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"A Study to Assess the Knowledge and Attitude Regarding Blood Donation Among Undergraduate Students in Selected College of Thiruvananthapuram District"

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Abstract: Background: Blood donation is essential for maintaining an adequate supply of safe blood for healthcare services. However, inadequate knowledge and misconceptions often limit voluntary blood donation among young adults. **Objectives:** To assess the knowledge and attitude regarding blood donation among undergraduate students and determine their association with selected socio-demographic variables. **Methods:** A quantitative cross-sectional study was conducted among 190 undergraduate students in a selected college in Thiruvananthapuram, Kerala. Data were collected using a structured questionnaire and analyzed using descriptive statistics, Chi-square test, and Fisher's exact test. **Results:** Adequate knowledge was observed in 38.4% of students, while 55.8% had a positive attitude toward blood donation. Knowledge was significantly associated with academic subject, blood group, and family type, whereas attitude was associated only with academic subject ($p<0.05$). **Conclusion:** Although students showed positive attitudes, knowledge gaps highlight the need for regular educational interventions and campus-based blood donation awareness programs.

Keywords: *Blood donation, Knowledge, Attitude, Undergraduate students, Voluntary blood donation, Cross-sectional study, Kerala.*

Introduction

Blood is an irreplaceable biological resource that plays a vital role in saving lives during medical emergencies and routine healthcare services. Every day, healthcare institutions require an uninterrupted supply of safe blood for managing trauma, major surgeries, obstetric emergencies, cancer therapy, anemia, thalassemia, hemophilia, and various chronic medical conditions. Since blood cannot be artificially manufactured, voluntary blood donation remains the only dependable source for meeting these clinical demands.

According to the World Health Organization (WHO), voluntary non-remunerated blood donors are considered the safest and most reliable source of blood because they have lower rates of transfusion-transmissible infections and are more likely to donate regularly. Increasing the proportion of voluntary blood donors has therefore become a global public health priority. Nevertheless, many developing nations continue to struggle with inadequate blood supplies due to limited public awareness, misconceptions regarding blood donation, fear of adverse effects, and lack of organized donor recruitment strategies.

India has one of the largest healthcare systems in the world and requires millions of blood units annually to meet the increasing demand arising from population growth, road traffic accidents, obstetric complications, major surgeries, and chronic diseases. Although national blood transfusion services have improved considerably over the past decade, shortages continue to occur in several regions, particularly during emergencies and public health crises. Recruiting healthy young adults as regular voluntary blood donors is therefore essential for ensuring an adequate and safe blood supply.

Undergraduate students constitute an ideal population for voluntary blood donation programs. Most students fall within the recommended age group for blood donation and are generally healthy enough to become regular donors. Furthermore, educational institutions provide an excellent platform for organizing awareness campaigns, health education programs, and blood donation camps. Students who develop positive attitudes toward blood donation during their college years are more likely to become lifelong voluntary donors and influence their peers, families, and communities.

Knowledge is a key determinant of blood donation behavior. Individuals who possess accurate information regarding donor eligibility, donation procedures, health benefits, and safety precautions are more likely to participate in voluntary blood donation. Conversely, inadequate

SCIENTIFIC JOURNAL
www.scientificjournal.in
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knowledge often contributes to misconceptions, including fears of weakness, infection, infertility, excessive blood loss, or long-term health complications. Such misconceptions remain important barriers to donor recruitment in many developing countries.

Attitude is another important predictor of blood donation behavior. A positive attitude reflects an individual's willingness, confidence, and motivation to donate blood voluntarily. Several studies have reported that although students often possess favorable attitudes toward blood donation, their actual donation practices remain relatively low because of anxiety, fear of needles, lack of opportunity, inadequate motivation, or absence of organized blood donation campaigns. Therefore, assessing both knowledge and attitude is necessary for identifying barriers and designing effective interventions that promote regular voluntary blood donation.

Previous studies conducted among university and college students in India and other countries have consistently reported varying levels of knowledge and positive attitudes toward blood donation. However, many investigations also indicate that favorable attitudes do not necessarily translate into regular donation practices. These findings highlight the importance of continuous health education, targeted awareness programs, and institutional support for promoting voluntary blood donation among young adults.

The present study was undertaken to assess the knowledge and attitude regarding blood donation among undergraduate students in a selected college in Thiruvananthapuram district, Kerala. Understanding students' awareness and perceptions can assist educators, healthcare professionals, blood banks, and policymakers in designing evidence-based interventions that encourage voluntary blood donation and contribute to maintaining an adequate blood supply. Furthermore, identifying socio-demographic factors associated with knowledge and attitude may help develop targeted educational strategies for specific student populations.

STATEMENT OF THE PROBLEM

A study to assess the knowledge and attitude regarding blood donation among Undergraduate students in selected college in Thiruvananthapuram district.

OBJECTIVES

- To assess the knowledge and attitude regarding blood donation among Under graduates.
- To find out association between level of knowledge and attitude regarding blood donation among Undergraduates with their socio demographic variables.

HYPOTHESIS

H1- There will be a significant association between level of knowledge and their socio demographic variable.

H2- There will be a significant association between attitude of Undergraduates and their socio demographic variable

The findings of this study are expected to provide valuable evidence for strengthening campus-based blood donation programs and promoting voluntary blood donation as a socially responsible health behavior among young adults.

Materials and Methods

Study Design

A quantitative, cross-sectional descriptive study was conducted to assess the knowledge and attitude regarding blood donation among undergraduate students. The cross-sectional design was selected because it enabled the researchers to assess participants' knowledge and attitudes at a single point in time and examine their association with selected socio-demographic variables.

Study Setting

The study was conducted at a selected undergraduate college in Thiruvananthapuram district, Kerala. The institution offers undergraduate programmes in Arts, Science, and Commerce, providing a diverse student population suitable for evaluating knowledge and attitudes toward voluntary blood donation.

Study Population

The study population comprised undergraduate students aged 18–21 years who were enrolled in the selected college during the study period. Students who met the inclusion criteria and voluntarily consented to participate were recruited for the study.

Inclusion Criteria

- Undergraduate students aged between 18 and 21 years.
- Students willing to participate in the study.
- Students able to read and understand English.

Exclusion Criteria

- Students who were absent during data collection.
- Students unwilling to participate.

Sample Size and Sampling Technique

The required sample size was calculated using the standard prevalence formula based on the estimated prevalence of adequate knowledge regarding blood donation reported in previous studies. A total sample of 190 undergraduate students was determined to be adequate for the study.

A multistage sampling strategy was adopted. Initially, the study institution was selected using simple random sampling from colleges within the district. Subsequently, eligible undergraduate students were recruited using convenient sampling until the required sample size was achieved.

Data Collection Instrument

Data were collected using a structured questionnaire developed after an extensive review of literature and consultation with subject experts. The questionnaire consisted of two major sections.

Section I: Socio-demographic characteristics

This section collected information on participants' age, gender, academic stream, blood group, religion, marital status, and family type.

Section II: Knowledge and attitude regarding blood donation

SCIENTIFIC JOURNAL
www.scientificjournal.in
JOURNAL PUBLICATIONS INDEXED IN
www.scientificjournal.in YEAR: 2026 VOLUME: 4 ISSUE: 1 ISSN: 3107-4162

The knowledge component consisted of 20 multiple-choice questions assessing awareness regarding eligibility criteria, donation procedures, frequency of donation, benefits, contraindications, and safety aspects of blood donation. Each correct response was awarded one mark, while incorrect responses received zero marks, resulting in a maximum score of 20.

Knowledge scores were classified as follows:

- Adequate knowledge: 75–100%
- Moderately adequate knowledge: 50–74%
- Inadequate knowledge: <50%

The attitude component consisted of 10 statements evaluating participants' perceptions, willingness, confidence, and motivation toward voluntary blood donation. Scores above 50% indicated a positive attitude, whereas scores below 50% represented a negative attitude.

Validity and Reliability

Content validity of the questionnaire was established through expert review involving specialists in nursing, medicine, and biostatistics. Their recommendations were incorporated before finalizing the instrument.

Reliability was assessed using Cronbach's alpha coefficient, demonstrating acceptable internal consistency for the questionnaire, indicating that the instrument was suitable for measuring knowledge and attitude regarding blood donation.

Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee before commencement of the study. Administrative permission was secured from the college authorities.

Participants were informed about the objectives of the study, confidentiality of the collected information, and their right to withdraw at any stage without any academic consequences. Written informed consent was obtained from all participants before data collection.

Data Collection Procedure

Data collection was conducted over a six-week period. During the first visit, students received information regarding the purpose of the study and were invited to participate voluntarily. On the second visit, eligible students completed the structured questionnaire under the supervision of the investigators while maintaining appropriate confidentiality. Following completion of data collection, health education sessions regarding voluntary blood donation were conducted to improve awareness and encourage future blood donation practices.

Statistical Analysis

The collected data were coded, entered, and analyzed using Statistical Package for the Social Sciences (SPSS) version 16.0.

Descriptive statistics, including frequency, percentage, mean, median, standard deviation, and interquartile range, were used to summarize demographic variables, knowledge scores, and attitude scores.

Inferential statistics, including Chi-square test and Fisher's Exact test, were employed to determine the association between knowledge, attitude, and selected socio-demographic variables. Statistical significance was considered at a p-value less than 0.05.

Results

Socio-demographic Characteristics

A total of 190 undergraduate students participated in the study. More than half of the participants (52.1%) were older than 20 years, while 28.9% belonged to the 19–20-year age group and 18.9% were between 17 and 18 years of age. Female students constituted the majority of participants (56.8%), whereas males represented 43.2%.

Regarding academic discipline, Science students accounted for the largest proportion (45.8%), followed by Arts (28.4%) and Commerce (25.8%). The distribution ensured representation from all major academic streams.

Table 1. Distribution of Participants According to Their Socio-demographic Variables (N = 190)

Sl. No.	Demographic Variable	Category	Frequency (n)	Percentage (%)
1	Age of student	17–18 years	36	18.9
		19–20 years	55	28.9
		>20 years	99	52.1
2	Gender	Male	82	43.2
		Female	108	56.8
3	Blood Group	A Positive	36	18.9
		A Negative	19	10.0
		B Positive	41	21.6
		B Negative	16	8.4
		AB Positive	22	11.6
		AB Negative	11	5.8
		O Positive	37	19.5
		O Negative	8	4.2
4	Religion	Hindu	90	47.4
		Christian	48	25.3
		Muslim	52	27.4
5	Marital Status	Married	21	11.1
		Unmarried	169	88.9

Analysis of blood group distribution revealed that B-positive blood group was the most common (21.6%), followed by O-positive (19.5%) and A-positive (18.9%). Smaller proportions of students belonged to A-negative, B-negative, AB-positive, AB-negative, and O-negative blood groups.

With respect to religion, Hindu students constituted nearly half of the study population (47.4%), followed by Muslims (27.4%) and Christians

SCIENTIFIC JOURNAL
www.scientificjournal.in
JOURNAL PUBLICATIONS INDEXED IN
www.scientificjournal.in YEAR: 2026 VOLUME: 4 ISSUE: 1 ISSN: 3107-4162

(25.3%). The overwhelming majority of participants (88.9%) were unmarried.
Regarding family type, nuclear families accounted for 58.4% of participants, while 36.3% belonged to extended families and only 5.3% came from joint families.

Knowledge Regarding Blood Donation
Knowledge regarding blood donation was assessed using a 20-item structured questionnaire. Participants' scores demonstrated varying levels of awareness.
Among the 190 undergraduate students, 73 (38.4%) demonstrated adequate knowledge regarding blood donation. Fifty-seven students (30.0%) exhibited moderately adequate knowledge, whereas 60 students (31.6%) had inadequate knowledge.

Table 2. Distribution of Undergraduate Students According to Their Knowledge Regarding Blood Donation (N = 190)

Knowledge Regarding Blood Donation	Frequency (n)	Percentage (%)
Poor	60	31.6
Average	57	30.0
Good	73	38.4
Total	**190**	**100.0**

Although the proportion of students with adequate knowledge was slightly higher than those with inadequate knowledge, nearly one-third of the study population lacked sufficient understanding of blood donation practices. This finding indicates that substantial knowledge gaps still exist among undergraduate students despite increasing public awareness campaigns.
The mean knowledge score was 12.8 (SD = 4.8), with scores ranging from 1 to 20. The median score was 13, suggesting moderate overall knowledge among the participants.

Attitude Towards Blood Donation
Participants' attitudes toward voluntary blood donation were assessed using a structured attitude scale. Overall, the findings indicated that undergraduate students generally held favorable perceptions regarding blood donation. Of the 190 participants, 106 (55.8%) demonstrated a positive attitude, while 84 (44.2%) exhibited a negative attitude.
The mean attitude score was 39.6 (SD = 6.0), with observed scores ranging from 12 to 50. The median score was 39, indicating that most participants expressed moderately positive views toward voluntary blood donation. Although a majority displayed a positive attitude, the substantial proportion of students with negative attitudes suggests that misconceptions, fear, or insufficient motivation remain important barriers to voluntary blood donation.

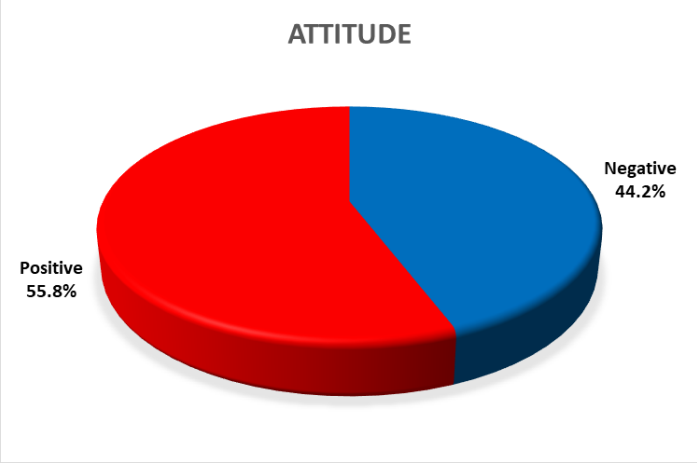

Figure 1: Attitude regarding blood donation among undergraduate

Association Between Knowledge and Socio-demographic Variables
The association between knowledge regarding blood donation and selected socio-demographic variables was examined using the Chi-square test and Fisher's Exact test.
No statistically significant association was observed between knowledge level and participants' age (p = 0.077), gender (p = 0.134), religion (p = 0.228), or marital status (p = 0.874). These findings indicate that knowledge regarding blood donation was relatively consistent across these demographic characteristics.
However, significant associations were identified between knowledge level and academic subject (p = 0.029), blood group (p = 0.006), and type of family (p = 0.006). Students enrolled in Science programmes demonstrated comparatively better knowledge than those studying Arts and Commerce. Similarly, variations in knowledge scores were observed among different blood group categories and family structures.
These findings suggest that educational background and family environment may influence awareness regarding voluntary blood donation. Students with greater exposure to biological sciences or health-related information may possess better understanding of blood donation procedures, eligibility criteria, and health benefits.

Association Between Attitude and Socio-demographic Variables
The relationship between attitude toward blood donation and socio-demographic characteristics was also evaluated.
Among all demographic variables examined, only academic subject demonstrated a statistically significant association with attitude (p = 0.046). Science students were more likely to exhibit positive attitudes toward voluntary blood donation than students enrolled in Arts or Commerce programmes.
No statistically significant associations were identified between attitude and age (p = 0.732), gender (p = 0.506), blood group (p = 0.766), religion (p = 0.227), marital status (p = 0.083), or type of family (p = 0.494).

SCIENTIFIC JOURNAL
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JOURNAL PUBLICATIONS INDEXED IN
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The results indicate that educational exposure rather than personal demographic characteristics plays a more important role in shaping students' attitudes toward blood donation.

Overall, the findings demonstrate that while undergraduate students generally possess positive attitudes toward blood donation, important deficiencies remain in knowledge, emphasizing the need for structured educational interventions within higher education institutions.

Discussion

The present study assessed knowledge and attitude regarding blood donation among undergraduate students in a selected college in Kerala. Although 38.4% of participants had good knowledge, nearly one-third demonstrated poor knowledge, indicating persistent gaps in awareness about donor eligibility, donation procedures, and safety. However, 55.8% of students exhibited a positive attitude toward voluntary blood donation, suggesting willingness to support this humanitarian practice despite limited knowledge. Academic subject showed a significant association with both knowledge and attitude, with science students demonstrating better outcomes than arts and commerce students. No significant association was observed with age, gender, religion, or marital status. These findings are consistent with previous studies and emphasize the need for regular educational programmes, awareness campaigns, and campus-based blood donation drives to improve knowledge and encourage lifelong voluntary blood donation among young adults.

Strengths of the Study

This study provides valuable baseline information regarding knowledge and attitude toward blood donation among undergraduate students in Kerala. The use of a structured questionnaire and standardized data collection procedures ensured consistency in data acquisition. Inclusion of students from different academic disciplines enhanced the diversity of the study population and enabled comparison across educational backgrounds.

Limitations

Several limitations should be considered while interpreting the findings. First, the study employed a cross-sectional design, which limits the ability to establish causal relationships between variables. Second, participants were recruited from a single educational institution; therefore, the findings may not be generalizable to all undergraduate students in Kerala or India. The use of convenient sampling may have introduced selection bias, and self-reported responses are subject to recall bias and social desirability bias. Furthermore, the study assessed knowledge and attitude but did not evaluate actual blood donation practices or long-term behavioural outcomes.

Future multicentre studies involving larger and more diverse populations are recommended to provide broader evidence regarding determinants of voluntary blood donation among young adults.

Implications for Nursing Practice

The findings emphasize the important role of nursing professionals in promoting voluntary blood donation through health education and community engagement. Nursing educators should integrate blood donation awareness into undergraduate health education programmes, while community health nurses can organize regular educational sessions and donor motivation campaigns in colleges.

Hospital-based nurses and blood bank personnel should collaborate with educational institutions to conduct periodic blood donation drives, provide pre-donation counselling, and ensure positive donation experiences for first-time donors. Such initiatives may improve donor retention and contribute to a sustainable voluntary blood donation programme.

Recommendations

Based on the findings of the present study, the following recommendations are proposed:

1. Regular educational programmes on voluntary blood donation should be conducted in colleges and universities.
2. Campus-based blood donation camps should be organized periodically to encourage first-time donors.
3. Targeted awareness interventions should focus particularly on non-science students who demonstrated comparatively lower knowledge levels.
4. Digital health education strategies using social media and mobile platforms should be developed to disseminate accurate information regarding blood donation.
5. Future research should evaluate blood donation practices, motivational factors, and barriers using longitudinal and multicentre study designs.

Conclusion

The present study assessed the knowledge and attitude regarding blood donation among undergraduate students in a selected college in Thiruvananthapuram district, Kerala. The findings revealed that although most students demonstrated a positive attitude toward voluntary blood donation, only a modest proportion possessed adequate knowledge regarding donor eligibility, procedures, and safety. Significant associations were observed between knowledge and academic subject, blood group, and family type, while academic subject was the only demographic factor significantly associated with attitude.

These findings highlight the need for continuous educational interventions aimed at improving awareness and correcting misconceptions regarding blood donation. Colleges and universities represent ideal settings for implementing structured health education programmes and organizing regular voluntary blood donation camps. Strengthening collaboration between educational institutions, healthcare professionals, and blood banks can enhance voluntary donor recruitment and contribute to maintaining a safe and adequate blood supply.

Promoting knowledge, fostering positive attitudes, and providing accessible opportunities for blood donation among undergraduate students will not only improve participation during their college years but may also establish lifelong voluntary donation practices that benefit society and strengthen healthcare systems.

SCIENTIFIC JOURNAL
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Conflict of Interest
The author declares no conflict of interest.

Ethical Approval
Institutional ethical approval was obtained from the Institutional Ethics Committee prior to the commencement of the study. Administrative permission was also obtained from the authorities of the selected college. Participation was entirely voluntary, and written informed consent was obtained from all participants before data collection. Participants were informed of the purpose of the study, assured of the confidentiality and anonymity of the information provided, and informed of their right to withdraw from the study at any stage without any academic consequences.

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