



## ASSESSMENT OF THE KNOWLEDGE AND ATTITUDE OF SAUDI POPULATION ABOUT ORGAN DONATION

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### ABSTRACT

Organ donation is considered a charitable act that saves the lives of suffering people facing organ failure. The present study was aimed to assess the knowledge and attitude of Saudi population about organ donation. Descriptive community-based study was conducted in the Kingdom of Saudi Arabia (KSA). The target population were male and female Saudi of 18 to 60 years age living in different regions in KSA. This study got 702 responses from the participants using an online questionnaire. About 83.5% (586) respondents were of age group 18-30 years, 632 (90%) were females, and 477 (67.9%) were from the Western region of Saudi Arabia. The most common source of organ donation information, as reported by the participants, was social media (88.2%), followed by family and friends. It was written by 14 (2%) participants who donated organs, and at the same time, about 125 (17.8%) had registered as organ donors. Only 21.1% participants knew that organ transplantation could be done at any age, and 55.4% knew Islam permits organ donation. The study found lack of knowledge and awareness about organ donation in the Saudi society. The study recommends that it is necessary to educate the people of KSA to improve their knowledge and understanding about organ donation.

**Keywords:** Attitude, knowledge, organ donation, Saudi population

### INTRODUCTION

Organ donation (OD) means the donation of biological tissue or a human organ from a living or a dead person to a needy living recipient. Organ transplantation is a preferred mode of replacement therapy and can be the last recourse of lifesaving or for life-improving treatments (Alsharidah *et al.*, 2018). There are three types of organ donors *viz.*, the living donor, donors after circulatory death (DCDs) [also known as non-heart-beating donors (NHBDs)], and donors after brain-death. OD is ruled out completely only when a donor is diagnosed with cancer or a donor suffers from untreated infection or a condition that affects the nervous system (Woodman *et al.*, 2022).

Worldwide, the demand for organ transplant is growing. However, the awareness about organ donation is poor and nonliving donation rate is dismal *i.e.* 0.05 per million populations as compared to 20 to 30 per million in developed countries (Ghose *et al.*, 2021). In Kingdom of Saudi Arabia (KSA) organ donation was approved in 1982, followed by the establishment of National Kidney Foundation in 1985 which later on in 1993 was developed into the Saudi Center for Organ Transplantation (SCOT). King Salman bin Abdulaziz approved the grant of King Abdulaziz Medal

of third degree to all the citizens in KSA who donate organs. He also ordered to issue organ donation card which aims to encourage the Saudi community to voluntarily fill the donation form. The organ donation rate in Saudi Arabia is low. There is also a relationship between organ donation in KSA and ignorance, lack of knowledge, religious beliefs, cultural influence, family refusal, health care system interaction and stigma (Alghamdi *et al.*, 2023). Therefore, the demand for organ donation has increased among the needy patients in KSA.

As per SCOT, the KSA experiences a decline in the rate of organ donations for years (Alghamdi *et al.*, 2023), despite the lucrative incentives offered for registration as a donor. This decline has compelled many researchers to assess the knowledge level and attitude of Saudi society regarding organ donation. Earlier research has revealed two gaps in previous studies. Firstly, those researchers targeted the educated groups such as medical and paramedical students who are expected to have sufficient knowledge about organ donation, and no one has so far assessed the knowledge of community as a whole. Secondly, no research has been carried out targeting the KSA in general, but such studies were mostly confined to specific cities. Therefore, we believe that the causes of problem have not yet been determined and there is a need for exhaustive studies. Our hypothesis is that there is significant influence of religious beliefs and misconceptions about health on organ donation among the Saudi society at Saudi Arabia. So there is urgent need to assess the influence of religious beliefs and misconceptions on organ donation. Correcting these misconceptions and encouraging the people to donate organs is the responsibility of health institutions. The health workers are expected to promote awareness about organ donation, explain its importance and method of donation, thereby correct the wrong belief about organ donation among Saudi societies. The present study was aimed to establish the relationship between organ donation and religious beliefs, if any, in Saudi society living in Saudi Arabia. The findings are expected to serve a baseline information for 2030 vision to promote people's awareness and correct their information and beliefs about organ donation.

## **MATERIALS AND METHODS**

The present descriptive community base study was conducted in the KSA in the year 2023 [initiated on 3/19/2023 and concluded on 6/3/2023] and the target population was Saudi society, both male and female of 18-60 years age group. We considered it appropriate to reach the majority of target participants who live in different districts of KSA. Message for explaining the major aim of research was circulated among the participants at the beginning of survey. In present study, 700 participants from Saudi society participated. A pre-framed questionnaire was used in this study and distributed among the participants electronically. The tools were tested for validity, reliability and continuity, and modified accordingly. Most of the questions in questionnaire were close-ended, some questions had the option of giving answers or not. The tool assessed an individual's knowledge, attitude, belief and intention towards organ donation as per Singh *et al.* (2018). The demographic data *viz.*, personal information, age, residence, gender, etc. were also collected. The data was collected via an online questionnaire posted on social media so as to reach most of the population. The prior ethical clearance for the study was obtained from the Ethical Committee of Al -Taif University vide No. HAO-02-T-107. Informal consent was obtained from each participant. Message for explaining the major aim of research was circulated among participants at the beginning of survey. Additionally, the collected data were kept with the researchers in order to protect person's confidentiality who participated in this study. The inclusion criteria were: that the subjects are Saudi citizens, and in the age group of 18 to 60 years. The non-Saudi citizens and the respondents of age < 18 or > 60 years were excluded. The questionnaire received responses from different regions of KSA *viz.*, Central, Eastern, Northern, Southern and Western regions.

After data collection, statistical methods were applied to analyse their scores, compare the groups, and draw conclusions about the knowledge levels across different populations. The total knowledge score of each participant was calculated based on the correct and wrong responses. Each correct response was given a score of 1 in case of one best answer item and 0.5 in case there were multiple correct answers. The maximum knowledge score each participant could score was 9. The knowledge scores were converted to percentages to assess the knowledge level of each participant. The knowledge percentage score  $\geq 75\%$  was considered 'good,' 60-74% as 'fair,' and  $\leq 60\%$  as 'poor'. The data generated was analysed using SIPSS statistical software. The initial analysis included the descriptive statistics *viz.*, means, medians, standard deviations, and frequency distributions. Chi square tests was performed to assess the association between two variables and the level of significance used in present study was 0.05. This means that there is a 5% chance of concluding that a difference exists when there is none (Type I error).

### RESULTS AND DISCUSSION

In this study 702 voluntaries, residing in different provinces of Saudi Arabia, participated. Of these 586 (83.5%) belonged to the age group of 18-30 years, 632 (90%) were females, and 477 (67.9%) were from the Western region of Saudi Arabia. The most common source of organ donation information, as reported by the participants, was social media (88.2%), followed by family and friends. Only 14 (2.0%) participants had donated organs, while 125 (17.8%) had registered as organ donors (Table 1).

The responses to the knowledge level is presented in Table 2. The correct definition of organ donation was given by 66.8% participants. Only 41.2 and 31.3% knew that pancreas and intestines could also be donated, while 96.3, 82.3, and 91.0% knew that kidney, heart, and liver, respectively, could also be donated. Only 21.1% knew that organ transplantation could be done at any age. About

**Table 1: Sociodemographic characteristics of Saudi participants**

Socio-demographic characters	Frequency	Percent	
Age (years)	18-30	586	83.5
	31-40	72	10.3
	41-50	36	5.1
	51-60	5	0.7
	>60	3	0.4
Gender	Female	632	90.0
	Male	70	10.0
Province in KSA	Central region	124	17.7
	Eastern region	42	6.0
	Northern region	35	5.0
	Southern region	24	3.4
	Western region	477	67.9
Source of organ donation	Social media	619	88.2
	Family and friends	227	32.3
	Television	144	20.5
	University	9	1.3
Donated organ to any of the members	No	688	98.0
	Yes	14	2.0
Registered donor	No	577	82.2
	Yes	125	17.8

55.4% knew that Islam allows organ donation. Most participants agreed that registering as an organ donor may save someone's life.

The mean knowledge score of participants was  $5.86 \pm 1.73$ . The assessment showed that 33.6% had good knowledge, 31.3% had fair, and 35% had poor knowledge levels (Fig. 1).

The association between the baseline characteristics of participants and knowledge level was non-significant ( $p > 0.05$ ), except for the organ donor registration status. The participants registered as donor had significantly 'good' knowledge level (55.2%) than the unregistered

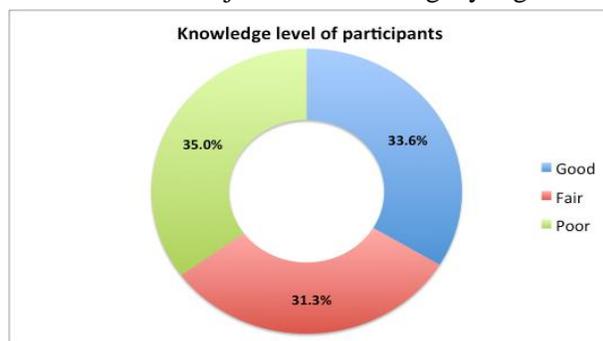
**Table 2: Knowledge level among Saudis related to organ donation**

Queries	N	%	
What is the definition of organ donation	Transfer of tissue and organs from the dead body to a patient who need it	194	27.6
	Transfer of tissue and organs from a living donor to a patient who need it	30	4.3
	All of the above*	469	66.8
	I don't know	9	1.3
	Total	702	100.0
What are the organs/ tissues that can be donated	Kidney*	676	96.3
	Heart*	578	82.3
	Liver*	639	91.0
	Lung*	438	62.4
	Pancreas*	289	41.2
	Intestine*	220	31.3
	Bone marrow*	455	64.8
	Cornea*	416	59.3
	None of the above	6	0.9
What is the age of organ donation	Any age*	148	21.1
	≥18 years	447	63.7
	I don't know	107	15.2
Whether Islam permits organ donation	No	41	5.8
	Yes*	389	55.4
	I don't know	272	38.7
Registering as an organ donor might save someone's life	Agree*	619	88.2
	Disagree	7	1.0
	Neutral	76	10.8
I would like to express my complete readiness to register as an organ donor	If I knew that my family would have no objection to donating my organs after my death	355	50.6
	If I was provided with more information about what organ transplantation is and how to perform it	192	27.4
	If you know where to register	87	12.4
	If you know the legal ruling for registration	328	46.7

ones (28.9%) and vice versa ( $p < 0.001$ ) [Table 3].

The data about the perception & attitude related to organ donation (Table 4) revealed that 61.1% participants believed that organ donation had a positive impact on their life after death. Majority of participants (51.3%) disagreed to the view that a patient would not get adequate care from doctors if he/she was registered as an organ donor. The majority participants (73.9%) also did not believe that taking organs after death may cause any physical deformity, and 57.8% agreed that organ donation would increase if social support was provided to the family of deceased. The most commonly reported demand to express willingness to register as organ donor was to provide more information about what

organ transplantation is and how it is performed (72.6%), followed by 'if they knew that their family would have no objection to donating my organs after my death' (49.4%), 'if they knew the legal ruling



**Fig. 1: The knowledge level among Saudi's regarding the organ donation** [The knowledge scores  $\geq 75\%$  was considered 'Good'; 60-74% as 'Fair' and  $\leq 60\%$  as 'Poor']

**Table 3: The relationship between knowledge level in Saudi's and baseline characteristics**

Parameters		Knowledge level			Total	p value
		Good	Fair	Poor		
Gender	Female	214 (33.9%)	202 (32.0%)	216 (34.2%)	632 (100.0%)	0.325
	Male	22 (31.4%)	18 (25.7%)	30 (42.9%)	70 (100.0%)	
Age (years)	18-30	204 (34.8%)	190 (32.4%)	192 (32.8%)	586 (100.0%)	0.303
	31-40	22 (30.6%)	18 (25.0%)	32 (44.4%)	72 (100.0%)	
	41-50	8 (22.2%)	10 (27.8%)	18 (50.0%)	36 (100.0%)	
	51-60	1 (20.0%)	1 (20.0%)	3 (60.0%)	5 (100.0%)	
	> 60	1 (33.3%)	1 (33.3%)	1 (33.3%)	3 (100.0%)	
Province	Northern	9 (25.7%)	15 (42.9%)	11 (31.4%)	35 (100.0%)	0.254
	Eastern	16 (38.1%)	12 (28.6%)	14 (33.3%)	42 (100.0%)	
	Central	43 (34.7%)	42 (33.9%)	39 (31.5%)	124 (100.0%)	
	Western	157 (32.9%)	141 (29.6%)	179 (37.5%)	477 (100.0%)	
	Southern	11 (45.8%)	10 (41.7%)	3 (12.5%)	24 (100.0%)	
Donated organ to any of the members?	No	231 (33.6%)	216 (31.4%)	241 (35.0%)	688 (100.0%)	0.973
	Yes	5 (35.7%)	4 (28.6%)	5 (35.7%)	14 (100.0%)	
Registered as organ donor	No	167 (28.9%)	180 (31.2%)	230 (39.9%)	577 (100.0%)	<0.001
	Yes	69 (55.2%)	40 (32.0%)	16 (12.8%)	125 (100.0%)	

for registration' (46.7%) and 'if they know where to register' (12.4%).

The participants who were registered as a donor had significantly 'good' knowledge levels (55.2%) than those who hadn't registered (28.9%) and vice versa ( $p < 0.001$ ). The participants who agreed that they believed their organ donation would have a positive impact on their life after death had significantly 'good' knowledge (42.9%) than those who didn't believe such (13.7%),  $p < 0.001$ . At the same time, those who disagreed that in emergency cases the patient would not find adequate care from doctors if he is registered as an organ donor demonstrated significantly 'good' knowledge level (40.8%) as compared to those who believed so (29.7%),  $p < 0.001$ . No significant differences

**Table 4: Perceptions and attitude of Saudi's towards organ donation**

Questions	Agree		Neutral		Disagree		p value
	N	%	N	%	N	%	
I believe my organ donation will have a positive impact on my life after death	429	61.1	222	31.6	51	7.3	< 0.001
In emergency cases, the patient will not find adequate care from doctors if he is registered as an organ donor	101	14.4	241	34.3	360	51.3	< 0.001
Taking organs after death may cause physical deformities	183	26.1	-	-	519	73.9	< 0.325
Organ donation will increase if social support is provided to the family of deceased	406	57.8	-	-	296	42.2	< 0.001
Are you ready to register as an organ donor?	No		Yes		Undecided		p value
	N	%	N	%	N	%	
	139	19.8	220	31.3	343	48.9	< 0.001
Demands/concerns to express complete readiness to register as an organ donor	If I knew that my family would have no objection to my organ donation after my death		More information about what organ transplantation is and how to perform it		If you know where to register for organ donation		If you know the legal ruling for Registration
	N	%	N	%	N	%	
	347	49.4	510	72.6	87	12.4	328 46.7

were observed in knowledge level with the belief that 'taking organs after death may cause physical deformities' ( $p = 0.325$ ). It was found that the participants who agreed that organ donation would increase if social support is provided to the family of the deceased' significantly demonstrated 'good' knowledge level (32.9%) than those who disagreed (26%),  $p < 0.001$ . Participants who were willing to register as an organ donor significantly showed 'good' knowledge level (50.9%) than those who were not willing to do so (20.9%),  $p < 0.001$ .

The Kingdom of Saudi Arabia's advancements in science and education had significant impact on people's general understanding and awareness about organ donation issue, which inspired us to conduct this study across the country. The demographic data revealed that 477 participants (67.9%) were from Western region and majority participants (90%) were females. About 83.5% (586) participants were in the age range of 18 to 30 years, which supports the belief that younger generations in society are most likely to bring about changes in health-related aspects (Agrawal *et al.*, 2017). Al Moweshy *et al.* (2022) from Saudi Arabia reported no significant differences between the participant's gender and their knowledge and awareness of organ donation. They conducted their study in a Saudi Arabian hospital and involved 403 participants; of these, 44.66% were between the ages of 18 and 25 years. When it came to sources of information about organ donation, participants indicated that social media was the most common source (88.2%), followed by family and friends. In a cross-sectional study, Darwish *et al.* (2021) reported the use of internet as a source of information by 32.4% (1,508) Saudi participants. Thus internet appears to play a significant role in raising participant's knowledge and awareness about organ donation. Regarding actual organ donation, only 2% participants had actually donated their organ, which contrasts with the previous studies in Saudi Arabia in 2021 where negative percentages were observed (Darwish *et al.*, 2021). They found that of the 1,508 participants, only 9 answered yes to this question, indicating a significant improvement. A program for organ donation is included in Tawakkalna app, whether it be during one's lifetime or after their passing away, with results indicating that only 17.8% participants were registered in the program, while majority (82.2%) were not (Table 1). In a survey, kidney donation was the top choice among the participants while thinking about organ donation, receiving 96.3% votes. This aligns with previous the study conducted in Saudi Arabia (Binsaleem *et al.*, 2017). In terms of awareness of other organs available for donation, the liver received the second highest votes (91%) followed by heart (82.3% votes); while bone marrow, lung, cornea, and pancreas received 64.8, 62.4, 59.3, and 41.2% votes, respectively (Table 2). The present study revealed that 66.8% participants could correctly define organ donation that it involves transferring tissue or organs from a living or deceased individual to a patient in need. Merely 21.1% respondents were aware that organ transplantation has no age limit. Only 55.4% participants knew that Islam allows organ donation (Table 2), suggesting a necessity to promote Islamic views on organ donation. Conversely, a study in Saudi Arabia in 2022 showed a higher awareness (84.09%) regarding Islam's stance on organ donation. Nearly 88% participants in a study at King Faisal University conducted in 2022 agreed that becoming an organ donor could potentially save a life. Al Moweshy *et al.* (2022) reported that almost 98% participants were aware of the life-saving benefits of organ donation. In present study only 50.6% participants affirmed willingness to register as an organ donor if their families had no issues with donating organs after death. The majority of participants (61.1%) felt no fear about organ donation and believed that it will benefit the society. Over 50% respondents did not believe that being an organ donor would impact the quality of medical care received, while the rest were divided between those who thought organ donors may not get optimal care in emergencies and those who were unsure. In reality, the decision to become an organ donor does not affect the level of care provided, as all patients are treated equally.

Most participants (73.9%) believed that the idea of physical deformities resulting from organ donation after death was simply a misconception and a misguided belief (Table 4). We also surveyed whether participants believed that providing social support to the families of donors would increase donation rates. More than half of participants (57.8%) agreed that offering support to the deceased donor's family would increase organ donation rates. Further, we evaluated participant's

ultimate decision to register as organ donors and found 31.3% were willing to do so. There was no significant relation between knowledge level and participant's gender ( $p = 0.325$ ) in the studied population. Somaili *et al.* (2022) reported similar findings in a study on Saudi population. In present study no significant relation was observed between the age of participants and their knowledge level ( $p = 0.303$ ). However, Somaili *et al.* (2022) in a study conducted in Jazan, Saudi Arabia found a significant relation between age and knowledge level of organ donation ( $p < 0.001$ ). They concluded that individuals aged 18-30 had a higher knowledge score as compared to other age groups. There was no correlation between the province of participants in Saudi Arabia and their knowledge level ( $p = 0.254$ ). Our study revealed a strong link between the individuals who had earlier signed to be organ donors and their knowledge level ( $p < 0.001$ ). Our study found many positive correlations between knowledge level and perception/attitude towards organ donation. Participants who believed that organ donation would positively impact their lives after death had significantly higher knowledge levels than those who didn't ( $p < 0.001$ ). The participants who disagreed with lacking sufficient care from doctors during emergencies as organ donors exhibited significantly higher knowledge levels ( $p < 0.001$ ). Participants who thought that harvesting organs post-mortem could result in physical abnormalities did not demonstrate any significant difference in their understanding level ( $p = 0.325$ ). Our research indicated that individuals with high knowledge scores were more supportive and believed that organ donation would rise with social support for the family of deceased ( $p < 0.001$ ).

**Limitations:** A major difficulty in the study was the difficulty in accessing all the Saudi communities. The access to Saudi community or a study sample is a difficult task for one or the other reasons like the lack of interest to response from a large segment of community and their neglect of questionnaire or their reservation to provide complete information for some or other reasons. This hinders the collection of desired research information.

**Conclusion:** The cross-sectional survey in Saudi Arabia revealed that the knowledge, attitudes and beliefs about organ donation in Saudi people were promising and supportive. Most participants agreed that Islam allows organ donation, and such donations can save a person's life. The majority were found willing to donate their organs if their families had no objection. The people in Saudi Arabia have good knowledge level about organ donation. More than 50% participants agreed that the patient will receive good health care if the attending doctors know that the patient is registered as an organ donor. Further, donation rate would increase if there was social support for the family of the deceased. The most participants consented their willingness to register as an organ donor if more information was available on organ transplantation. The study emphasized to create more awareness among the people so as to improve their attitude and beliefs towards organ donation after death.

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