ORIGINAL ARTICLE

# KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS BLOOD DONATION BETWEEN UNDERGRADUATE STUDENTS AT THE UNIVERSITY OF CYBERJAYA

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## ABSTRACT

*Blood transfusion is a critical component in medical care, yet worldwide demand exceeds supply. Voluntary donation of blood (VBD) is the most secure method, but response in Malaysia is poor, with only 2.2% of the population donating compared to the WHO-recommended 3-5%. This study compares and assesses the knowledge, attitude, and practice (KAP) of blood donation among healthcare and non-healthcare undergraduates. The purpose of this study is to determine whether healthcare students possess enhanced knowledge and more positive attitudes and practices than their non-healthcare counterparts. A cross-sectional comparative study was conducted among 386 students through structured questionnaires. Convenience sampling and statistical testing through Jamovi, such as chi-square tests, was conducted. Healthcare students possessed significantly enhanced knowledge (62.3% vs. 37.3%, $p < 0.001$), likely due to greater exposure to health-related education. Attitudes were generally favorable but not significantly different ($p = 0.380$). Practice was low in both groups without any significant difference ($p = 0.806$), reflecting a global trend where knowledge does not always translate to action. Despite enhanced knowledge among healthcare students, the actual act of donating blood is low in both groups. Donation drives and campaigns are recommended.*

***Keywords**: Blood donation; healthcare students; knowledge; attitude; practice*

## INTRODUCTION

Blood donation plays a vital role in the modern healthcare systems, and will continue to be an essential part of the modern healthcare system, as this is the sole means to save lives in a broad spectrum of clinical cases, including trauma care, surgery, obstetric emergencies, and the management of chronic illnesses such as cancer and hematological diseases. Regardless of the current developments in the medical technology and transfusion practices, ensuring a safe and adequate supply of blood remains a global health issue of concern. The World Health Organization recommends that at least 3-5 percent of the national population should also donate blood at least once a year to meet national requirements to the best of their ability[1]; however many countries still fail to reach this target because of poor donor recruitment and retention[2].

International efforts have focused on voluntary, non-paid blood donation as the best and safest source of blood supply[3]. It will minimize the chances of transfusion-transmissible infections and will encourage a sustainable donor base. In Malaysia, proper blood supply is a national priority that is coordinated by the ministry of health Malaysia via the national blood centre which organizes regular blood donation campaigns and awareness programs[4]. However, the variation in the number of donors and the growing medical needs still remain as a problem in ensuring steady blood supplies.

It is important to understand the factors that influence the behavior of blood donation to develop the effective strategies to boost the participation. Knowledge, attitude and practice (KAP) are popular studies that are used to determine the awareness, perceptions and practices of individuals about blood donation. There is evidence to suggest that despite the fact that many people have sufficient knowledge and are expressing positive attitudes towards blood donation, these do not necessarily translate into actual donation practices[5&6]. Some barriers have been identified such as fear of needles, misconceptions about the health risks, lack of awareness about the eligibility criteria, and limited opportunities or access to the donation centers[7].

University students can be considered one of the most important target groups in promoting the voluntary blood donation. They are usually young, healthy, and a potential donor, so they are an ideal population to build a sustainable donor base. In addition, students may become powerful change agents in their respective communities through fostering awareness and influencing their peers to join blood donation efforts. Nevertheless, research

in various contexts has continually shown that there is a disconnect between the knowledge and attitudes of students and their actual practice of donation[8]. This gap shows that special interventions are needed that extend beyond awareness to include behavioral and motivational aspects. Donor motivation and retention will also be very crucial because first-time donors are less likely to be retained without the relevant encouragement and support[9].

Within the Malaysian context, empirical studies carried out on university students have shown that despite the rate of awareness on blood donation may be moderate to high, the percentage of students who are actively involved in donating blood is relatively low[10]. This implies that current awareness initiatives might not be effective enough in creating knowledge into practice. Hence, it is crucial to gain a better insight into the knowledge, attitudes, and practices associated with blood donation among university students to inform the evidence-based interventions and policies. Thus, this research paper will evaluate the knowledge, attitude, and practice of blood donation among the undergraduate students at the University of Cyberjaya, and determine what factors have an impact on whether they will participate in voluntary blood donation.

## METHODOLOGY

This study adopted a comparative cross-sectional design to assess and compare the knowledge, attitudes, and practices (KAP) related to blood donation among undergraduate students. The research was conducted at the University of Cyberjaya, Malaysia, a private higher education institution offering a wide range of healthcare and non-healthcare academic programs. The study population comprised undergraduate students from diverse faculties, enabling comparison between students enrolled in healthcare-related disciplines (e.g., medicine, pharmacy, nursing) and those in non-healthcare programs.

Eligible participants were undergraduate students aged between 18 and 30 years who were officially enrolled at the university during the study period. Inclusion criteria required participants to be free from known chronic medical conditions that could contraindicate blood donation and willing to provide informed consent. Exclusion criteria included postgraduate students, foundation or pre-university students, individuals outside the specified age range, and those with medical contraindications to blood donation (e.g., severe anemia, chronic infectious diseases, or other conditions restricting eligibility for blood donation).

Data collection was carried out using a structured, self-administered questionnaire developed based on previously validated instruments from the literature and adapted to suit the local context. The questionnaire consisted of four main sections: (1) socio-demographic characteristics (including age, gender, ethnicity, and field of study), (2) knowledge related to blood donation (e.g., eligibility criteria, frequency, and benefits), (3) attitudes toward blood donation (including perceptions, beliefs, and willingness), and (4) practices related to blood donation (including prior donation history and frequency). The questionnaire included a combination of multiple-choice questions and dichotomous (yes/no) items to facilitate ease of response and standardization.
Prior to data collection, the questionnaire was reviewed for content validity and clarity. Participation was voluntary, and the questionnaire was distributed either electronically or in person, depending on accessibility and participant convenience. Respondents were given adequate time to complete the questionnaire independently to minimize response bias.

Data were entered and analyzed using IBM SPSS Statistics. Descriptive statistical analyses were performed to summarize participants' socio-demographic characteristics and KAP variables, including frequencies, percentages, means, and standard deviations where appropriate. Inferential statistical analysis was conducted using the chi-square ($x^2$) test to examine associations between the field of study (healthcare versus non-healthcare) and categorical KAP variables. Where applicable, additional statistical measures such as odds ratios and confidence intervals may be considered to further explore associations. A p-value of less than 0.05 was considered indicative of statistical significance.

Ethical approval for the study was obtained from the Cyberjaya University Research Ethics Committee prior to commencement. All participants were informed about the purpose and objectives of the study, and written informed consent was obtained before participation. Participation was entirely voluntary, and respondents were assured of their right to withdraw at any stage without any consequences. Confidentiality and anonymity were strictly maintained, with no personally identifiable information collected or disclosed. All data were securely stored and used solely for research purposes in accordance with ethical guidelines.

## RESULTS

### Demographic Profile

A total of 386 undergraduate students participated in this study. The majority of respondents were female (65.3%), while males accounted for 34.7% of the sample. Most participants (94.8%) were within the age range of 18–25 years, indicating that the study population predominantly consisted of young adults. In terms of ethnicity, Indian students represented the largest proportion (40.9%), followed by Malays (33.4%), other ethnic groups (18.4%), and Chinese students (7.3%). Regarding academic background, 73.6% of respondents were enrolled in healthcare-related programs, while 26.4% were from non-healthcare disciplines.

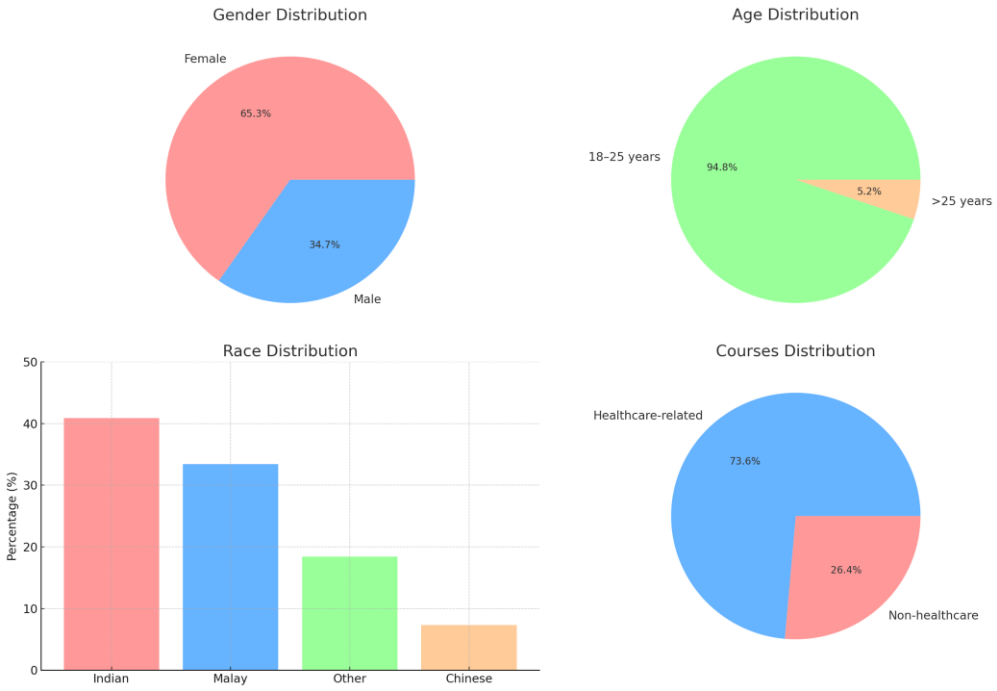


**Figure 1: Socio demographic presentation of the respondents**

### Knowledge Towards Blood Donation

Table 1 presents the distribution of knowledge levels regarding blood donation among healthcare and non-healthcare students. Overall, 55.7% of participants demonstrated good knowledge, while 44.3% had poor knowledge. A statistically significant association was observed between course type and knowledge level ($x^2 = 19.1$, $p < 0.001$). Specifically, a higher proportion of healthcare students exhibited good knowledge (62.3%) compared to non-healthcare students (37.3%). Conversely, poor knowledge was more prevalent among non-healthcare students (62.7%) than healthcare students (37.7%). This finding suggests that formal education in healthcare-related fields contributes significantly to improved awareness and understanding of blood donation.

**Table 1: Knowledge Towards Blood Donation**

| Course Type | Good Knowledge | Poor Knowledge | Total |
|---|---|---|---|
| **Non-healthcare** | 37.3% | 62.7% | 102 |
| **Healthcare** | 62.3% | 37.7% | 284 |
| **Total** | 55.7% | 44.3% | 386 |

*Chi-square = 19.1, p < .001 (Significant)*

### Attitude Towards Blood Donation

Table 2 illustrates participants' attitudes toward blood donation. The majority of respondents demonstrated a positive attitude (86.6%), while only 13.4% exhibited a negative attitude. Although healthcare students showed a slightly higher proportion of positive attitudes (87.9%) compared to non-healthcare students (83.3%), this difference was not statistically significant ($x^2 = 0.769$, $p = 0.380$). These findings indicate that both groups

share similarly favorable perceptions toward blood donation, suggesting that positive attitudes are widespread regardless of academic background.

The knowledge table (Table 1) shows a great disparity between non-healthcare and health in care students regarding knowledge of blood donation. Healthcare students were far better knowledgeable, with 62.3% of them possessing good knowledge compared to only 37.3% of non-healthcare students who had good knowledge. This is understandable since healthcare students receive greater exposure to medical knowledge and public health education as part of their curriculum. Statistical significance ($p < .001$) confirms the existence of a real difference between the two groups, justifying special awareness interventions for non-healthcare students.

**Table 2: Attitude Towards Blood Donation**

| Course Type | Positive Attitude | Negative Attitude | Total |
|---|---|---|---|
| **Non-healthcare** | 83.3% | 16.7% | 102 |
| **Healthcare** | 87.9% | 12.1% | 284 |
| **Total** | 86.6% | 13.4% | 386 |

*Chi-square = 0.769, p = 0.380 (Not significant)*

**Practice of Blood Donation**

Table 3 shows the practice of blood donation among the study participants. Overall, only 20.7% of respondents reported good blood donation practices, while a substantial majority (79.3%) demonstrated poor practice. Among healthcare students, 20.4% reported good practice compared to 21.6% among non-healthcare students. The association between course type and practice was not statistically significant ($x^2 = 0.060$, $p = 0.806$). These findings highlight a considerable gap between knowledge, attitude, and actual donation behavior, indicating that favorable knowledge and attitudes do not necessarily translate into practice.

**Table 3: Practice Towards Blood Donation**

| Course Type | Good Practice | Poor Practice | Total |
|---|---|---|---|
| **Non-healthcare** | 21.6% | 78.4% | 102 |
| **Healthcare** | 20.4% | 79.6% | 284 |
| **Total** | 20.7% | 79.3% | 386 |

*Chi-square = 0.060, p = 0.806 (Not significant)*

## DISCUSSION

This study evaluated and compared the knowledge, attitudes, and practices (KAP) related to blood donation among healthcare and non-healthcare undergraduate students at the University of Cyberjaya. The findings revealed three key observations: significantly higher knowledge among healthcare students, uniformly positive attitudes across both groups, and persistently low levels of actual blood donation practice regardless of academic background. These findings highlight the continued existence of a knowledge–practice gap in voluntary blood donation behavior.

**Knowledge of Blood Donation**

The present study demonstrated that healthcare students had significantly higher knowledge levels compared to non-healthcare students (62.3% vs. 37.3%, $p < 0.001$). This finding is consistent with recent evidence indicating that students in health-related disciplines tend to possess better knowledge due to structured academic exposure and clinical training[11,12]. A large multi-country study conducted in 2023–2024 also confirmed that medical and health science students consistently achieve higher knowledge scores compared to non-health students, with knowledge improving alongside academic progression[13].

However, the overall level of good knowledge in this study (55.7%) remains moderate when compared to recent studies reporting higher levels. For example, a 2024 study among university students in Ethiopia reported that 77.6% had adequate knowledge[14]. Similarly, a 2025 study among medical students reported knowledge levels exceeding 75%[12]. These differences may be attributed to variations in curriculum integration, exposure to awareness campaigns, and institutional emphasis on blood donation education. This suggests that although healthcare education improves knowledge, additional targeted educational interventions are still required, particularly among non-healthcare students.

**Attitudes Toward Blood Donation**

The majority of participants in this study (86.6%) demonstrated a positive attitude toward blood

donation, with no statistically significant difference between healthcare and non-healthcare students. This finding is consistent with recent studies showing that positive attitudes toward blood donation are generally high among university students, regardless of academic discipline[13,14].

Recent evidence indicates that attitudes are strongly influenced by altruism, social responsibility, and perceived societal benefit rather than formal education alone[15]. For instance, a 2025 study reported that over 90% of participants expressed favorable attitudes toward blood donation despite varying levels of knowledge[16]. However, despite these encouraging attitudes, they do not necessarily translate into actual donation behavior, reinforcing the complexity of behavioral determinants.

**Practice of Blood Donation**

A critical finding of this study is the low prevalence of blood donation practice, with only 20.7% of participants reporting good practice. Importantly, no significant difference was observed between healthcare and non-healthcare students, indicating that increased knowledge does not necessarily result in improved behavior. This finding aligns with recent global evidence. A 2024 study reported that only 19.3% of university students had ever donated blood despite adequate knowledge and positive attitudes[14]. Similarly, a large cross-sectional study involving over 12,000 students across multiple countries found that actual donation rates remained low, with fewer than one-third of participants engaging in regular blood donation[13]. Additionally, a 2025 study observed that although knowledge and attitudes improved over time, up to 77% of participants had never donated blood[15].

These findings collectively confirm that low practice rates among students are a persistent global issue, emphasizing that knowledge and attitude alone are insufficient to drive behavioral change.

**Knowledge, Attitude and Practice (KAP) Gap**

The discrepancy observed between knowledge, attitudes, and practice reflects a well-established challenge in public health. Recent studies have emphasized that behavioral outcomes are influenced by multiple factors beyond knowledge, including perceived barriers, accessibility, and psychological determinants[11,15]. Common barriers identified in recent literature include fear of needles, concerns about adverse effects, lack of time, and limited opportunities for donation[12,14]. Additionally, theoretical models such as the Health Belief Model suggest that perceived susceptibility, perceived benefits, and perceived barriers significantly influence donation behavior[15]. The absence of significant differences in practice between healthcare and non-healthcare students in this study further supports the notion that structural and psychological barriers may outweigh the influence of knowledge alone.

**Implications for Practice and Policy**

The findings of this study highlight the need for multifaceted strategies to improve voluntary blood donation rates. While educational interventions remain important, they should be complemented by practical and behavioral approaches. These may include organizing regular on-campus donation drives, improving accessibility, and implementing peer-driven campaigns.

Recent evidence also supports the use of behavioral interventions, such as nudging and social influence strategies, to increase participation rates[15]. Furthermore, integrating experiential learning and real-life exposure to clinical scenarios may enhance motivation among students, particularly in healthcare disciplines.

Recent evidence highlights the growing importance of digital health communication in influencing health-related behaviors. In the Malaysian context, the increasing reliance on social media and digital platforms has been shown to play a significant role in shaping public awareness, engagement, and quality of life outcomes, particularly in health-related domains[17]. This suggests that leveraging digital communication strategies may enhance the effectiveness of blood donation campaigns, especially among younger populations who are highly active on these platforms.

Furthermore, evidence from multi-country studies demonstrates that targeted social media interventions can significantly improve both the intention to donate and actual blood donation behavior by reducing psychological barriers, enhancing accessibility to information, and increasing motivation[18]. These findings underscore the potential of integrating digital and social media-based approaches into existing blood donation promotion strategies to bridge the gap between knowledge, attitudes, and practice.

**Strengths and Limitations**

This study provides valuable comparative insights between healthcare and non-healthcare students within a single institutional setting. However, the cross-sectional design limits causal inference, and the use of self-reported data may introduce bias. Also one of the limitations is using convenience sampling method. so, the findings may not be generalizable.

## CONCLUSION

This study demonstrates that healthcare students have much greater awareness of blood giving than their non-healthcare counterparts. Attitudes were nonetheless equally favorable and rates of practice low in both groups. To improve rates of blood giving among university students, targeted education and increased access to donations need to be implemented. This study demonstrated that while undergraduate students at the University of Cyberjaya exhibit generally favorable knowledge and highly positive attitudes toward blood donation, actual donation practices remain markedly low. Healthcare students showed significantly better knowledge compared to their non-healthcare counterparts; however, this advantage did not translate into improved donation behavior. The absence of significant differences in attitude and practice between the two groups highlights a persistent knowledge–attitude–practice gap. These findings suggest that knowledge and positive perceptions alone are insufficient to drive voluntary blood donation. Instead, behavioral, psychological, and structural barriers appear to play a more decisive role in influencing actual participation. Therefore, efforts to improve blood donation rates should move beyond traditional awareness-based approaches and incorporate multifaceted strategies, including improved accessibility, regular institutional donation drives, and behavior-focused interventions. Importantly, integrating digital health communication particularly through social media platforms offers a promising avenue to enhance engagement, reduce perceived barriers, and convert positive intentions into sustained practice among young adults. In conclusion, addressing the gap between knowledge and behavior is essential for strengthening voluntary blood donation systems. Targeted, innovative, and behavior-driven interventions are needed to effectively mobilize university students as a reliable and sustainable donor population.

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