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Undergraduate Students' Knowledge Regarding Blood Donation: A Cross-Sectional Study

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Abstract: ***Background: Blood donation has everlasting problems in India. there is a higher dependency on voluntary blood donation to fulfil the necessary requirement of blood across the country. The main reasons were found for limited donation are misconception, fear of transmitting diseases, ill health and negative attitude. There is need to develop an action plan for implementation of teaching-training and awareness program, mass education, social group involve ment to fulfil the demand of blood in India.***

Aims: The study aimed to determine limiting factor and knowledge regarding blood donation among undergraduate students.

Materials and methods: A cross sectional study were conducted among 100 undergraduate students in Government Polytechnic College of Lucknow, Uttar Pradesh. In systematic random sampling method, every 3rd student (out of 300) was randomly selected. Data collection was done using structured questionnaires.

Results: In study participants, only 5 % had good, 32% had poor and 63 % had average knowledge regarding blood donation. The mean score was found 12.1 ±3.52. There were significant association found between knowledge level and area of residence, monthly family income, knowledge about blood group and previous knowledge about blood donation.

Conclusion: There is intense necessity to disseminate knowledge and awareness on blood donation. This will help to change the attitude of public towards blood donation in India.

Keywords: Blood, Blood Donation, Knowledge, Student, Undergraduate

I. INTRODUCTION

Blood is an essential component of human body, which is composed of specialized cell to maintain the hemostasis. The average adult has 5-liters blood in their body. Blood is usually separated into component or parts to treat many disease conditions. One unit of blood (Approximate 350 ml) can save up to three lives. Blood donations is a process of giving blood for transfusion in needy people. A blood donor is who gives some of their blood to sick people those who need it. Globally, almost 118.4 million donations of blood are reported. A total 106 million donations were collected from 13300 blood centers of 169 countries. [1] Worldwide there was shortage of 100 million units of blood and India has facing huge shortage approximate 41 million units' bloods. There is need to expand transfusion service, application of evidence-based action plan for policy making and resource development for voluntary blood donation. [2] There is need to awareness people about donation process and strengthening of blood collection center by utilization of advanced resources and technologies that will ease to donate blood and increase the rate of donation.[3] Voluntary blood donors have enormous contribution for donating maximum unit of blood to the transfusion department. Donated blood safely stored in blood banks and further provided to recipients when needed. Voluntary blood donors are needed for safe blood and blood components availability to transfusion blood to needy people. Proper screening should be performed and after ensuring safety, the blood and blood component sent for use. Before donating blood, ensure that donor having relevant information regarding blood donation process and also fulfilling the criteria for donating blood. A donor criteria or guidelines should be followed for ensuring safety and wellbeing of donor and for lessen infection transmission possibilities. [4] Limited usage of allogenic blood prevents the transmission of blood borne infection as well as inflammation and infection in lungs, after performing any surgical intervention. [5] Felicitous and logical usage of blood and blood component is universal necessity. this will ensure that right person getting right blood at appropriate time. Sometime client needs any one component of blood such as plasma, platelet etc. [6] Public awareness regarding blood donation needs to be addressed by the heath care authorities. Strategic planning has necessary to determine the reason for less participation in blood donation practices, through systematic assessment, identification of various factors that affect blood donation, will help to develop strategies for providing knowledge and increasing the awareness, which changes the negative

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attitudes of public towards blood donation. [7-9] Davey and Bednall reveled in their studies and suggested that promotion of social responsibility and focusing on the advantages of blood donation on health, play a pivotal role in increasing blood donation practices. [10,11] Youth have a major proportion in population of India, Student studying medicine, Nursing and paramedical profession are the safest donors as they practicing healthy life style practices and know the criteria or advantages of blood donation. On the basis of existing literature and experience, it is assumed that the students from non-medical profession have less knowledge because of less exposure to curriculum focus blood donation information, so they are less active for blood donation practices. Thus, this study aimed to determine the knowledge of under graduate students and identify the reason of less involvement in blood donation practices.

II. MATERIALS AND METHODS

A cross sectional descriptive research design was adopted to conduct the study among undergraduate students. A total of 300 college students who was fulfilling the criteria, so using systematic random sampling method, every 3rd student was randomly selected and the final sample size was 100 undergraduate samples. The participants were selected using inclusion criteria for the study. The data collection procedure was carried out by investigator through giving tool to students eligible for participation in the study. The data collection tool comprises of a set of questionnaires consisting information regarding demographic profile, and question related to assess the knowledge regarding blood donation. The Demographic profile which includes age, gender, marital status, type of family, area of residence, religion, monthly family income, type of blood group, history of ever donated blood, previous knowledge about blood donation and source of information. The knowledge questionnaire consists of 30 items covering the knowledge regarding blood donation knowledge. In knowledge questionnaire multiple choice question, each having 3 distractor and one right answer. The zero-score given for each wrong answer and one score given for each right answers. Thus, criteria to assess the level of knowledge score ranged between 0 to 30. 0-10 knowledge score considered poor knowledge, 11-20 knowledge score considered average knowledge, and 21-30 knowledge score considered good knowledge level among undergraduate students. After development of structured demographic and knowledge questionnaire, the tool sent for validation along with content validity index and brief research summary. The content validity of tool was obtained after getting suggestions based on content validity index from experts belongs from relevant disciplines. Suggestions given by experts were incorporated and tool were finalized to ensure the validity of the questionnaire. The Content validity index of developed tool was obtained 8.83. The reliability of tool was tested to ensure the internal consistency of validated tool for data collection. Reliability of tool was calculated by using Karl Pearson's correlation coefficient and Spearman- Brown formula. Using split-half method, the reliability of tool was obtained 0.87, which stated that the tool was found reliable. The proposed study approved by institutional ethics committee of King George's Medical University Lucknow wide ethical approval letter no- 59/Ethics/2020 (Dated- 11/02/2020). A formal permission was obtained from the College Administration to conduct the study and initiate data collection among undergraduate students. The written Consent was taken from the participants by explaining the purposes and obtaining their willingness to participate in research study. The confidentiality of data should be maintained by using indirect identifiers. After completion of data collection procedure, investigators distributed information pamphlet on knowledge regarding blood donation for further improvement of knowledge of other students, family and society. This information pamphlet was not included in study results as it was given to spread the awareness regarding blood donation among peoples. After data coding and tabulation, analysis of data was done by using IBM SPSS Statistics (version 23) software. Analysis was done in accordance with objectives to obtain outcome of study using descriptive statistics (Mean, Sd) and inferential statistics.

III. RESULTS

A. Demographic Characteristics of the Participants

A total of 300 undergraduate students eligible for study, after random allocation of subject 100 participants were selected for study. In total 100 participants nearly half of participants 59 (59 %) were male. One third of study participants 37 (37%) belongs to the age group of 20-21. Majority of participants 91 (91%) were single and almost half of 54 (54%) lived in the nuclear families. Almost Two third participant's 77 (77%) belongs from Hindu religion. Almost one third of participants 31(31%) monthly family income were between 5001-10000.

Half of the study participants 55 (55%) had knew their blood group. Majority of participants (88%) had not donated the blood. Almost half of participants 51 (51%) had previous knowledge about blood donation. (Table 1.)

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B. Reason for not Donating Blood

Almost one third of participants 32 (32%) had not donated blood due to fear of health, 27(27%) not feel important to donate, 16 (16%) due to poor health and 13(13%) never got a chance to donate blood. (Figure 1.)

C. Major Source of Information Regarding Blood Donation

The major source of information regarding blood donation among 51 participants, almost half of 22 (43.2%") had from newspaper/ TV, while 10 (19.60%) had from internet, 8(15.6%) had source of knowledge from health camp and 11 (21.6%) had knowledge from other sources. (Figure 2.) Some less preferred sources for information about blood donation were multimedia movies, call reminders, training workshops, nukkad natak, pamphlet, and booklet etc.

D. Knowledge Level of Participants Regarding Blood Donation

In 100 participants who participated in the study, only 5 % had good knowledge regarding blood donation, 32% of the participants poor knowledge and 63 % had average knowledge regarding blood donation. The mean knowledge score of participants were 12.1 ±3.52. Confidence interval 95% (or statistical significance of 5%) were 12.1 ±0.692. The maximum minimum score respectively obtained was 22 and 6. (Figure 3.)

E. Association of Level of Knowledge with Demographic Variables

Study results revealed that participant residing in urban area have 43% average knowledge and in rural area 20% have average knowledge and association of knowledge score with area of residence was statistically significant ($p<0.05$). In addition, there was a statistically significant association was found between Knowledge level and knowledge about blood group ($p<0.05$). Demographic variable such as family monthly income, ever donated blood and knowledge regarding blood donation was found significantly associated with knowledge level ($p<0.05$). (Table 2.) There were no significant association was found between demographic variable such as Age, gender, religion, and reason for not donating blood and knowledge level ($p<0.05$). (Table 2.)

IV. DISCUSSION

The study finding revealed that majority of participants (88%) had not donated the blood. A similar study finding reported that Out of total 401 respondents only 58 (14.5%) of study respondents had donated blood. [12] A survey conducted regarding blood donation among 682 participants, 496 (72.3%) had never donated blood. [13] A cross sectional descriptive study reported that out of 349 participants only one third of participants ever donated blood. [14] only one-fifth of study participants donated blood. [16] based on the study finding, participant was less motivated and showing willingness regarding blood donation. In study findings further reported that various factors that affect the blood donation such as fear of health in 32 (32%), not find important to donate in 27 (27%), poor health in 16 (16%) and 13(13%) participants were never got a chance to donate blood. Somewhat similar reasons were reported that (20.85%) of participants had fear of physical consequences after blood donation, [13] had no desire to blood donation, [15] poor knowledge, limited opportunities, and fear were the reasons for poor donation. [17] In the present study, almost half of the participants were got information regarding blood donation from newspaper, one fifth from internet and 15% from health awareness camps. A similar result was found that the main sources of information were school in one third participants, 27 % from health care centers and 30 % from media sources (30.6%). [17] another study reported that (36%) from television, (31%) camps, (28%) newspapers and (21%) from internet. [18] and (50%) of respondents got information from social media [19]. There is need to disseminate information regarding blood donation, through various methods of information, education and communication to enhance public awareness, and addressing the misconception about blood donations.

In present study participants knowledge regarding blood donation were, almost one third of participants had poor knowledge, half of the participants had average knowledge and only 5 % of participants had good knowledge. Knowledge level of participants are affected due to incomplete information, fear, stress, risk of developing diseases. A mean knowledge score of participants were 12.1 ±3.52. A similar cross-sectional study conducted in Northwest Ethiopia supported that, only one third of participants had adequate blood donation knowledge. [12] nearly one-third participants had good knowledge [18], (40%) of the students had below the average knowledge [20] almost half of participants have limited knowledge.[21] Good knowledge regarding blood donation can fosters blood donation practices among people, sharing the relevant information to people can eradicate the misconception of people towards blood donation

In the present study, participant those who were residing in urban area have 43% of participants had average knowledge and 20% in rural area.

Participant's knowledge level significantly associated with area of residence ($p<0.05$). A similar study found that participants knowledge level belongs from urban area, having higher level education were significantly associated ($P <0.001$). [22] Self-knowledge about own blood group is necessary, it help during life-threatening emergency for quick readiness and availability of particular type of blood group. In present study, almost half of the participants (55%) knew their blood group and there was a statistically significant association found between Knowledge level and knowing blood group ($p<0.05$). A study found that majority of study participants (95.7%) were aware about their blood group. [17]

In present study demographic variable family monthly income was found statistically significant with level of knowledge of participants regarding blood donation ($p<0.05$). A similar study by Anand N. et al reveled that poor socioeconomic status was significantly found associated with knowledge level about blood donation. [23] There are many factors that might be affect the blood donation and willingness to donate of among general population. In present study majority of participants (88%) had not donated the blood. Ever donated blood was significantly found association with level of knowledge regarding blood donation ($p<0.05$). A similar supportive cross-sectional study done in Northeast Ethiopia in 351 participants and found that almost three-fourth of students had never donated blood. [24] A similar cross-sectional study was conducted in India and found that more than three-fourth of students had not been donated blood.[25] In present study previous knowledge regarding blood donation were significantly found associated with level of current knowledge ($p<0.05$). There were no significant association was found between demographic variable such as Age, gender, religion, and reason for not donating blood and knowledge level ($p<0.05$).

V. STUDY LIMITATION

This present study based on cross-sectional method in that participants knowledge level were assessed using structures questionnaire. The study was limited to hundreds of undergraduate participants from selected college of Lucknow. This type of study would be better outcome and support by use of qualitative aspect to assess the attitude of the participants regarding blood donation and conducting in heterogenous population. The data collection tool as questionnaire is one of the limitations of this study. In addition, asking about ever donated blood, type of group, actual sources of information sometime lead to recall bias and affect the accuracy of data. Moreover, present study was conducted on undergraduate students, therefore, the finding cannot be generalized to the entire community population.

VI. CONCLUSION

Blood donation knowledge and awareness among general public can help to eliminate various myths and folk tale. Lack of authentic information among young individuals is the main reason for disinclination of blood donation practices. This study suggests that encouraging public and youth by various social medica and mass media platform, blood donation awareness campaign, token of appreciation for donors are the key steps to conquer the poor donation rate. For the educational institutions embedding blood donation awareness program under co-curricular activity can help to motivate young students. Blood donation practices among general public can help to fulfill the demand of blood.

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CONFLICT OF INTEREST: None declared
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Table 1. Showing frquency and percentage distribution of demographic profile of undergraduate students
N=100

S. No	Demographic variable	Frequency	Percentage
1.	Age (in years)		
	(a)18-19	28	28
	(b)20 -21	37	37
	(c)22-23	20	20
	(d)24-25	15	15
2.	Gender		
	(a)Male	59	59
	(b)Female	41	40
3.	Marital status		
	(a)Single	91	91
	(b)Married	9	9
4.	Type of family		
	(a)Nuclear	54	54
	(b)Joint	33	33
	(c)Extended	13	13
5.	Religion		

	(a)Hindu	77	77
	(b)Muslim	11	11
	(c)Christian	12	12
6.	Monthly family income (in rupees)		
	(a)<5,000	28	28
	(b)5,001-10,000	31	31
	(c)10,001-20,000	22	22
	(d)>20,000	19	19
7.	Do you know your blood group?		
	(a)Yes	55	55
	(b)No	45	45
8.	Ever donate blood?		
	(a)Yes	12	12
	(b)No	88	88
9.	Previous knowledge about blood donation?		
	(a)Yes	51	51
	(b)No	49	49

Table 2. Showing the association between knowledge level of undergraduate students regarding blood donation with their selected demographic variable.
N=100

Age (in years)	Knowledge Score level			Chi-Square	P value
	Poor	Average	Good		
18 - 19	7.0%	20.0%	2.0%	4.24	<0.05
20 - 21	14.0%	20.0%	2.0%		
22 - 23	8.0%	12.0%	0.0%		
24 - 25	3.0%	11.0%	1.0%		
Gender				1.82	<0.05
Male	18.0%	39.0%	2.0%		
Female	14.0%	24.0%	3.0%		
Area of Residence				38.2*	<0.05
Urban	1.0%	43.0%	4.0%		
Rural	31.0%	20.0%	1.0%		
Religion				2.07	<0.05
Hindu	25.0%	47.0%	5.0%		
Muslim	4.0%	7.0%	0.0%		
Christian	3.0%	9.0%	0.0%		
Monthly Family Income				16.08*	<0.05
< 5,000	16.0%	12.0%	0.0%		

5,000 - 10,000	11.0%	18.0%	2.0%		
10,000 - 20,000	4.0%	17.0%	1.0%		
> 20,000	1.0%	16.0%	2.0%		
Knowledge about Blood Group					
Yes	11.0%	41.0%	3.0%	8.13*	<0.05
No	21.0%	22.0%	2.0%		
Ever donated blood					
Yes	0.0%	10.0%	2.0%	8.97*	<0.05
No	32.0%	53.0%	3.0%		
Reason for not donating blood					
Fear of health	10.2%	25.0%	1.1%		
Poor health	11.4%	6.8%	0.0%	6.83	<0.05
don't find it important	10.2%	19.3%	1.1%		
Never got a chance	4.5%	9.1%	1.1%		
Previous knowledge about blood donation					
Yes	8.0%	39.0%	4.0%	13.33*	<0.05
No	24.0%	24.0%	1.0%		

*(p<0.05 level of significance)

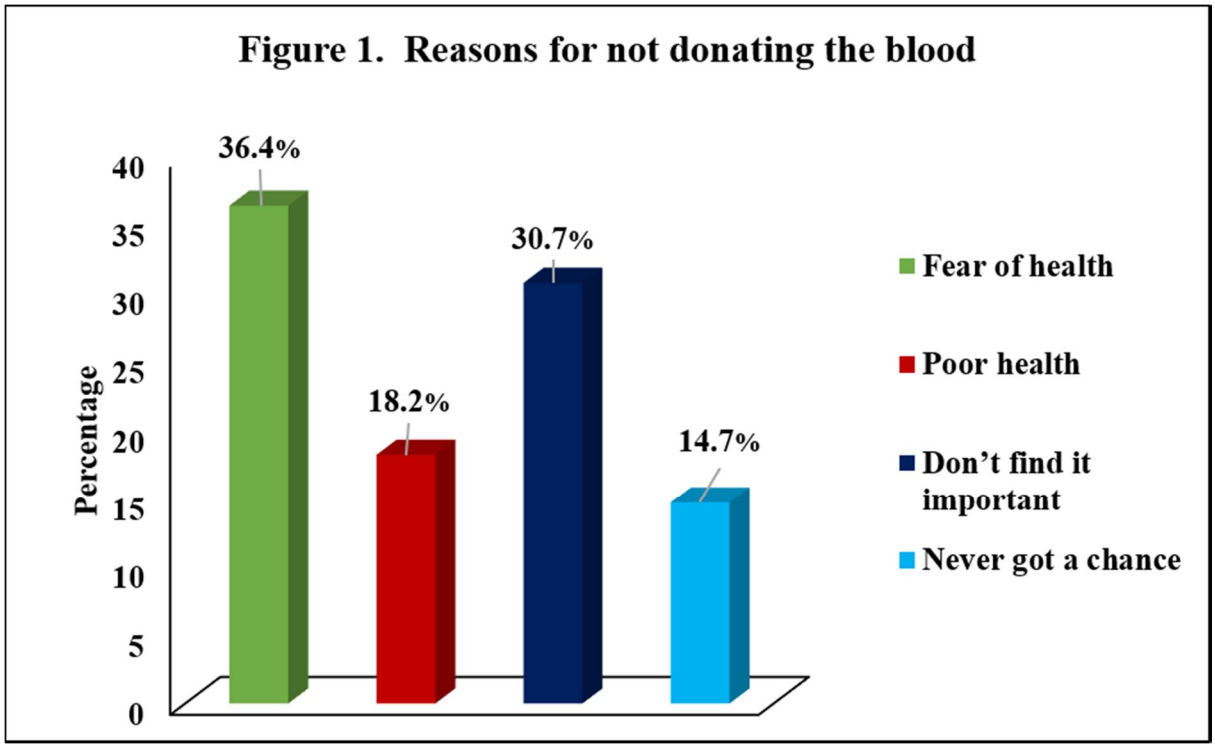

Figure 1. Column diagram showing the reasons for not donating the blood among undergraduate students.

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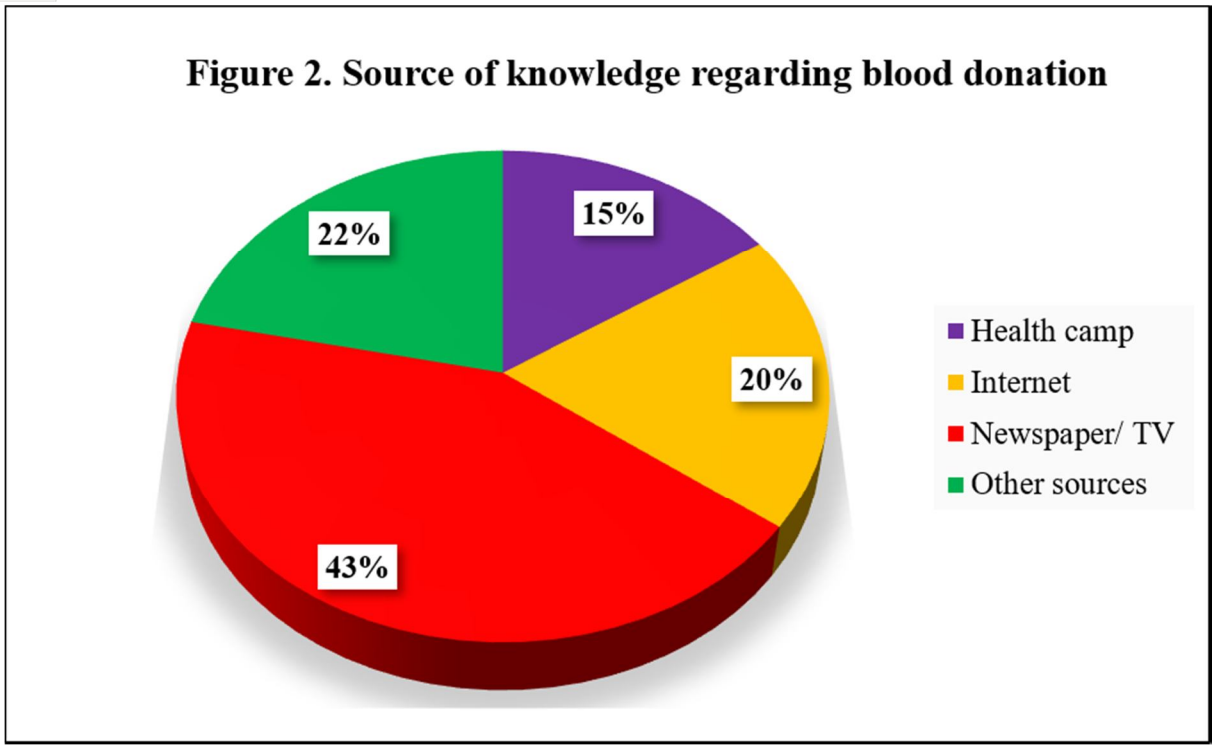

Figure 2. Pie diagram showing the source of knowledge regarding blood donation among undergraduate students.

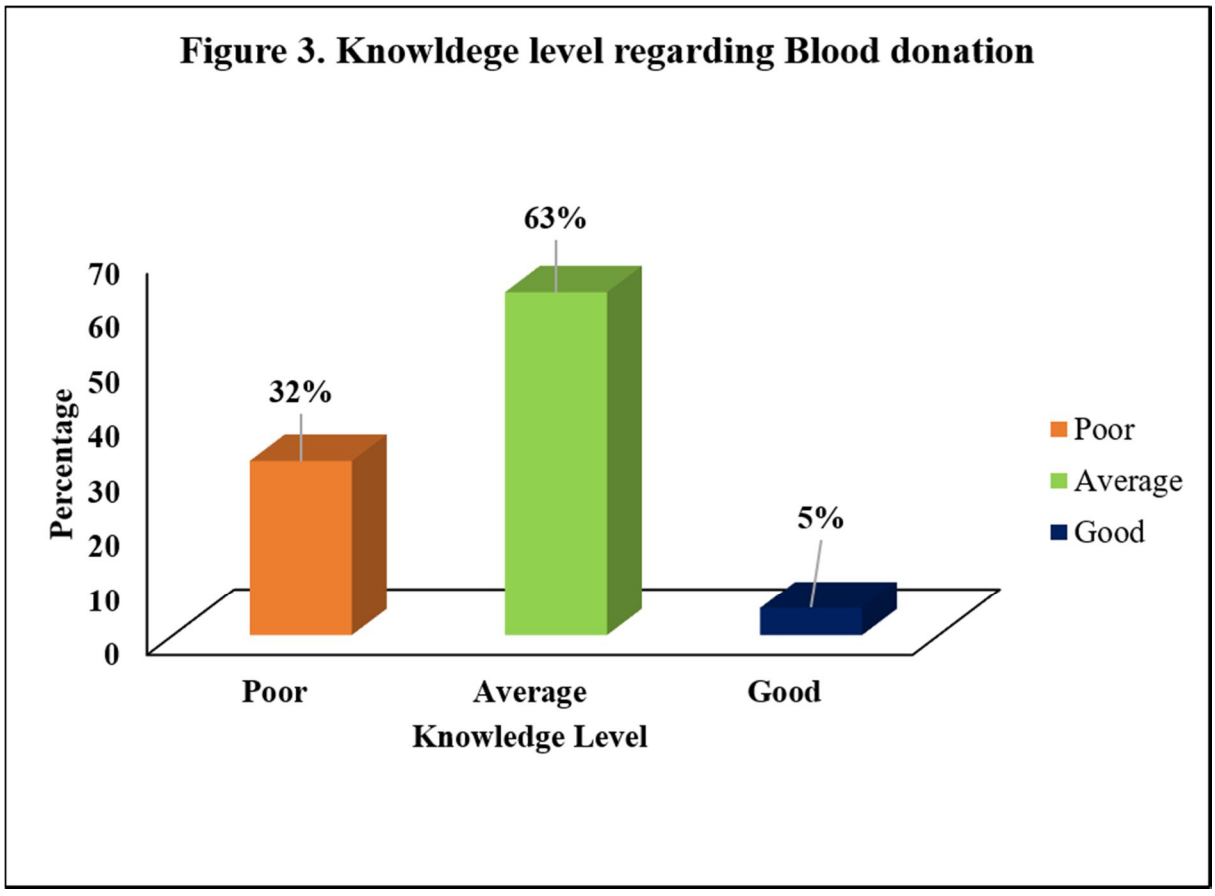

Figure 3. Column diagram showing the knowledge level regarding blood donation among undergraduate students.

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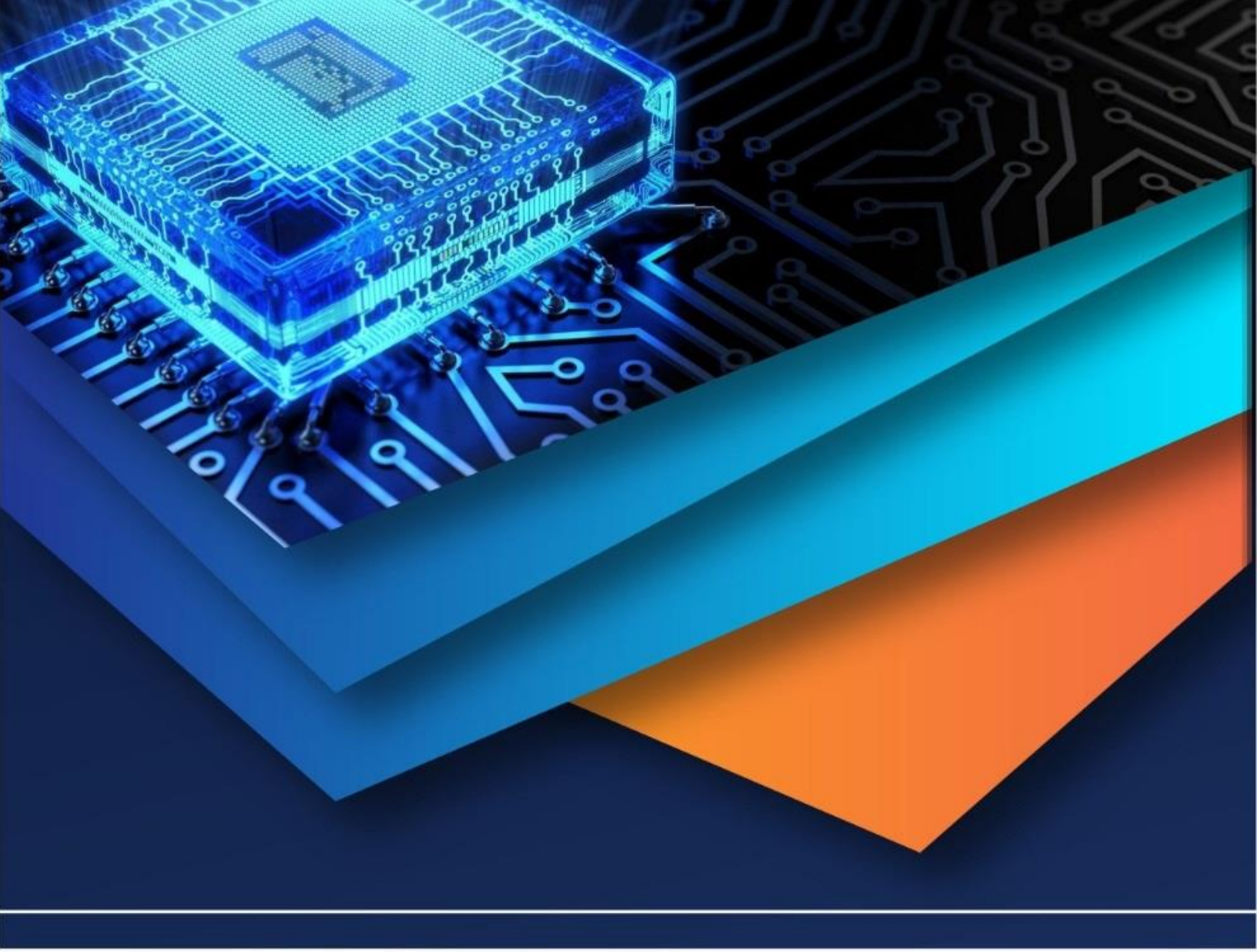

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