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Assessment of the knowledge, attitudes and practice towards voluntary blood donation among students of College of Health and Medical Technology/Shekhan

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Research Article

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Abstract

Background

Factors affecting on blood donation decisions are diverse and complex and one's knowledge and attitude can influence this decision. The aim of this study was, therefore, to determine the knowledge, attitude and practice of blood donation between university students.

Methods

This cross-sectional study was conducted among 415 college students using convenience sampling from three departments of College of Health and Medical Technology/ Shekhan.

Results

Adequate knowledge about blood donation was seen in 228 (54.9%) of the students, favorable attitudes seen in 154(37.1%), 241 (58.1%) of the students expressed their willingness to donate blood in the future, however, only 33(7.95%) students had donated blood. Knowledge was significantly better among MLT students, those older ≥ 25. Donation practice was more frequent among male and MLT students.

Conclusions

Over half of the students had adequate knowledge about blood donation, while 54.9% had adequate knowledge, only 33 students (7.95%) have donated blood in their life time. There is this large pool of safe blood in college going students who are willing, but not tapped as source of blood donation.

Recommendations

The study concluded a massive gap between knowledge level and practice, undergraduate medical syllabus must be revised to emphasize voluntary blood donation. Furthermore, regular Continuous Medical Education programs should be established to effectively close the knowledge gap and boost motivation among university students.

Introduction

Blood donation plays a crucial role in maintaining the health of the human body, while the safety of blood transfusions is fundamental to enhancing healthcare outcomes and mitigating the transmission of infectious diseases (1). Attracting voluntary blood donors continue to be a major barrier for blood transfusion services, among the 193 Member States of the World Health Organization, merely 62 countries, representing 32%, indicated that over 99% of their blood supply was obtained through voluntary non-remunerated blood donation, in accordance with recommendations from the World Health Organization (WHO), 10 blood donations per 1000 population (1% donation rate) is sufficient to supply the needs of the respective population (2). Younger people serve as the most encouraging source for maintaining a secure and sustainable blood supply in the future (3).The World Health Organization (WHO) recognizes the critical role of voluntary non-remunerated blood donations (VNRBDs) in securing an adequate supply of blood and blood products. It has highlighted the importance of establishing and maintaining a sufficient donor pool. This initiative ensures the safety and adequacy of the blood supply, enabling patients in need of transfusions to receive the vital treatments they require. A program of this nature would ensure a reliable and stable blood supply, while also fostering voluntary blood donation without any financial compensation(4). Recruiting and retaining young people as blood donors is increasingly important to ensure an adequate supply of blood products for healthcare

services (5). A recent study has highlighted several factors that encourage individuals to donate, including altruistic intentions, a sense of civic responsibility, and opportunities for health-related testing (6). A number of problems have been identified as impeding the practice of blood donation. These included a lack of knowledge regarding blood donation, fear of anemia, concern of health hazards, and the belief that one is not fit to donate blood. Furthermore, the identified characteristics that may influence blood donation practices were age, gender, religion, knowledge, attitude, educational attainment, self-perceived health status, family education and religious motivation as a charity (7). No such previous study was conducted in this region, this study tried to come up with the following major finding that fills the existing information gap on the level of knowledge, attitude and practice towards voluntary blood donation among the students from the three different departments of Shekhan college of Health and Medical techniques/ Duhok Polytechnic university.

Material and Methods

Study design, setting, and period: a cross-sectional study was conducted at Shekhan College of Health and Medical Technology from November 1st, 2023 to 15th, March 2024. Students of the three departments of the college were the participants: Medical Laboratory Technology, Public Health, and Nursing. There were 415 students from all departments of whom 178 were males and 237 females during the study period. Students of the first stages were not included in the study. Source and study populations: Undergraduate students were the source population for this study. The nature and purpose of the study was explained to the students and then they were supplied with a self-administered structured questionnaire form. Data collection instrument and procedures: The data were collected using a structured self-administered questionnaire. The questionnaire was composed of four parts: socio-demographic factors, knowledge-related questions (10 questions), attitude-related questions (4 questions) and practice-related (4 questions). The unclear questions on the questionnaire were addressed and explained. Hard copies of the questionnaires were distributed over participating students and they were followed whereas filling the questionnaires forms.

Study variables: the dependent variables were knowledge, attitude, and practice towards blood donation. The independent variables were age, sex, college department, and academic year.

Operative definitions:

1. 1. Knowledge: The true response received a score of one, while the incorrect answer received a score of zero. Those who scored higher than 60% was regarded having adequate knowledge, while those who scored less were regarded having inadequate knowledge.
2. 2. Attitude: Each right or positive response received a score of one, while the incorrect response received a score of zero. Favorable attitudes were attributed to respondents who scored higher than the mean, while unfavorable attitudes were attributed to those who scored lower.
3. 3. Practice It was measured by asking about the history of blood donation.

Ethical consideration: Ethical approval was obtained from Shekhan College of Health and Medical Technology. All study participants were informed about the purpose of the study, their right to deny participation, secrecy, and confidentiality.

Results

Socio-demographic characteristics: of the 465 students recruited, 415 students have actively participated & filled out the hard copies of the questionnaire, yielding a response rate of 89.25%. The respondent students were categorized

into two age groups, 376 (90.60%) were less than 25 year and 39(9.40%) were ≥ 25 years. More than half (57.10%) of the respondents were females, moreover most (58.55%) of the respondents were medical laboratory student (MLT). **(**Table 1**).**

Table 1
Students' demography:

Age (years)		**Gender**		**Department**			**Study year**		
< 25	≥ 25	Male	Female	MLT	PH	Nursing	Second	Third	Fourth
376	39	178	237	243	88	84	120	145	150
90.60%	9.40%	42.9%	57.1%	58.6%	21.20%	20.24%	28.92%	34.93%	36.15%
MLT= Medical Laboratory Technology, PH= Public health									

Knowledge of the respondents towards Blood Donation: The overall level of knowledge was good in 228 (54.9%) students and the score in the remaining 187(45.1%) was below the average. Three hundred sixty-two (87.22%) knew their blood group. More than two-thirds of the respondents (72.05%) & (68.19%) provided correct answers for each of the universal and the comments blood groups respectively. Additionally, 33.01% and 18.55% of participants knew the minimum weight and age requirements for donation, respectively. About 70.60% of participants knew that donated blood is tested before being transfused, while only 26.02% knew the maximum frequency of donation in a year for adult males.

Comparison of the knowledge level between the two departments, showed 192(79.01%) of MLT and 36 (20.93%) of the non -MLT students including (Public health and Nursing) had good knowledge with statistically significant differences between the two department on applying Chi square test with P- Value 0.000. Regarding all the other questions relevant to knowledge assessment significant differences between the two department was also noted except for the question related to alcohol consumption and cigarette smoking relation to blood donor deferral where P- Value was 0.00697 **(**Table 2**).**

Table 2
Knowledge assessment regarding blood donation and donor eligibility criteria.

Variable	MLT Students	Non- MLT Students	Total No.	Chi square	*p*-value
Participant knowing his/her blood group type				**16.325**	**0.0001**
Correctly answered	226	136	362		
In correctly answered	17	36	53		
Knowing universal blood donor (blood groups)				**24.789**	**0.0001**
Correctly answered	198	101	299		
In correctly answered	45	71	116		
Knowing commonest blood group type				**7.490**	**0.0062**
Correctly answered	179	104	**283**		
In correctly answered	64	68	**114**		
Minimal weight for blood donors				**92.060**	**0.0001**
Correctly answered	126	11	**137**		
In correctly answered	117	161	**278**		
Accepted age for blood donation				**42.435**	**0.0001**
Correctly answered	**71**	**6**	**77**		
In correctly answered	**172**	**166**	**338**		
Maximum number of blood donation in every year for males				**15.367**	**0.0001**
Correctly answered	81	27	**108**		
In correctly answered	162	145	**307**		
Does blood screen before transfusion				**42.872**	**0.0001**
Correctly answered	202	91	**293**		
In correctly answered	41	81	**122**		
Does alcohol and smoking prevent blood donation?				**3.290**	**0.0697**
Correctly answered	122	70	**192**		
In correctly answered	121	102	**223**		
Does gender (sex) prevent blood donation?				**38.772**	**0.0001**
Correctly answered	190	83	**273**		
In correctly answered	53	89	**142**		
Does chronic diseases and medical treatments prevent blood donation?				**78.172**	**0.0001**
Correctly answered	193	62			
In correctly answered	50	110			

Student's level of attitude regarding blood donation

Regarding student's attitude toward blood donation, only 154(37.1%) students had favorable attitude with no significant difference observed between the two departments (P- value of 0.560). Relevant to the belief that blood donation is good, majority 275 (66.27%) of the participants believed so. On the other hand, participant perceptions displayed a nearly uneven split in their views on whether providing incentives to blood donor will enhance the possibility of individuals engaging in blood donation process revealed 206 (49.64%) agreed and the remainder replied with No and don't know. Furthermore, more than half of the participant 241 (58.1%) expressed their willingness to donate blood in the future. Statistically no significant differences seen between the two departments regarding the questions relevant to attitude measurement of the study participants except for the question whether the donation can be harmful to donors (P- Value was 0.000). Moreover, significant differences seen in the attitude level between the students of different study year regardless of the study department (P- Value was 0.009). **(**Table 3**).**

Table 3
Attitudes of students regarding blood donation:

Variable	MLT Students	Non- MLT Students	Total No.	Chi square	*p*-value
What do you think about blood donation?				**4.04**	**0.132**
Good	155	120	275		
Bad	83	45	128		
Don't know	5	7	12		
Should patient relatives be asked to donate blood?				**3.58**	**0.166**
Yes	33	16	49		
No	191	135	326		
Don't know	19	21	40		
Do you think incentive is needed to be given to blood donors?				**3.74**	**0.154**
Yes	130	76	**206**		
No	65	52	**117**		
Don't know	48	44	**92**		
Can harm occur to blood donor during or after donation?				**25.15**	**0.000**
Yes	139	59	**198**		
No	68	59	**127**		
Don't know	36	54	**90**		
Willing to become a regular blood donor				**0.183**	**0.669**
Yes	139	102	**241**		
No	104	70	**174**		

Table 4
KAP of the participating students toward blood donation and their association with some studies variables.

Variable	Knowledge status		P value	Attitude status		P value	Practice status		P value
	Adequate	Inadequate		Favorable	Unfavorable		Ever	Never	
Department									
MLT	192	51	**0.000**	93	150	**0.560**	29	214	**0.000**
Non- MLT	36	136		61	111		4	168	
Age group									
< 25 years	196	180	**0.000**	135	241	**0.115**	24	352	**0.000**
≥ 25 years	32	7		19	20		9	30	
Gender									
Male	93	85	**0.339**	82	155	**0.222**	25	153	**0.000**
Female	135	102		72	105		8	229	
Stage									
2nd	28	92	**0.000**	31	89	**0.009**	5	115	**0.182**
3rd	88	57		62	83		13	132	
4th	112	38		61	89		15	135	

Level of students' practice of blood donation:

Pertaining to blood donation practices only 33(7.95%) of the students provided the history of previous donation, and 18 (78.26%) had history of repeated blood donations, and the major reason for donation was to help people, regarding those who had no history of donation, the most common causes were have not been asked to donate blood 136 (35.6%) and some exhibited fear of getting infections while others so-called, they were not come up to blood banking centers. Significant differences were seen between those who had history of blood donation and those who had not in relation to the studies variables except for the students' studying year (stage) with a P- Value of 0.182 (Table 4).

Table 5
Common reasons for donating blood in orders:

Variable	Number	Percentage
To help people	25	75.75
To know my screening result	5	15.15
Religious bless	3	9.1
Total	33	100.0

Table 6
The common Barriers for not donating blood in orders:

Variables	Number	Percentage
Have not been asked to donate blood	136	35.60
Fear of infection	90	23.56
Not approached to blood bank	79	20.68
Fear of needle	55	14.40
Fear of knowing my screening result after checkup for blood donation	22	5.76
Total	382	100.0

Discussion

Globally, there is a shortage of blood supply due to high blood demand and increase in medical treatment procedures requiring blood transfusion therapy particularly in developing countries (2). This study explores the status of knowledge, attitude, and practice of students in Shekhan College of Health and Medical Technology towards blood donation. In Duhok province, registered blood donors who visit the center periodically are primarily composed of voluntary and replacement donors (8). In this study more than half (57.1%) of the participants were females, this figure goes with those reported in previous studies, 53% from Ethiopia (9), 79.5% from Qatar (10) and 56.9% in Turkey (11). Evaluation of the level of knowledge revealed that 228 (54.9%) of the students had adequate knowledge, the finding is comparable to those reported in other parts of the world including 50.4% in Uganda (12), but was higher than those reported from Spain and Portugal (30%) (13), Saudi Arabia (3%) (14) and (28.5%) by (15). In contrast to our results, studies reported higher results (82.6%) in Ethiopia (16), (79.1%) in Qatar (10). Moreover, the study showed that older age (≥ 25 years) was associated with a higher level of knowledge, which is consistent with previous studies(10, 15). This may be explained by the fact that overall knowledge and awareness tend to increase with age. Moreover, our results showed that there were no significant differences in the level of the knowledge and the gender, finding is again similar to that of (15). The study revealed that 79.01% of MLT students shown to have good knowledge about blood donation, this is similar to the 79.4% reported knowledge level in a previous study conducted at Arsi University and Adama Science and Technology University, the study also showed that students of MLT department had significantly higher levels of knowledge (79.01%) than those in non-MLT department (20.93%) the figure aligns with a study conducted in Ethiopia, where only 13.9% of non-MLT students had good or adequate knowledge, while 79.4% of MLT had a good knowledge level. These discrepancies in knowledge levels may be attributed to differences in the study curriculum of each department, the variation in sociocultural circumstances and the access to information about the blood donation significance. No significant difference was seen in the level of knowledge between male and female students (P value 0.339), but is contrary to that in a Saudi study where males had significantly higher level of knowledge compared to female students (14), and another study which showed female students to have higher knowledge level(15, 17). Regarding factors associated with knowledge toward blood donation, the current study also explored that age was significantly associated with the level of knowledge (p-value of 0.000), the finding is similar to the results of previous studies(10, 15). The department (MLT) and the study year were significantly associated with the level of knowledge (p-value of 0.000), the finding is comparable to the results of previous studies(10, 15). In this study, the rate of positive attitude was (62%) among MLT students and 54.9% among non-MLT students, the findings are higher than that reported in a previous study by(15), the study also highlighted that the overall level of favorable attitude was154 (37.1%), the finding is much lower than figures from other regions including 66%, 74% and 93.6% among other university students(15, 18, 19). No significant differences were observed

between the factors associated with attitude except for the study year of the participants, where the students of third and fourth stages had better attitude toward blood donation, this could be due to their life experience and scientific background which helped them to understand better the importance of blood donation. About 58.1% of the students expressed a willingness to donate blood and become a voluntary blood donor in the future, which is significantly higher than the 34.1% reported among students of Wachemo University in South central Ethiopia (20), but is lower than the 85.5% reported in a study in Eastern Ethiopia by (21).

The reported prevalence of blood donation among the enrollees was 7.95%, which is similar finding from Bangladesh (18), nevertheless, it is lower than that in other study from lower than the earlier reports (15%) from India (22) and (22.7%) by (15), such variation could be attributed to the sample size of the study participants as well as to the difference in the implementation of blood donation campaigns, besides the lower rate of blood donation in developing countries.

The current study also suggests that MLT department, gender, and age are associated with blood donation practice with a statistically significant p value (0.000), with MLT students being relatively more involved in donation process, in contrast to findings from (15), furthermore, significant association seen between gender and blood donation status, with male students also having more frequently donated blood, these results are consistent with previous researches (17, 21). The study also demonstrated that those older than 25 years had higher frequency of donation practice, these results are consistent with previous research demonstrating that higher ages positively correlate with blood donation (5, 10, 14). In contrast to the current work, some studies found those who had higher knowledge level, had higher likelihood of blood donation (5, 14, 15, 23). The study also showed that about 92% of the students had not donated blood in their lifetime, the figure is similar to that reported in Bangladesh (18), but, is much higher than that reported in a study in Saudi Arabia (24). The most commonly cited barrier for not donating blood (35.60%) was that they have not been asked to donate blood, this finding aligns with previously reported reasons (10). About 241 (58.1%) of the participants expressed their willingness to donate blood in the future, altruism or helping people was the commonest reported motivator for donation, which is consistent with other studies from different regions Asaad et al. 2024 and (10, 23).

Conclusion

The results show that 228 (54.9%) of the students had adequate knowledge and 154 (37.1%) had a favorable attitude about it. The results also showed that 33 (7.95%) of students donate blood in their lifetime; significant differences regarding level of knowledge and donation status were observed between the MLT and non-MLT students of Shekhan College of Health and Medical Technology.

Recommendations:
Blood donation campaigns need to be held to further motivate students and raise the level of awareness at the community level towards voluntary donation rather than donating blood when being asked or needed. The findings once more suggest that less than half of students had positive attitudes towards blood donation; steps need to be taken to alleviate the barriers especially their fears. Undergraduate medical syllabus needs to be restructured by stressing voluntary blood donation and should establish regular continuous medical education curricula to bridge the knowledge gap and motivate the university students.

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