



Original Article

Suboptimal utilization of advancements in transplants due to a lack of organ donations globally. Are we doing enough to enhance the donation rate? A study from Jeddah, Saudi Arabia

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ABSTRACT

Background: The last decade has seen significant improvements in organ transplant techniques and post-transplant care. Unfortunately, this advancement is marred by a lack of donations. This cross-sectional study aimed to identify current trends in organ donation among the general population residing in Jeddah, Saudi Arabia. The objective was to identify the current trend, compare it with previous similar studies, and explore possible reasons for any change or lack thereof, with the aim of identifying a remedy to enhance the donation rate.

Methods: A questionnaire related to both knowledge and attitudes towards organ donation was distributed through social media applications and randomly to common unknown residents in person. Those with medical backgrounds were dropped. The study was conducted during the third quarter of 2025

Results: A total of 662 responses were received, including both genders, all age groups above 18, and all educational levels. Despite a considerable time gap, the percentage of people willing to donate organs after death is essentially the same (around 43%). In general, the tendency to donate to relatives during life was greater. Women were more generous in this regard. Education did not influence the tendency to donate. Knowledge gaps exist. Most importantly, about 90% of potential donors were unaware of the existing registration mechanism.

Conclusion: Willingness to donate is effective only when coupled with registration. We recommend, especially for Asian and African countries, that awareness campaigns be aided by proactive registration, early screening of possible donors, and regular updating of their information in the registry.

Keywords: Organ donation, organ transplant, Organ Trade, Donor registration, KSA.

INTRODUCTION

One of the major developments in medical science is the ability to transplant an organ from one person to another. The impact of this on the lives of recipients, their families, and society is enormous. So many lives have been saved and improved due to organ transplants. New research and improvements are being made to ensure the safety and success of both recipients and donors. All over the world, the requirement for organ transplants has tremendously increased. This is coupled with improved facilities in transplant centers and greater expertise among transplant teams, including surgeons, pathologists, nurses, and others 1. In Saudi Arabia, organ transplants have been done for many years. The first renal transplant was done in 1979. Presently, there are many transplant centers in the Central, Eastern, and Western regions that operate under the Saudi Center for Organ Transplant (SCOT), established in 1984.

Despite an increasing demand, the availability of donors is significantly less than required all over the world, and Saudi Arabia is no exception. In developed and underdeveloped countries, there are long lists of people waiting to receive the organs. The supply does not match the demand ². As a result, patients are suffering. Precious lives are being lost that could have been saved, and the quality of life of many is not being improved due to a lack of donors ³. The answer lies in increasing the donation rate. For that, people should come forward and volunteer. In a few countries, people are motivated and donate regularly, but in most of the world, the situation is far from expected or required. It is necessary that the common person should be aware of organ donation and transplant. The public should have basic knowledge and should have the right attitudes.

Many studies regarding knowledge and attitude about organ donation and transplant have been done globally in the past. Studies in KSA were mostly done in the central and eastern parts of the Kingdom, as compared to ours, which is from the western region ^{4,5}. Most importantly, we wanted to have this study to compare our results with those done more than a decade back so that we can compare with these and see any change in donation rate and in knowledge and perceptions in this regard during all these years. This can also help us to evaluate the efficacy of public awareness campaigns for improving the trend towards organ donation in the Kingdom.

METHODS:

Residents of Jeddah were chosen for this study. Jeddah was chosen because it is a cosmopolitan industrial port city where citizens from all parts of Saudi Arabia live, as well as a good number of expatriates. A research questionnaire was formulated, having five personal questions without individual identity, ten questions related to knowledge about organ transplant, and eight questions pertaining to attitudes toward donating or receiving an organ. The study was conducted in August and September 2025.

This questionnaire was distributed through cell phone applications (social media apps) as well as in person, randomly to unknown persons, at public places such as Malls. All age groups above 18 years, genders, all education standards, and both Saudi and non-Saudi residents were included in the study. All those with a medical background (doctors, nurses, medical students) were not included or dropped from the study because of their better knowledge, as they are not part of the common population in relation to this study. Ethical approval to conduct the study was obtained, and participants were informed about the objectives and personal anonymity. Participation was totally voluntary. Quantitative data were analysed for frequencies and percentages

RESULTS:

After applying the exclusion criteria, we had 662 responses, as shown in Table 1

Table 1: Respondents (Total 662)

Parameter		Number	Percentage
Age in years	Less than 30	246	37.2%
	30 – 50	345	52.1%
	More than 50	71	10.7%
Gender	Female	448	67.7%
	Male	214	32.3%
Nationality	Saudi	616	93.1%
	Non-Saudi	46	6.9%
Education	Undergraduate	209	31.6%
	Graduate	405	61.2%
	Masters	37	5.6%
	PhD	11	1.7%

Knowledge about organ transplantation and related perceptions/attitudes was gathered and is shown in Tables 3, 4, and 5

Table 2: Knowledge about organs, the responders think, that can be donated and transplanted

Organ	Number	Percentage
Brain	58	8.8%
Heart	441	66.6%
Kidneys	613	92.6%
Lungs	222	33.5%
Stomach	66	10.0%
Liver	487	73.6%
Whole Eye	180	27.2%
Cornea	267	40.3%
Blood	401	60.6%
Limbs	200	30.2%

Bone marrow	340	51.4%
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Table 3: Perceptions about donation

Perception		Number	Percentage
Who do you think can donate an organ?	A living person	51	7.7%
	A dead person	43	6.5%
	Both	568	85.8%
Do you think organ donation is Halal (allowed in religion) or Haram (prohibited)?	Halal	637	96.2%
	Haram	25	3.8%
Do you think the donor should get money from the recipient for donating the organ?	Yes	149	22.5%
	No	513	77.5%
Do you think a person can be allowed to sell his/her organs?	Yes	237	35.8%
	No	425	64.2%
Who do you think should pay for the donor's operation?	Donor	69	10.4%
	Recipient	593	89.6%
Do you think the donation of organs is safe?	Safe	387	58.5%
	Not safe	275	41.5%
If you choose not to be safe, how much do you think the risk is?	Little	72	26.2%
	Moderate	146	53.1%
	High	57	20.7%

Table 4: Attitudes/Knowledge about donations

	Yes		No	
	Number	Percentage	Number	Percentage
Do you think the donation will change the lifestyle of a donor?	507	76.6%	155	23.4%
Do you think kidney transplants are being done in KSA?	608	91.8%	54	8.2%
Do you think liver transplants are being done in KSA?	524	79.2%	138	20.8%
Has anyone in your family/friends ever donated an organ?	161	24.3%	501	75.7%
Did anybody in your family/friends ever receive an organ?	186	28.1%	476	71.9%
Do you think the donor and recipient should always be close relatives?	99	15.0%	563	85.0%
Will you offer your body organs as a donation after your death, in your will?	287	43.4%	375	56.6%
If the need arises, would you donate an organ, such as a kidney, while you're alive?	477	72.1%	185	27.9%
Do you know where to register as a donor?	69	10.4%	593	89.6%
Have you registered as a donor?	0	0%	662	100%

All parameters were also customized for age, gender, and educational status, as considered in the discussion

DISCUSSION:

Transplantation of various organs has been performed in the Kingdom of Saudi Arabia since 1979. Since then, significant progress has been made in the field. In 2023, a record 2,091 organ transplants, involving both living and deceased donors, were performed in 31 accredited centers. As reported by the Saudi Center for Organ Transplantation (SCOT), it represents a 30% increase in activity ⁶. But with over 18000 patients on the waiting list, only for the kidney, this is far from what is required. The main issue is not the facilities, but the lack of local donations. For this reason, a lot of patients are traveling abroad for transplant operations. This study was done to see the current trends and compare these with past studies related to perceptions and practices of organ donation in Saudi Arabia, and to explore possible reasons behind fewer donations.

In our study, 43.4% of the general population was willing to donate organs after they are dead. The study done more than 17 years ago in 2007 had figures of 42% willing donors after death ⁷. This has essentially not changed despite time, awareness campaigns, increased demand, more and better centers for transplant, and an overall higher literacy rate as compared to the year 2007. This percentage, however, by itself is not inadequate. Still, the actual donations are extremely low. How many of these willing donors actually can donate depends on their getting registered, screened, and actively updated in a system, so that their willingness can be materialized in the form of actual donations in the future. The tendency

to donate while alive is significantly higher than donating organs after death. This is despite the fact that a living donor can donate for one person, but organs from a deceased donor, who has given consent in his lifetime, can save multiple lives, as many organs can be transplanted to many recipients⁸. Seventy-two percent of males and females are found ready to donate organs while alive if a need arises. This is mostly because it is meant for a close relative⁹.

Gender and age were not found to have a significant effect on the tendency to donate in most earlier studies conducted locally or internationally^{10,11}. However, in our study, female seems to be more generous when it comes to donating an organ to save the life of a person. This trend has been seconded by another recent local research¹². We found that 48% of the women were willing to donate organs after death compared to 32% of men.

In our study, the majority of the common people consider that the lifestyle of a person is affected once he or she has donated an organ. 76.6% of the respondents have this opinion. Education did not affect this belief, and both undergraduates and masters had the same opinion.

The general population in KSA was found to be better aware of who can donate organs. 86% had the knowledge that organs can come from both living and dead persons. People were less aware of this in a study done in Pakistan¹³. This question was not asked in the Saudi study of 2007. Perhaps with the passage of time, the knowledge about organ donation in general has improved globally. Still, some of the expected knowledge was lacking. Only 40% of common people are aware of corneal transplants, while 9% falsely think that the brain can be transplanted. Similar findings were reported by other local researchers in the recent past¹⁴. These knowledge gaps need to be filled. Effective awareness campaigns can help the common people understand the whole process and their role in it¹⁵.

Religious beliefs have long been affecting the tendency to donate and even receive an organ from another person. With better awareness about the cause and true religious teaching, this negative effect has been gradually corrected. It doesn't seem to be a hindrance, as 96% of the respondents in our study considered it Halal (allowed in religion). Although a formal religious decree in favor of organ donation and acceptance was given as early as 1987, not many people were precisely knowledgeable about it, as found in earlier studies^{16,17}. As many as 10% of Malaysians considered it against Islamic beliefs in a study¹⁸. Earlier studies in KSA showed that 27.5% of people were not ready to donate due to fear that it is against their religious beliefs⁷. This is not the situation at present, and in this aspect, the concept of the general population is clear.

Studies have shown that despite excellent facilities, there still are some physical and psychological risks associated with organ donation, which, when dealt with care, should not pose serious problems¹⁹. Public opinion on the safety of donating an organ was found to be divided in our study. While 58.5% considered it safe to donate, 41.5% thought that it is associated with risks. Out of those who thought that some risk exists, 26% believe that the risk is there but is minimal, while 53% considered the risk to be moderate. 21% have the opinion that donating an organ has high risks involved. The financial aspect was more defined, as 90% believe that the recipient should take care of finances, not the donor, and 22.5% even thought that the donor should get a monetary benefit for the donation. Related to finances is the problem of selling and buying organs illegally. Organ trade is a serious issue in many parts of the world. The issue has been present for years and has been raised in many studies^{20,21}. Different legislations also exist, but the demand-supply imbalance is triggering the trade to flourish. People from third-world countries are donating kidneys for financial gain, and many of them are suffering from complications related to non-optimal conditions during such illegal operations. There have been reports of forced donations in poor countries. In our study, 36% of people consider it ethically fine to sell an organ. The ethical issues related to organ donations and transplants are still not clear to most of the common people throughout the world²².

In some of the previous studies done in KSA and in Pakistan, education had a positive impact on the willingness to donate^{5,8}. This, however, was not the finding in a few other studies²³, and also in our study, as shown in Table 5.

Table 5: Effect of education on tendency to donate

Educational level	Total Participants	Willing to donate while alive	Willing to donate after death
Under-graduate	209	145 (69.4%)	108 (51.6%)
Graduate	405	299 (73.8%)	159 (39.2%)
Masters	37	28 (75 %)	17 (45 %)
PhD	11	05 (45.4%)	03 (27%)

Strangely, the least willing to donate were those with a PhD degree. Similarly, it was unexpected to find that 3 out of 11 PhD respondents did not know that renal transplants are being done in KSA, compared to only 3 out of 37 Master's degree holders. These findings have limitations of having very few PhD. respondents.

We did not include those belonging to the medical profession in our study, as their knowledge cannot be compared with that of a layman, but our study also had the opportunity to compare the tendency to organ donation between common people versus individuals belonging to the medical profession in the same community/area evaluated in other recent studies.

Despite better knowledge and awareness related to the benefits of organ donation, only 41.2% of medical students were willing to donate in a recent study²⁴. Similar findings were found in an older study²⁵. In our study, 72% of common people were willing to donate while alive, and 43.4% were ready to donate after death. This indicates that being in the medical profession may not have any profound effect on the tendency to donate. A larger study involving senior and junior doctors, along with nurses, is needed to validate this finding.

People are also not aware of conditions in which there are contraindications to donation, like Hepatitis B or C positivity⁴. As a result, even the donated organs sometimes get wasted. This was evident in the study of 2016 regarding organ donation and transplant in KSA²⁶.

Although more than 40% of the public is willing to donate their organs once they are dead, only a very small percentage (10.4%) are aware of how and to whom to give consent and get registered. This has serious implications for the number of persons who will actually donate. None of the responders in our study had actually registered themselves as donors after their death. This means that despite the readiness to donate, the potential donor actually will not be donating practically, mainly because about 90% have no idea how to get registered. In a few recent studies with a larger number of responders, more than 50% were willing to donate, but only 7% and 4% had registered in the national donor database^{27, 28}. This then has its effects. In the SCOT report of 2020, it was revealed that out of the total 33728 corneal transplants done till then, only 715 (2.1%) were from local donors. For that year, only 4 (0.6%) donations out of 612 corneal transplants were from Saudi Arabia²⁹. Potential donors are largely unaware of any existing mechanism that actively registers willing donors. Ideally, the decision to donate should come during good health when a person is at peace of mind, can consent, and should then get themselves registered in the National Registry. Unfortunately, this final step of registration is not happening despite the willingness. Different countries have adopted different strategies to boost donations and regularize the related policies³⁰. The option of 'opt-out' is preferred to the 'opt-in' choice as it increases the number of willing donors³¹. Here, the population is asked to say that they are 'not willing' to donate instead of asking who is willing to donate. Some countries have adopted multiple strategies. In Spain, the target of 40 donations per million population per year was achieved and is a success story in this regard³². We in KSA need not only to improve public opinion but also to propagate and ease the methodology of registering those who are willing. Without this step, most of the awareness campaigns will end up as futile. This may be true for many countries, especially in Asia and Africa. In a recent study from Tunisia, 80% of people questioned were willing to donate, but only 1% were actually registered³³. All countries with less active registration systems should take the help of international experiences³⁴.

With more than 93% of respondents being Saudi citizens, our study essentially reflects the trends in that fraction of the population. Though the number of responders is not huge, our findings are significantly alarming to qualify for reporting. The main issue is translating the willingness to donate into actual donations. Concerned authorities must implement better registration awareness and methodology for potential donors. Stagnation in the rate of willing donors, despite more than a decade, also demands revisiting the practices employed in awareness campaigns in the future

Limitations and Strengths:

The study has the limitation of not having a very large number of respondents, as it only involved a specific city and a certain time period. But the very fact that it has still been able to point towards a major reason behind the deficiency of organ donation locally merits it to be eyed by the concerned stakeholders

CONCLUSION:

Our study indicates that despite a lapse of more than a decade, the tendency in common people to donate organs after death has not increased. Some serious gaps in knowledge exist. Considering the increasing demand, we need to increase the donation rate, especially when better-equipped centers are coming up in different parts of the Kingdom. Those willing to donate are unaware of the mechanism involved in getting them registered as a donor. This single factor grossly impedes the number of persons who actually will donate. Awareness campaign programs must be coupled with proactive registration of willing donors, early screening to drop those with contraindications to donate, and regular updating of information related to these potential donors. Donation rates can improve, especially for countries in Asia and Africa, if the authorities revisit and revise their protocols for the active donor registry.

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