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Attitudes of healthcare students in Syria toward organ donation and their association with healthcare system distrust in the context of a prolonged war

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The demand for organ transplantation continues to rise due to the spread of serious and chronic diseases, yet only 10% of the need is being met. In Syria, organ donation relies primarily on living donors, highlighting the necessity of promoting deceased organ donation. Therefore, medical college students can play an important role in raising awareness and educating the public to increase organ donation rates. To better understand how medical, dental, and pharmacy students in Syria view organ donation, a cross-sectional study was conducted. Over the course of three weeks, 615 students completed questionnaires that were distributed electronically, via QR codes, and in printed form both on and off campus. The survey included questions about their background, trust in the healthcare system, attitudes toward organ donation, and multiple-choice questions, all collected with strict ethical oversight and informed consent. Social media (43.3%) and university courses (29.9%) emerged as the primary sources of students' knowledge about organ donation. Overall attitudes were positive (mean = 3.65 ± 0.55). Furthermore, both medical students, participants from high-income family backgrounds, and sixth-year students had significantly more positive attitudes ($p < 0.05$). However, some barriers, such as lack of trust in the healthcare system, concerns about confidentiality, cultural and religious sensitivities, and perceived discomfort when seeking consent from the families of the deceased, are high. The ongoing war in Syria has exacerbated these challenges. we recommend structured educational programs, transparent healthcare policies to rebuild trust, and targeted social media campaigns.

Keywords Organ donation, Medical students, Syria, Attitudes, Transplant, Health care, Trust

Background

In recent years, the prevalence of chronic diseases such as diabetes, renal failure, and heart disease has increased, leading to a notable rise in the demand for organ transplantation. Globally, approximately 31,044 liver transplants, 7928 heart transplants, 78,627 kidney transplants, and 5788 lung transplants were performed worldwide in 2020[1]. Organ donation (OD) is giving an organ or tissue from a living or deceased person after obtaining consent either from the donor or their family to a patient in need of transplantation[2]. Despite advancements worldwide, the responsibility of preserving organs and ensuring their safe transfer remains a difficult matter, which is the main reason many people reject the idea of donation from the outset. Therefore, a system called OTDT (organ

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and tissue donation and transplantation) was established[3]. Annually, about 15 million individuals ranging 30 and 69 die from noninfectious diseases. Statistically, 85% of these deaths occur in low- and middle-income countries. Therefore, population demographics have played a major role, along with the widespread presence of risk factors, in increasing the demand for organ replacement therapies[1]. OD faces major challenges: First, the urgent need for organs, and second, the low number of donors. Therefore, efforts must focus on increasing the donor pool. For example, in India the donation rate needs to be raised to 62 per million population; this would improve the situation and offer more people a chance to survive[4]. On the other hand, there are also challenges facing organ transplantation, particularly the lack of awareness within the general public, as understanding is mostly limited to medical students. There are also misconceptions in society regarding this procedure. Medical students play an important role in advancing this field, and they are capable of encouraging people to consider OD by spreading awareness about its importance[5]. In Syria, the majority of transplanted organs come from living donors, who are often relatives or friends, rather than deceased donors. Thus, enhancing the rate of deceased OD has become an urgent necessity, though it is hindered by multiple barriers[6]. It is possible that legal facilitations, political amendments, and educational seminars for culture and awareness about organ donation can have a positive impact on society and increase the rate of OD, which means that this concerns politicians, religious representatives, and healthcare specialists[7]. The Global Observatory on Donation and Transplantation (GODT) reports a major imbalance between the global demand for and supply of organ transplants, with only 10% of the global demand being met. The United States and Spain are among the highest-ranking countries, with transplantation rates exceeding 130 per million population[8].

This study targets healthcare students at one of Syria's largest universities, the University of Kalamoon (UOK), as they represent an important segment of society and can positively influence public opinion regarding OD. They may also contribute to increasing OD rates by identifying future potential donors and encouraging them through raising awareness and providing accurate information about this sensitive topic.

Methods

Study design and data collection

This cross-sectional study was conducted to assess the perceptions and attitudes toward organ donation among students from three colleges (Medicine, Dentistry, and Pharmacy) in Syria. Data collection was conducted using a variety of methods to ensure that the questionnaire reached the largest possible number of students. As for the electronic questionnaires, we have published them through the official channels for student groups, and they have also been made available for completion via a quick response (QR) code. In addition, printed versions of the questionnaire were distributed to students both inside and outside the university campus, including in the university library. The data collection period extended for approximately three weeks, from June 28 to July 17, 2025. A total of 615 healthcare students participated in the study. Participant confidentiality and anonymity were strictly maintained, and participation was entirely voluntary. Students who declined to participate were excluded from the study.

The questionnaire was carefully prepared, with the main inclusion criterion being the participant's affiliation with one of the medical sciences faculties at UOK, in order to ensure alignment between the sample and the study objectives. The questionnaire was translated into Arabic by the principal investigator in collaboration with two researchers. A research team consisting of 12 members conducted the distribution of the questionnaire, both through in-person interviews and electronic sharing via official university social media groups. Each interview with the students lasted an average of 6 min, during which the importance and objectives of the study were fully explained to the participants.

Two main validated scales were used in this study. The first was the 10-item Health Care System Distrust Scale. The second was the 14-item Attitude Toward Organ Donation Scale.

Sample size

The statistician in our study calculated the minimum required sample size from UOK using Cochran's formula for a total population of approximately 2851 students, yielding 339 participants at a 95% confidence level and 5% margin of error. Nevertheless, and in order to ensure broad representation, we exceeded the minimum and included 615 students in the study, which guarantees greater statistical power for the analyses.

Questionnaire and ethical approval

The questionnaire used in this study consisted of four sections. The first section contained demographic information about the participant, including gender, age, college, year of study, university GPA, income level, place of residence, religion, and any prior knowledge of the concept of organ donation, along with the source of this knowledge. The second section used the Health Care System Distrust (HCSD) scale, which is considered a highly reliable and valid tool for assessing distrust in the healthcare system[9]. The scale was modified to align with the goals and nature of this study and included 10 items rated using a five-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree).

The purpose of using this scale in our study was:

1. To measure the prevalence of distrust in the healthcare system within this sample of the Syrian students.
2. To relate this data specifically to the topic of OD.

The third section assessed the attitudes of students from the three faculties toward organ donation using a scale adapted from a previous study. The scale consisted of 14 items, half expressing positive attitudes and the other half negative attitudes toward OD. This instrument has demonstrated validity and reliability across multiple prior studies, with a Cronbach's alpha of 0.80[10]. In the final section, the researchers compiled and refined a

variety of questions from two prior studies[6,10]. Approval for the inclusion of this section was obtained from the supervisor of this study. It consisted of 6 multiple-choice questions (MCQs).

This study respected the participants through social media by including a question at the beginning of the questionnaire asking for their consent to participate. Their agreement was considered as written informed consent and served as evidence of their voluntary participation. As for participants who completed the paper-based questionnaire, written consent was obtained from them. Ethical approval for this study was obtained from the Institutional Review Board (IRB) of the Faculty of Medicine, University of Kalamoon, Syria.

Validity and reliability

The Arabic version of the HCSD scale and the attitudes toward OD scale demonstrated very good internal consistency in the Syrian sample. Reliability analysis using Cronbach's alpha revealed the following values: 0.753 for the HCSD scale and 0.838 for the attitudes scale, confirming the reliability and appropriateness of these instruments for use.

Statistical analysis

The Statistical Package for the Social Sciences (SPSS Inc.), version 25, was used during our data analysis. To summarize the demographic characteristics of the undergraduate students in our study, we used descriptive statistics. One-way ANOVA and independent t-tests were applied to compare mean attitude scores across demographic groups. Pearson's correlation coefficients were calculated to assess relationships between health system distrust and organ donation attitudes. A p-value < 0.05 was considered statistically significant.

Results

Demographic data of participants

A total of 615 undergraduate students were surveyed. There was a relatively close gender distribution, although females constituted a slight majority (54.1%). Most students were between 21 and 22 years old (42.6%), with the largest proportion attending colleges of medicine (58.7%), pharmacy (23.9%), and dentistry (17.4%). However, the third year was the most represented (23.1%). Regarding their academic achievement, (38.2%) reported a GPA between 2.5 and 2.99, while only (4.2%) reported a GPA above 3.5. Regarding the students' background, the majority were from urban areas (57.7%), and they were also Muslim (93%). It is worth noting that (97.6%) of participants answered "yes" when asked if they had heard about organ donation. Social media was the primary source of information for nearly half of the sample (43.3%), followed by university courses (29.9%). For more details, see Table 1.

Health care system distrust scale results

Table 2 presents the distribution of responses to ten items adapted from the Health Care System Distrust Scale, originally developed by Rose et al. (2004). These items were classified to assess four key dimensions of distrust: honesty (4 items), confidentiality (2 items), competence (2 items), and fidelity (2 items). There were significant levels of skepticism, ranging from moderate to high, about the transparency of the Syrian health system, its ethical conduct, and its prioritization of donor rights. For example, to illustrate: Honesty-related concerns were prominent, with 35.6% of students expressing neutrality and 42.7% agreement (combined) with the statement that donor organs may be used for undisclosed purposes (Item 1). Confidentiality was questioned, 54.8% of participants in our sample stated that they disagreed or strongly disagreed with the positive statement regarding protecting donor privacy (Item 2). Competence was perceived more favorably, with 75.3% of students reporting that they agreed or strongly agreed with the point that errors in organ donation may lead to serious consequences (Item 3), thus indicating Syrian healthcare students' awareness of procedural risks. Fidelity concerns were evident, with nearly half of the sample (50.4%) of students reporting disagreement with the item stating that the health system gives top priority to the rights of the donor after death (Item 9).

Attitudes toward organ donation among Syrian healthcare students

In Table 3, we present participants' responses to 14 items to assess their attitudes toward OD. We used a five-point Likert scale to assess these statements; higher scores indicate more positive attitudes toward OD. Statements with negative connotations were reverse-coded to ensure consistent interpretation. The overall mean score was 3.65 ± 0.55, indicating a moderately positive attitude toward organ donation. Participants in the sample expressed strong agreement with statements highlighting the humanitarian and life-saving aspects of donation, while responses to religious, emotional, and dignity-related concerns were more mixed.

Relationship between demographic variables and attitudes toward organ donation

Table 4 shows the mean scores for attitudes toward organ donation across several demographic categories. Statistical tests were used to assess differences between groups.

Significant findings Students belonging to the faculty of human medicine had significantly more positive attitudes (**Mean = 3.71 ± 0.54**) than students in Dentistry and Pharmacy colleges ($p = 0.008$). Positive attitudes reached their peak among sixth-year students (**Mean = 3.92 ± 0.56**), indicating a significant association between academic advancement and donation attitudes ($p = 0.001$). Income was associated with students' attitudes toward donating in our study. Students from high-income family backgrounds reported markedly more positive attitudes (**Mean = 3.80 ± 0.58**) than their peers from low-income backgrounds (**Mean = 3.40 ± 0.53**, $p < 0.001$).

Non-Significant findings No statistically significant differences were observed based on **gender**, **age**, **GPA**, **residence**, or **religion**.

Variable	Category	*N* %
Gender	Male	282 (45.9%)
	Female	333 (54.1%)
Age (years)	18–20	219 (35.6%)
	21–22	262 (42.6%)
	23–24	96 (15.6%)
	≥25	38 (6.2%)
College	Medicine	361 (58.7%)
	Dentistry	107 (17.4%)
	Pharmacy	147 (23.9%)
Study year	1st	56 (9.1%)
	2nd	139 (22.6%)
	3rd	142 (23.1%)
	4th	141 (22.9%)
	5th	120 (19.5%)
	6th	17 (2.8%)
GPA	3.5–4.0	26 (4.2%)
	3.0–3.49	166 (27.0%)
	2.5–2.99	235 (38.2%)
	2.0–2.49	167 (27.2%)
	<2.0	21 (3.4%)
Income level	Low	58 (9.4%)
	Middle	357 (58.0%)
	High	200 (32.5%)
Residence	Rural	260 (42.3%)
	Urban	355 (57.7%)
Religion	Islam	572 (93.0%)
	Christianity	13 (2.1%)
	Atheist	7 (1.1%)
	Prefer not to answer	23 (3.7%)
Heard of organ donation	Yes	600 (97.6%)
	No	15 (2.4%)
Main source	Courses	184 (29.9%)
	Family/Friends	43 (7.0%)
	Media	66 (10.7%)
	Social media	266 (43.3%)
	Personal experience	6 (1.0%)
	Other	35 (5.7%)

Table 1. Characteristics of respondents (*N* = 615).

Item no.	Statement	[5] Strongly agree, %	[4] Agree, %	[3] Neutral, %	[2] Disagree, %	[1] Strongly disagree, %
1	I believe the health system may use donor organs for purposes not disclosed to the public.	10.7%	32.0%	35.6%	18.0%	3.6%
2	I feel there is genuine protection of donor privacy.*	1.8%	15.1%	28.3%	43.4%	11.4%
3	Mistakes in organ donation or allocation decisions may lead to serious consequences.	24.2%	51.1%	17.9%	5.2%	1.6%
4	Sometimes samples or health data are taken from donors without their prior knowledge or consent.	9.4%	35.9%	27.5%	21.8%	5.4%
5	If errors occur in the organ donation process, the health system may not disclose them transparently.	17.2%	42.8%	23.4%	14.1%	2.4%
6	Donor identity information may reach unauthorized parties.	10.9%	40.3%	21.6%	21.5%	5.7%
7	The health system prioritizes cost reduction over respecting donor wishes.	9.9%	31.5%	33.8%	20.7%	4.1%
8	I trust that organ donation procedures are managed efficiently and ethically by the health system.*	4.9%	20.8%	37.1%	30.1%	7.2%
9	I feel the health system gives top priority to the donor's will and rights after death.*	2.8%	15.6%	31.2%	39.0%	11.4%
10	Some organ transplant procedures occur without full disclosure to recipients or donor families.	10.9%	41.0%	23.6%	18.2%	6.3%

Table 2. Items of the health care system distrust scale adapted for Syrian medical students. *2, 8, and 9 are reverse scored to measure distrust.

Item No.	Statement	Mean ± SD*
1	Donating organs to another person after death is a humanitarian act.	4.04 ± 0.96
2	Organ transplantation saves lives.	4.40 ± 0.69
3	Organ transplantation improves life in society.	4.12 ± 0.79
4	Donating organs after death prolongs someone else's life.	3.93 ± 1.01
5	Some diseases can be treated through organ donation.	4.13 ± 0.77
6	The deceased no longer needs their organs.	3.36 ± 1.10
7	It is not important for a person to be buried with all their organs.	3.05 ± 1.05
8	Deciding to donate organs means being ready to die.	3.46 ± 0.97
9	The deceased is physically disfigured by organ transplantation.	3.10 ± 1.00
10	I do not believe my religion allows organ donation after death.	3.07 ± 1.14
11	Organ transplantation violates human rights.	3.64 ± 0.93
12	Organ donation disturbs the peace of the deceased.	3.40 ± 1.01
13	The soul of the deceased is not at peace if their organs live in another body.	3.67 ± 0.97
14	Organ donation insults human dignity.	3.80 ± 0.99
Total	Overall attitude score (mean of all items)	3.65 ± 0.55

Table 3. Attitudes toward organ donation among Syrian medical students. *Scores range from 1 (strongly disagree) to 5 (strongly agree). Scores of all items that formulated negatively were inverted, so that a higher value always indicates a more positive attitude.

Variable	Category	Attitude score (Mean ± SD)	*p*-value
Gender	Male	3.65 ± 0.58	0.77
	Female	3.66 ± 0.52	
Age (years)	18–20	3.62 ± 0.52	0.28
	21–22	3.67 ± 0.54	
	23–24	3.73 ± 0.62	
	≥ 25	3.58 ± 0.56	
College	Medicine	3.71 ± 0.54	**0.008**
	Dentistry	3.61 ± 0.56	
	Pharmacy	3.55 ± 0.52	
Academic Year	1st year	3.67 ± 0.57	**0.001**
	2nd year	3.62 ± 0.51	
	3rd year	3.53 ± 0.45	
	4th year	3.66 ± 0.59	
	5th year	3.79 ± 0.58	
	6th year	3.92 ± 0.56	
GPA	3.5–4.0	3.58 ± 0.67	0.14
	3.0–3.49	3.67 ± 0.54	
	2.5–2.99	3.67 ± 0.52	
	2.0–2.49	3.66 ± 0.57	
	< 2.0	3.37 ± 0.50	
Income Level	Low	3.40 ± 0.53	**0.000**
	Middle	3.61 ± 0.50	
	High	3.80 ± 0.58	
Residence	Rural	3.62 ± 0.51	0.18
	Urban	3.68 ± 0.57	
Religion	Muslim	3.65 ± 0.53	0.32
	Christian	3.84 ± 0.56	
	Atheist	3.77 ± 0.80	
	Prefer not to say	3.50 ± 0.72	

Table 4. Relationship between demographic variables and attitudes toward organ donation (Mean ± SD). Independent t-test and One-way ANOVA were used as appropriate.

Distrust Item	Pearson's *r*	*p*-value
I believe the health system may use donor organs for purposes not disclosed to the public.	−0.078	0.053
I feel there is genuine protection of donor privacy.	−0.029	0.475
Mistakes in organ donation or allocation decisions may lead to serious consequences.	−0.074	0.066
Sometimes samples or health data are taken from donors without their prior knowledge or consent.	−0.055	0.174
If errors occur in the organ donation process, the health system may not disclose them transparently.	0.069	0.086
Donor identity information may reach unauthorized parties.	−0.004	0.923
The health system prioritizes cost reduction over respecting donor wishes.	−0.019	0.630
I trust that organ donation procedures are managed efficiently and ethically by the health system.	0.075	0.063
I feel the health system gives top priority to the donor's will and rights after death.	−0.058	0.154
Some organ transplant procedures occur without full disclosure to recipients or donor families.	−0.040	0.320

Table 5. Correlation between health care system distrust and attitudes toward organ donation.

Donation type	Frequency (%)
1. Blood	231 (37.6)
2. Bone marrow	8 (1.3)
3. Skin	3 (0.5)
4. Heart	34 (5.5)
5. Kidney	44 (7.2)
6. Liver	17 (2.8)
7. Organs of a deceased relative	3 (0.5)
8. Cornea	9 (1.5)
9. Organs for scientific purposes	10 (1.6)
10. Multiple organs for transplantation	82 (13.3)
Total (Valid Responses)	441 (71.7)

Table 6. Distribution of highest willingness to donate specific organs or tissues (during life or after death).

Correlation between health care system distrust and attitudes toward organ donation

Although our results in this study did not indicate any statistically significant associations between any of the items on mistrust in the Syrian health system and attitudes toward OD (all $p > 0.05$), some items were close to the threshold level of significance. there is a weak negative correlation with the belief that donor organs may be used by the health system for undisclosed purposes ($r = -0.078$, $p = 0.053$), suggesting a possible link between concerns about transparency and hesitancy toward donation (see Table 5).

Finally, by analyzing the last section of the questionnaire questions of our study and asking the students whether they were aware of the laws and regulations related to organ donation and organ transplantation in Syria, 414 (67.3%) answered "no" while only 201 (32.7%) were aware of the laws and regulations. Then, when asked, "If the law or religion encouraged you to donate your organs, would you do so?" 441 (71.7%) respondents were willing to donate their organs, while 174 (28.3%) were unwilling to do so. Among students who agreed to donate their organs, the most important reason for doing so was saving the lives of others (60.7%), followed by the high financial reward (5%), religious motivations (4.2%), and other motivations (1.8%). In addition, we asked students to choose the single option that reflected their highest willingness to donate, either during their lifetime or after their death (see Table 6 for more details).

Figures 1 and 2, respectively, illustrate students' responses to the following two questions: "What do you think are the biggest challenges or obstacles preventing the spread of organ donation culture in Syria?" and "If you were in your position as a healthcare student and were asked to speak with the family of a deceased patient about organ donation, how would you expect to feel?".

Discussion

Organ donation has been significantly impacted by the Syrian conflict, with the number of organ donors and transplantations significantly dropping. Data showed that kidney transplants fell from 385 in 2010 to 154 in 2013 (60% less) before increasing to 251 transplants in 2018, which is still 35% less than the number of transplants performed before the war[11]. Knowledge of the attitudes and perceptions of future healthcare providers in Al-Kalmoon University regarding organ donation was necessary because of the increased need for organ transplantation due to factors like trauma-related injuries, chronic illnesses with a lack of access to healthcare facilities, the deceased donor system not yet implemented[12], and low public awareness.

This issue is prevalent across most countries, particularly in Asia (such as India). Despite the large population density and high absolute number of inhabitants, the rate of organ donation is considerably lower than that

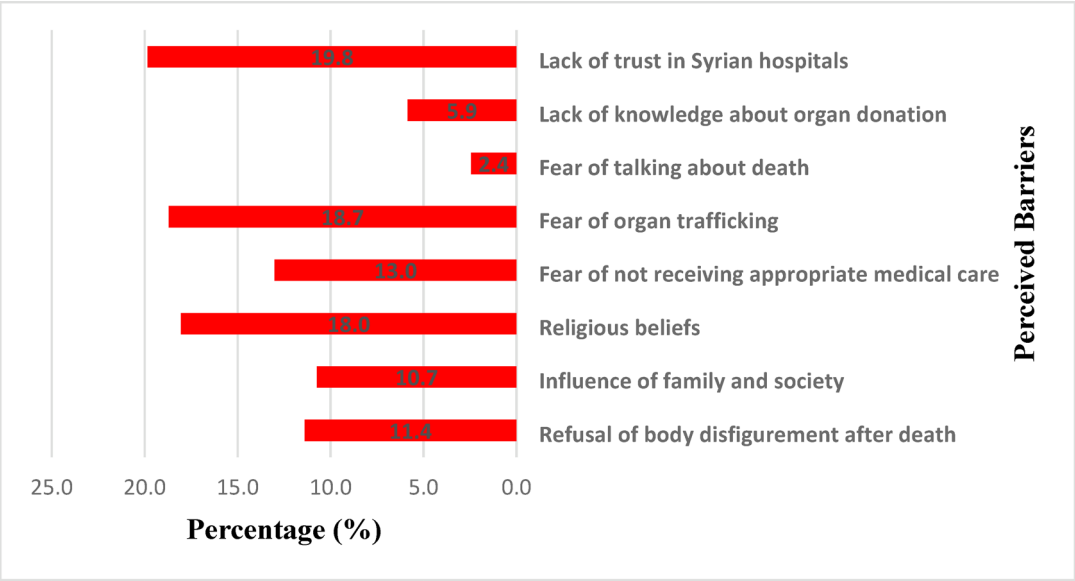

Fig. 1. Perceived barriers to the spread of organ donation culture in Syria, based on responses from healthcare students. The most frequently cited challenges were lack of trust in Syrian hospitals (19.8%), fear of organ trafficking (18.7%), and religious beliefs (18.0%).

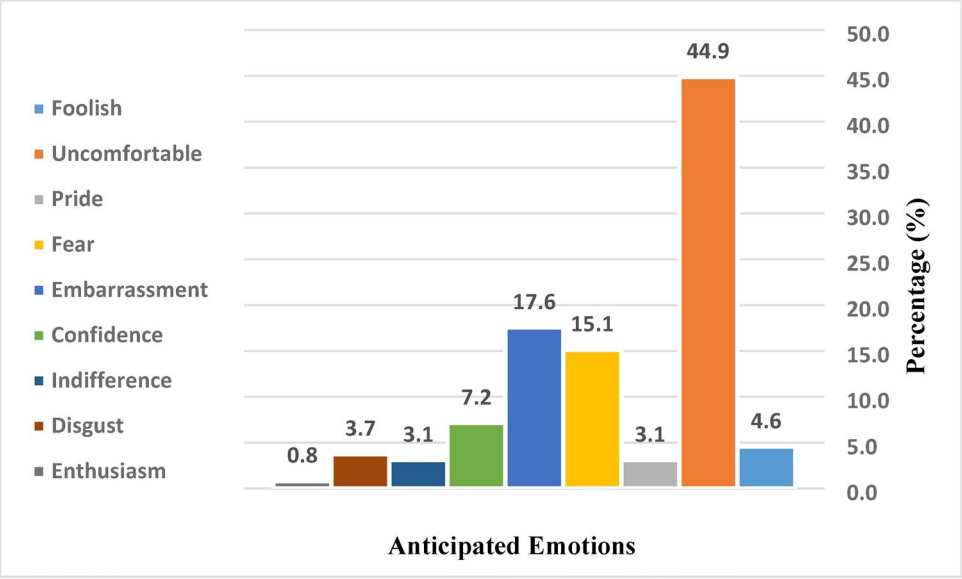

Fig. 2. Distribution of anticipated emotions among healthcare students when imagining themselves asking a deceased patient's family for organ donation. The most prevalent emotion was uncomfortable (44.9%), followed by embarrassment (17.6%) and fear (15.1%). Positive emotions such as confidence and enthusiasm were reported by fewer participants. These findings highlight the emotional challenges that may hinder effective communication in organ donation settings.

observed in Western countries. This discrepancy has been attributed to widespread lack of knowledge, limited awareness, and social traditions that restrict acceptance of the practice[13].

This study also revealed that the primary source of information regarding organ donation was social media, which contradicted the findings of Kolagari et al.[14], who reported television as the main source of information. Similarly, our findings differed from a previous study in Saudi Arabia[15]. Our study, however, was consistent with the findings of Alwahaibi et al.[2]. The diversity of information sources has played an important role, as differences in the speed of dissemination, the available equipment, and the accessible resources have led to variations in the source of information.

Regarding the relationship between demographic variables, medical students demonstrated more positive attitudes about organ donation compared to students from other disciplines particularly in the later years of study. According to Alwesmi et al., students with excellent academic performance were significantly more supportive of organ donation. Furthermore, undergraduate students' awareness increased notably during the clinical years, especially in the fourth and fifth years, compared to their earlier academic stages[16]. Similarly, Krishna et al. reported varying levels of knowledge across different professional groups, with consultants and residents demonstrating the highest awareness, followed by nursing and medical students [4]. Even in the study conducted by Uzuntarla in a Turkish hospital to investigate the attitudes and knowledge regarding OD among healthcare workers, the greatest knowledge on the subject was possessed by physicians compared to other workers[17].

Higher income was also a positive predictor of favorable attitudes, consistent with a study including 36 countries within the Organization for Economic Co-operation and Development (OECD), which found that higher personal income positively influenced willingness to donate, along with higher education levels[18].

From a religious perspective, the majority of participants were Muslims 93%, which is consistent with studies conducted in the Middle East, where the population is predominantly Muslim[19–21]. It is worth mentioning that Islam encourages the idea of organ donation, and this stance is supported by leading scholars of fatwa[19]. Religion is considered one of the strongest factors influencing societal attitudes toward organ donation. In the study by Aboghazleh et al.; more than half of the participants reported that their decision was influenced by religious beliefs[20].

The results of this study revealed that 71.7% of the sample were willing to donate their organs after death. This percentage is significantly lower than that recorded in the Sinda et al. study conducted in Finland, which reached 92.5%[22]. As for the motivations for donating, "saving the lives of others" topped the list of reasons that motivate students to donate, followed by "high financial reward" in second place, and "religious motives" in third place. This ranking in our study contrasts with the results of a similar study conducted in Oman, where the motivations were as follows: "Saving the lives of others" also came first, followed by "Helping a colleague," followed by "Donating for someone dear." Financial motivation was the least common motivation among participants in the Omani study[2].

A previous study by Chowdhury et al. described eye donation as a noble act for individuals who are blind, as it offers them renewed hope and the possibility of living more independently[23]. On the other hand, in our study, only 1.5% of students were willing to donate their cornea, which is a small percentage compared to blood donation (37.6%), which is a more common and less intimidating procedure.

One of the most prominent factors identified in our study as a barrier to promoting the culture of organ donation was lack of trust, which received the highest percentage of responses in our results. This contradicts a study conducted in Poland[24], which found that the most common reason for refusal was the fear of mutilation of corpses after death. This may be explained by the ongoing conflict in Syria, which has resulted in inadequate government oversight because of damaged infrastructure, a failure to keep up with the latest developments in medical technology and its application, and a lack of medical professionals because of emigration and displacement from Syria.

The shortage of donors drives medical institutions to be more assertive in approaching or requesting donation from the patient's family after death. Our study showed that the emotions involved can vary, with discomfort being the most common, followed by embarrassment and fear. In contrast, another study that specifically examined these emotions indicated that the matter could be less complicated and that the feelings may even be positive, depending on the individual's prior experience[25].

The study's results of the health system distrust scale four dimensions were measured: honesty, confidentiality, efficiency, and loyalty. Honesty: 78.3% are either neutral or believe that organs may be used for undisclosed purposes, which shows a lack of trust in health care monitoring and a lack of knowledge about the laws governing organ donation and transplantation. Confidentiality: 54.8% do not trust the protection of donors' privacy.

In recent years, Syria has witnessed reports of gross human rights violations, reported by international organizations and media outlets, related to the trafficking of human organs, particularly in the context of detention. This climate, coupled with the lack of rule of law, has contributed to a general sense of distrust in institutions, including hospitals[26,27].

The results of our study—the first to our knowledge in the medical literature to examine several aspects related to organ donation, including trust in the healthcare system, and the first in Syria since the fall of the Assad regime—show that a lack of trust in hospitals is a major and powerful reason behind individuals' refusal to donate organs. This was clearly reflected even among healthcare students, who are supposed to be the nucleus of the country's health-care future. These findings place a great responsibility on medical and media personnel in the post-conflict phase to work diligently to rebuild trust between the community and health institutions. If Syrian healthcare students and future doctors themselves lack this trust, how can the public ever trust them?.

Conclusion and recommendations

As shown in our research, we found somewhat positive results among healthcare students, especially as they progress through the years and gain more life experience. We therefore conclude that it is essential to raise awareness and highlight the importance of organ donation through media, especially social media platforms, as well as integrating the topic into school curricula in general and university curricula in particular. It is also crucial to involve university students in organized seminars. Moreover, we should not overlook the importance of enacting clear laws, ethical guarantees, and regulations to strengthen trust and transparency, particularly within the healthcare system. All of these measures can contribute to spreading the culture of donation more widely and increasing donation rates, ultimately bringing about a major change in society's perspective in the

future. Even though these steps may seem simple, they can create a significant impact by paving the way for more organ donation procedures and saving countless lives.

Limitations

Although the study was conducted in one of the largest Syrian universities, we acknowledge several limitations, including being single-center and, moreover, from one country in the Middle East, which may limit the generalizability of the results. Although the findings are intriguing and somewhat concerning regarding the healthcare system, future studies should broaden the categories.

Data availability

The datasets generated and/or analysed during the current study are not publicly available due to privacy and ethical considerations but are available from the corresponding author on reasonable request.

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Author contributions

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Declarations

Competing interests
The authors declare no competing interests.

Ethics approval and consent to participate
All procedures performed in this study involving human participants complied with the institutional and/or national research committee ethical standards and the 1964 Helsinki declaration and subsequent amendments or equivalent ethical standards. The study was designed and conducted in accordance with the ethical principles established by University of Kalamoon. Therefore, ethical approval was obtained from the Institutional Review Board (IRB) Committee, Faculty of Medicine, University of Kalamoon, Syria (ID Number: 115:2025). Written informed consent was obtained from all the participants for the participation of this study and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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