

General Knowledge and Attitude toward Organ donation among of High School Students

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Abstract:

One of the biggest challenges in organ transplantation is the shortage of available organs compared to the number of individuals awaiting transplants. This shortage often leads to long waiting lists and significant health risks for those in need of organ transplantation. To study knowledge and understanding regarding organ donation, to examine attitudes towards organ donation and to study intention to donate organs among high school and university students. This study is a cross-sectional study that collected data through an online questionnaire (Google Form) from June to July 2023. A total of 373 participants had a moderate level of knowledge (Mean=7.57, SD=2.06). Majority of participants showed a moderate level of knowledge related to organ donation (58.45%, Mean=7.90, SD=0.77), and the results indicated a moderate level of attitude toward organ donation (Mean=16.87, SD=2.68), most participants had a moderate level of attitude toward organ donation (63.27%, Mean=16.78, SD=1.41). For the intention to donate organs, the majority of participants responded “yes, willing to” 46.11%, followed by “not sure” 42.90% and “no, not willing to” 11.00%, respectively. A total of 373 participants had a moderate level of knowledge (Mean=7.57, SD=2.06). Majority of participants showed a moderate level of knowledge related to organ donation (58.45%, Mean=7.90, SD=0.77), and the results indicated a moderate level of attitude toward organ donation (Mean=16.87, SD=2.68), most participants had a moderate level of attitude toward organ donation (63.27%, Mean=16.78, SD=1.41). For the intention to donate organs, the majority of participants responded “yes, willing to” 46.11%, followed by “not sure” 42.90% and “no, not willing to” 11.00%, respectively.

Keywords —organ, donation, willingness, knowledge

Background

One of the biggest challenges in organ transplantation is the shortage of available organs compared to the number of individuals awaiting transplants [1]. This shortage often leads to long waiting lists and significant health risks for those in need of organ transplantation. Deceased organ donation is the primary source of organs for transplantation. In this process, organs are retrieved from individuals who have been declared brain-dead or have suffered irreversible cardiac arrest but are kept on life support to maintain organ viability [1,2]. Living organ donation, particularly kidney donation, is another option. Living donors can donate a kidney, part of their liver, lung, or intestine to a recipient. Advances in surgical techniques and medical care have made living donation safer and more feasible.

Organ transplantation involves complex ethical and legal issues, including consent for donation, allocation of organs, and ensuring fairness and equity in the distribution process [2]. Challenges in organ transplantation include organ rejection, the need for lifelong immunosuppression for recipients, ensuring

equitable access to transplantation [3], and addressing concerns related to organ trafficking and commercialization [2]. Public awareness campaigns are important for promoting organ donation, dispel myths, and encourage individuals to register as organ donors. Education about the importance of organ donation is essential to address misconceptions and increase donor registration.

Based on the previous study regarding organ donation, it was found that knowledge about organ donation is positively correlated with attitudes towards organ donation, and attitudes towards organ donation are positively correlated with beliefs. [4]

Factors influencing the desire to donate organs beyond personal factors include attitudes towards post-mortem body matters [5] and factors related to knowledge and understanding about organ donation.[6,7]

Different cultures and social environments influence attitudes toward organ donation. Understanding these factors among high school students can help address potential barriers and tailor approaches accordingly.

High school students represent a future pool of potential organ donors. Understanding their willingness to donate organs can provide insights into the future availability of organs for transplantation. High school is a crucial period for education and awareness. Studying their knowledge about organ donation, attitudes and willingness can help tailor educational campaigns and programs to promote organ donation and raise awareness and can help understand the factors that influence decisions related to organ donation. Research findings can guide the development of policies and interventions to encourage organ donation among high school students, potentially leading to increased rates of organ donation in the future. Increasing organ donation rates can have a significant public health impact by saving lives and improving the quality of life for those in need of transplants.

Study Objectives

1. To study knowledge and understanding regarding organ donation.
2. To examine attitudes towards organ donation.

Study Method

This study is a cross-sectional study that collected data through an online questionnaire (Google Form) from June to July 2023. The sample group consists of students, and participants were selected through a volunteer recruitment process using a screening question that asked if they were students. If they answered that they were students, they were eligible to participate in this study.

Population and sampling

The population for this study consists of students who have access to the internet, and the exact population size (Infinite Population) is unknown. The sample size is determined using Cochran's formula. [8] A sample group of 345,744 individuals was obtained from the formula. In this study Convenient Sampling method was used. Invitations to participate in the study were sent to individuals in online social groups, such as educational groups, tutoring groups, and gaming groups. Upon data collection, it was found that there were 373 volunteers who expressed interest and provided consent to participate in the research. Therefore, the researchers decided to include all of these volunteers in this study.

Instrument

The data collection tool used in this study is a questionnaire, which the researchers developed following a process. The process involved studying 1) organ donation, the state of demand for organ donation from

the Thai Red Cross Society under the Ministry of Public Health, and 2) related research to study relevant variables and develop the data collection tool. The details of the data collection tool are as follows:

Part 1 consists of a personal data questionnaire with 5 questions. It includes gender, current grade level of study, family income, pre-existing medical conditions, and whether the participant has ever received or donated organs.

Part 2 consists of a questionnaire measuring knowledge about organ donation, comprising 12 multiple-choice questions with only one correct answer. Each correctly answered question earns points, with a possible score range of 0 to 12 points. The score interpretation criteria are as follows: A score greater than or equal to 80% or a score of 10-12 points indicates a high level of knowledge about organ donation. A score of 60-79% or a score of 7-10 points indicates a moderate level of knowledge about organ donation. A score below 60% or a score lower than 7 points indicates a low level of knowledge about organ donation.

Part 3 consists of questions measuring attitudes towards organ donation, comprising 5 questions. The questions utilize a Likert Scale ranging from 1 to 5, where 5 signifies strongly agree, 4 signifies agree, 3 signifies neutral, 2 signifies disagree, and 1 signifies strongly disagree. The score range is 5 to 25, and the interpretation criteria are as follows: A score greater than or equal to 80% or a score of 20-25 indicates a positive attitude towards organ donation. A score of 60-79% or a score of 15-19 indicates a neutral attitude towards organ donation. A score below 60% or a score lower than 15 indicates a negative attitude towards organ donation.

Part 4 consists of a question measuring satisfaction with organ donation, comprising 1 question. The question is a multiple-choice question with 3 options: "Yes, willing to" "Not sure," and "No, not willing to."

Instrument validation

The instruments used for data collection in this study have been reviewed by three experts in the field of medical science. Each question was scored by the experts to determine the index of congruence between the questions and the objectives.[9] Each question, as measured by the IOC criteria, exceeds a value of 0.5 for all items.

Data Analysis

Analyzing data using Descriptive Statistics, including frequency, percentage, mean, and standard deviation, as well as Inferential Statistics: Investigating the relationship between knowledge and attitudes associated with blood donation satisfaction using Chi-Square statistics, and exploring predictive factors through Multinomial Logistic Regression.

Result

The table below shows the demographic characteristics of the participants in this study. There was a total of 373 people who participated in this questionnaire, with 224 (60.1%) being females, and 149 (39.9%) being males. 113 (30.3%) of the participants are higher than year 4 college students, followed by 64 (17.2%) grade 11 students, 63 (16.9%) grade 12 students, 61 (16.4%) grade 10 students, 28 (7.8%) year 4 college students, 23 (6.2%) year 1 college students, and 10 (2.7%) of both year 2 and year 3 college students. The income of the participants is most commonly in the range of 40,001-80,000 Thai Baht (104 [27.9%]) of the participants, followed by 20,000-40,000 Thai Baht (97 [26.0%]), 80,001-150,000 Thai Baht (84 [22.5%]), less than 20,000 Thai Baht (54 [14.5%]), and more than 150,000 Thai Baht (34 [9.1%]). 324 (86.9%) of the participants do not have chronic illnesses, while the 49 (13.1%) of the

participants did. Lastly, 338 (90.6%) of the participants and their family have never donated organs, while the remaining, including their families, 49 (13.1%) have donated organs before.

Table 1. Demographic characteristic of participants (n=373)

Variable	Frequency (%)
Gender	
Male	149 (39.9)
Female	224 (60.1)
Class Level	
Grade 10	61 (16.4)
Grade 11	64 (17.2)
Grade 12	63 (16.9)
Year 1	23 (6.2)
Year 2	10 (2.7)
Year 3	10 (2.7)
Year 4	29 (7.8)
Above Year 4	113 (30.3)
Family monthly income	
<20,000	54 (14.5)
20,000-40,000	97 (26.0)
40,001-80,000	104 (27.9)
80,001-150,000	84 (22.5)
>150,000	34 (9.1)
Health Condition	
No	324 (86.9)
Yes	49 (13.1)
Donated or received donated organs before?	
No	338 (90.6)
Yes	35 (9.4)
Total	373 (100.0)

From the total sample group of 373 individuals, the average knowledge score about organ donation is 7.57 (SD=2.06). The uppermost portion possesses a moderate level of knowledge about organ donation,

with a mean score of 7.90 (SD=0.77), representing 58.45%. The subsequent portion holds a low level of knowledge, with an average score of 5.10 (SD=1.09), accounting for 26.54%. Lastly, the lowest level of knowledge is represented by 15.01%, with an average score of 11.07 (SD=0.85).

Table 2. Number of Individuals with level of Knowledge about Organ Donation

Level of Knowledge	Frequency (%)	Mean (SD)
Good (80-100%)	56 (15.01)	11.07 (SD=0.85)
Moderate (60-79%)	218 (58.45)	7.90 (SD=0.77)
Low (0-59%)	99 (26.54)	5.10 (SD=1.09)
	373 (100.00)	7.57 (SD=2.06)

From a total of 373 participants, the average score was 16.87 (SD=2.68). Majority of them had a moderate level of attitude toward organ donation (63.27%, Mean=16.78, SD=1.41), followed by a good level of attitude organ donation (18.49%, Mean=20.89, SD=0.94) and a low level of attitude toward organ donation (17.96%, Mean=13.14, SD=0.80)

Table 3. Number of Individuals with level of Attitudes towards Organ Donation

Level of Attitude	Frequency (%)	Mean (SD)
Good (80-100%)	69 (18.49)	20.89 (SD=0.94)
Moderate (60-79%)	236 (63.27)	16.78 (SD=1.41)
Low (0-59%)	67 (17.96)	13.14 (SD=0.80)
	373 (100.00)	16.87 (SD=2.68)

Out of the total 373 respondents, the majority, 172 individuals, are willing to donate organs, accounting for 46.11%. Among male respondents, the majority are not sure about organ donation, with 75 individuals, constituting 50.34%. Among female respondents, the majority are willing to donate organs, with 121 individuals, representing 54.02%. Among 12th-grade students, the majority are not sure about organ donation, with 39 individuals, making up 69.34%. Among 11th-grade students, the majority are not sure about organ donation, with 25 individuals, comprising 39.07%. Among 10th-grade students, the majority are not sure about organ donation, with 31 individuals, equating to 49.21%. Among 9th-grade students, the majority are willing to donate organs, with 11 individuals, reflecting 47.83%. Among 8th-grade students, the majority are willing to donate organs, with 6 individuals, making up 60%. Among 7th-grade students, the majority are willing to donate organs, with 7 individuals, constituting 70%. Among 6th-grade students, the majority are willing to donate organs, with 21 individuals, representing 72.41%. Among students in higher grades than 6th, the majority are willing to donate organs, with 70 individuals, comprising 69.94%. Among families with a monthly income of less than 20,000, the majority are willing to donate organs, with 33 individuals, constituting 61.11%. Among families with a monthly income between 20,000-40,000, the majority are willing to donate organs, with 46 individuals, making up 47.42%. Among families with a monthly income between 40,001-80,000, the majority are uncertain about organ donation, with 50 individuals, accounting for 48.08%. Among families with a monthly income between 80,001-150,000, the majority are willing to donate organs, with 41 individuals, reflecting 48.81%. Among families with a

monthly income exceeding 150,000, the majority are not sure about organ donation, with 18 individuals, constituting 52.90%. Among those without chronic illnesses, the majority are willing to donate organs, with 145 individuals, comprising 44.75%. Among those with chronic illnesses, the majority are willing to donate organs, with 27 individuals, making up 55.10%. Among those who have never received organ donations, the majority are willing to donate organs, with 151 individuals, reflecting 44.68%. Among those who have received organ donations, the majority are willing to donate organs, with 21 individuals, constituting 60%.

Table 4. Intention to donate organ among participants

Variable	Frequency (%)	Intention to Donate Organ			p-Value
		Yes, willing to n (%)	Not sure n (%)	No, not willing to n (%)	
Gender					.000*
Male	149 (39.9)	51 (34.00)	75 (50.34)	23 (15.44)	
Female	224 (60.1)	121 (54.02)	85 (37.95)	18 (8.04)	
Class Level					.000*
Grade 10	61 (16.4)	10 (16.40)	39 (69.34)	12 (19.67)	
Grade 11	64 (17.2)	22 (34.38)	25 (39.07)	17 (26.57)	
Grade 12	63 (16.9)	25 (39.68)	31 (49.21)	7 (11.11)	
Year 1	23 (6.2)	11 (47.83)	10 (43.48)	2 (8.70)	
Year 2	10 (2.7)	6 (60.00)	4 (40.00)	0 (0.00)	
Year 3	10 (2.7)	7 (70.00)	3 (30.00)	0 (0.00)	
Year 4	29 (7.8)	21 (72.41)	7 (24.14)	1 (3.45)	
Above Year 4	113 (30.3)	70 (69.94)	41 (36.28)	2 (1.77)	
Family monthly income					.003*
<20,000	54 (14.5)	33 (61.11)	20 (37.04)	1 (1.85)	
20,000-40,000	97 (26.0)	46 (47.42)	45 (46.39)	6 (6.19)	
40,001-80,000	104 (27.9)	38 (36.54)	50 (48.08)	16 (15.39)	
80,001-150,000	84 (22.5)	41 (48.81)	27 (32.14)	16 (19.05)	
>150,000	34 (9.1)	14 (41.18)	18 (52.90)	2 (5.88)	
Health Condition					.078
No	324 (86.9)	145 (44.75)	139 (42.90)	40 (12.35)	
Yes	49 (13.1)	27 (55.10)	21 (42.86)	1 (2.04)	
Donated or received donated					.196

organs before?					
No	338 (90.6)	151 (44.68)	148 (43.79)	39 (11.54)	
Yes	35 (9.4)	21 (60.00)	12 (34.29)	2 (5.71)	
Total	373 (100.0)	172 (46.11)	160 (42.90)	41 (11.00)	

Discussion

A total of 373 participants had a moderate level of knowledge (Mean=7.57, SD=2.06). Majority of participants showed a moderate level of knowledge related to organ donation (58.45%, Mean=7.90, SD=0.77), and the results indicated a moderate level of attitude toward organ donation (Mean=16.87, SD=2.68), most participants had a moderate level of attitude toward organ donation (63.27%, Mean=16.78, SD=1.41). For the intention to donate organs, the majority of participants responded “yes, willing to” 46.11%, followed by “not sure” 42.90% and “no, not willing to” 11.00%, respectively.

Participants had a moderate level of organ donation knowledge, this may be because organ donation is a specific matter. It requires someone who is genuinely interested or someone who is involved in the field to have a good understanding. Students, scholars, or the general public may have some awareness, but may not know or understand deeply. The results of this study align with the education of Khwanprapat Chanbunlawat, indicating a moderate level of knowledge and belief in organ donation among the hospital staff sample group [4]

and aligned with Doaa Eisaa Mohamed and et al. [10] that conducted a study on

Knowledge and Attitude Toward Organ Donation and Transplantation at Selected Faculties of Minia University and found that most participants had a moderate level of knowledge related to organ donation.

Participants had a moderate level of attitude toward organ donation. It may be because students often lack education on organ donation, not fully understanding its benefits. At this age, many students may not be particularly focused on health or the significance of saving lives, as it is a time for enjoyment. This sentiment is reflected in the United States, where organ registration rates are also relatively low [11]. Studies show that students who receive education in medical school tend to have a more positive perspective toward organ donation [12]. Additionally, it could be attributed to the relatively limited dissemination of knowledge about organ transplantation and donation. Some individuals may not see it as important, or they may not perceive a strong personal connection. Environmental factors within specific groups may also play a role. This finding aligns with the study conducted by Kua Wongboonsin and et al. [13] and may be linked to educational institutions providing inaccurate or insufficient information about organ donation, as observed in the study by Ma. Luisa Marván [14]. Furthermore, the lack of widespread knowledge about transplantation and organ donation appears to be a significant influencing factor, more so than the participants' residence, gender, age, education, employment status, marital status, and economic status. This finding is consistent with the experimental results reported by Xiaojing Fan and et al. [15]. Beliefs also play a consequential role in influencing the inclination towards organ donation. Therefore, legal and religious support for donation may lead students and scholars to have a more positive attitude towards donation, as corroborated by the findings of Mohammed Somaili and et al. [16].

Most university and high school students willingly donate organs. This could be attributed to their understanding and correct attitudes towards organ donation. They comprehend that organ donation is a way to save human lives, aligning with the fundamental compassionate nature of the majority of Thai

people. This willingness to help arises when they have the opportunity, as supported by Ayman El-Menyar's study on beliefs and intentions regarding organ donation [17]. Behavior and normative beliefs play pivotal roles in influencing the intention to donate organs. Moreover, students might respond positively or with uncertainty because their environment may include individuals connected to organ donation. As evidenced in a paper, these students hold a favorable attitude towards organ donation [18]. Furthermore, individuals who receive accurate understanding tend to recognize the positive impact and benefits of organ donation on those in need. This concurs with the findings of Taimur Saleem and colleagues in their study on knowledge, attitudes, and practices regarding organ donation in Pakistan [19]. Some may also be motivated by the awareness that there is an inadequate supply of donated organs, believing that their contribution can help address the shortage and ensure that fellow citizens have access to the organs they require. This aligns with the findings from the National Statistical Office, Ministry of Digital Economy and Society [7]. Additionally, there is a belief that organ donation is a virtuous act of self-sacrifice to assist fellow human beings [4].

The hesitation of males to donate organs in comparison to females might be attributed to various factors. Men may not tend to overthink the decision, unlike some women. Additionally, their beliefs, especially concerning life after death, can influence their willingness to donate. Ethics also play a role in this decision-making process. In the sample group studied, it was observed that males tend to have more decisive decision-making principles compared to females. It's possible that males may not consider factors as intricately as females do. This indicates that there are inherent differences in thought processes between genders, which can impact their attitudes towards organ donation. However, it's important to note that willingness to donate may not always be higher among males, as it can depend on the specific demographics of the studied group. This finding is in line with the research conducted by Teresa L. Thompson and colleagues, which explored gender differences in family communication about organ donation [20]

The hesitancy of higher-grade students in willingly donating organs compared to younger children might be attributed to several factors. As individuals grow older, they accumulate more qualifications and experiences, which influences their thoughts and attitudes towards organ donation. Younger children may not have much exposure to or knowledge about organ donation. They are still in the early stages of development and may not yet feel confident in making significant decisions for themselves. Their focus may not extend deeply into considerations of life and death at this point. On the other hand, higher-grade students, being more mature, likely have a better understanding of the benefits of organ donation. They have had more time to acquire accurate knowledge and comprehension, leading to more informed decisions. This stands in contrast to younger students, who may have limited understanding and therefore may hesitate or struggle to provide a firm response. This finding aligns with the study conducted by Jureporn Uppotipong, which investigated the knowledge, attitude, and motivation toward body donation among students at Kanchanabhishek Institute of Medical and Public Health Technology [21]. It was observed that individuals in higher grades possessed a more thorough grasp of the subject, contributing to a higher likelihood of being willing to donate. Furthermore, older individuals may have fewer reservations about the criteria used to determine brain death, compared to their younger counterparts who may have limited knowledge in this area. This is in accordance with the experimental results reported by P. Burra and colleagues [22]. Additionally, there may still be a level of hesitation in decision-making among higher-grade students.

Individuals from higher-income families may have greater financial stability and security. This can lead to a more positive attitude towards organ donation, as they may feel more comfortable with the idea of helping others through donation. This study's result was inline with Elahe Pourhosein and et al. [23] that

conducted a study in Iran and found that the donor's socioeconomic status and availability of social services play an important role in organ donation. Moreover, individuals from higher-income families may have more exposure to the healthcare system and a better understanding of the need for organ donations. They may have interacted with healthcare professionals who have emphasized the importance of organ donation.

Conclusion

A total of 373 participants had a moderate level of knowledge (Mean=7.57, SD=2.06). Majority of participants showed a moderate level of knowledge related to organ donation (58.45%, Mean=7.90, SD=0.77), and the results indicated a moderate level of attitude toward organ donation (Mean=16.87, SD=2.68), most participants had a moderate level of attitude toward organ donation (63.27%, Mean=16.78, SD=1.41). For the intention to donate organs, the majority of participants responded "yes, willing to" 46.11%, followed by "not sure" 42.90% and "no, not willing to" 11.00%, respectively.

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