024). The health impacts of blood donation: a systematic review of donor and non-donor perceptions. *Blood Transfus.* 22, 7–19. <https://doi.org/10.2450/BloodTransfus.494>
10. Alfouzan, N. (2014). Knowledge, Attitudes, and Motivations towards Blood Donation among King Abdulaziz Medical City Population. *Int. J. Fam. Med.*, 539670. <https://doi.org/10.1155/2014/539670>
11. Melku, M., Terefe, B., Asrie, F., Enawgaw, B., Melak, T., Tsegay, Y.G., Areba, M., & Shiferaw, E. (2016). Knowledge, Attitude, and Practice of Adult Population towards Blood Donation in Gondar Town, Northwest Ethiopia: A Community Based Cross-Sectional Study. *J. Blood Transfus.* 2016, 7949862. <https://doi.org/10.1155/2016/7949862>
12. Blood safety and availability, <https://www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability>
13. Nwogoh, B., Aigberadion, U., & Nwannadi, A.I. (2013). Knowledge, Attitude, and Practice of Voluntary Blood Donation among Healthcare Workers at the University of Benin Teaching Hospital, Benin City, Nigeria. *J. Blood Transfus.* 2013, 1–6. <https://doi.org/10.1155/2013/797830>
14. Arage, G., Ibrahim, S., & Adimasu, E. (2017). Blood donation practice and its associated factors among health professionals of University of Gondar Hospital, Northwest Ethiopia: a cross sectional study. *BMC Res. Notes.* 10, 294. <https://doi.org/10.1186/s13104-017-2618-5>
15. Masser, B.M., White, K.M., Hyde, M.K., & Terry, D.J. (2008). The psychology of blood donation: current research and future directions. *Transfus. Med. Rev.* 22, 215–233. <https://doi.org/10.1016/j.tmr.2008.02.005>
16. Pule, P.I., Rachaba, B., Magafu, M.G.M.D., & Habte, D. (2014). Factors Associated with Intention to Donate Blood: Sociodemographic and Past Experience Variables. *J. Blood Transfus.* 2014, 1–7. <https://doi.org/10.1155/2014/571678>
17. Ugwu, N.I., Uneke, C.J., Ugwu, C.N., Oti, W.J.O., Agbo, U.N., & Akamike, I.C. (2020). Effect of Blood Donor Educational intervention on the knowledge and Attitude towards Voluntary Blood Donation among Medical Students at a Nigerian University. *Niger. Med. J. J. Niger. Med. Assoc.* 61, 163–168. [https://doi.org/10.4103/nmj.NMJ\\_177\\_19](https://doi.org/10.4103/nmj.NMJ_177_19)
18. Saleh, D., AlWawi, G., Tayyem, R., Al Hajji, A., Alketbi, R., & Albeetar, M. (2021). Blood Donation Practices and Awareness of Blood Types Among Adults in the United Arab Emirates: A Cross-Sectional Community-Based Study. *Cureus.* 16, e52044. <https://doi.org/10.7759/cureus.52044>
19. Jemberu, Y.A., Esmael, A., & Ahmed, K.Y. (2016). Knowledge, attitude and practice towards blood donation and associated factors among adults in Debre Markos town, Northwest Ethiopia. *BMC Hematol.* 16, 23. <https://doi.org/10.1186/s12878-016-0062-8>
20. Carey, P.M., High, P.M., Schlumpf, K.S., Johnson, B.R., Mast, A.E., Rios, J.A., Simon, T.L., & Wilkinson, S.L. (2012). Donation return time at fixed and mobile donation sites. *Transfusion (Paris).* 52, 127–133. <https://doi.org/10.1111/j.1537-2995.2011.03235.x>
21. Hu, Q., Hu, W., Han, W., & Pan, L. (2022). Web-Based Short Video Intervention and Short Message Comparison of Repeat Blood Donation Behavior Based on an Extended Theory of Planned Behavior: Prospective Randomized Controlled Trial Study. *J. Med. Internet Res.* 24, e37467. <https://doi.org/10.2196/37467>
22. Hupfer, M.E., Taylor, D.W., & Letwin, J.A. (2005). Understanding Canadian student motivations and beliefs about giving blood. *Transfusion (Paris).* 45, 149–161. <https://doi.org/10.1111/j.1537-2995.2004.03374.x>

23. Orletti, M.P.S., Assone, T., Sarnaglia, G.D., Martins, M.L., Rosadas, C., Casseb, J., Taylor, G., Ferreira-Filho, J.B., Pereira, F.E.L., & Miranda, A.E. (2021). Prevalence of infection by human T Cell lymphotropic viruses (HTLV-1/2) in adult population in Vitória-ES. *Braz. J. Infect. Dis.* 25, 101631. <https://doi.org/10.1016/j.bjid.2021.101631>
24. Boulware, L.E., Ratner, L.E., Cooper, L.A., Sosa, J.A., LaVeist, T.A., & Powe, N.R. (2002). Understanding disparities in donor behavior: race and gender differences in willingness to donate blood and cadaveric organs. *Med. Care.* 40, 85–95. <https://doi.org/10.1097/00005650-200202000-00003>
25. Bednall, T.C., & Bove, L.L. (2011). Donating blood: a meta-analytic review of self-reported motivators and deterrents. *Transfus. Med. Rev.* 25, 317–334. <https://doi.org/10.1016/j.tmr.2011.04.005>
26. Blood Donor Selection: Guidelines on Assessing Donor Suitability for Blood Donation. World Health Organization (2012)
27. Esefeld, M., Sümnick, A., Alpen, U., Grabe, H.J., & Greinacher, A. (2021). A Cross-Sectional Study of Blood Donors' Psychological Characteristics over 8 Weeks. *Transfus. Med. Hemotherapy.* 49, 67–74. <https://doi.org/10.1159/000517566>