



Knowledge and Awareness of Organ Donation and Brain Death among the Population in Al-Ahssa, Saudi Arabia

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Authors' contributions

This work was carried out in collaboration between both authors. Author AA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SA supervised the study and managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Background: Organ donation plays an important role in the treatment of cases of end organ failure and it has saved thousands of lives in the world. There is a worldwide shortage of donors in comparison to the need for transplantation. In Saudi Arabia, inadequate knowledge and inappropriate attitude are one of the most important barriers for organ donation.

Aim: The present study was designed to assess the knowledge and awareness of organ donation and brain death among the general population in Al-Ahssa Saudi Arabia.

Methodology: A cross-sectional study was conducted in Al-Ahssa, Kingdom Of Saudi Arabia (KSA) in the period from February to April 2017. A pretested standardized questionnaire was used

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to collect information upon knowledge and awareness about organ donation and brain death, Sample technique used is Simple Random Sampling, Data entry was performed using SPSS Version 24 software.

Results: the responses of 410 of which 257 (62.7%) female and 153 (37.3%) male. The mean age was 29 years, the majority of the participants have a bachelor degree 251 (61.2%), followed by 136 (33.2%) with high school degree and 23 (5.6%) with master or Ph.D. degrees. 342 (83.4%) of the participants did not know the systemic regulation of organ donation in our country and how they can get the donation card. Majority of the sample 331 (80.7%) reported social media as the main source of information, followed by symposium and campaign 28 (6.8%). 141 (34.4%) of participants are willing to donate their organs while 70 (17.1%) do not want to donate and 199 (48.5%) are not sure. 255 (62.2%) suggest providing educational and health insurance to the family as a promotion to increase organ donation. More than a third of our respondents had a misunderstanding regarding brain death and if patients can donate their organs or not.

Conclusion: The study shows that The population has inadequate knowledge about organ donation and brain death, it is important to generate more awareness regard this issue through the internet and educational campaigns to increase the knowledge and awareness.

Keywords: Organ donation; transplantation; knowledge; awareness; general population; Saudi Arabia.

1. INTRODUCTION

Organ transplantation plays an important role in the treatment of cases of end organ failure and it has saved thousands of lives in the world [1-2]. There is a worldwide shortage of donors in comparison to the need for transplantation [3-4]. Assessment of the public knowledge and attitude regarding the organ donation is important to increase and develop educational programs to raise the public awareness of organ donation this will increase the number of donation and promote the concept in general population [5-6]. organ donation has complex issues including ethical, medical, religious, legal, organizational, and social factors [7].

Attitude of populations toward deceased donor is an important public health problem because the prior consent of the donor or of a close relative at the time of death may trigger family communication and ease the physicians' approach to family about donation. [8-9]. Lack of awareness along with the misconception of brain death are the main reasons for a low percentage of organ donation [10-11]. Motivation to donate has been shown to have a positive association with knowledge and awareness of organ donation [12]. In Saudi Arabia there is a wide gap between the number of patients on the waiting list and the available number of organ donors [13] in the annual report of Saudi center for organ transplantation in 2015 they mentioned that the number of brain dead patient was 629 most common causes was cerebral vascular accident, blunt brain trauma and hypoxic brain [13], only 101 (30.4%) of the brain dead patient's family agreed for organ donation [13]. Therefore, we

should increase the awareness of population regarding this issue.

There is a lack of studies about enhancing of organ donation published In Saudi Arabia. Therefore this study was designed to assess the knowledge and awareness of organ donation and brain death among the public in Al-Ahssa, Saudi Arabia.

2. METHODOLOGY

2.1 Study Design

A cross-sectional study was conducted in Al-Ahssa, Kingdom of Saudi Arabia in the period from February to April 2017.

2.2 Target Population

Adults from the age of 15 to 55 years in different area in Al-Ahssa, Kingdom of Saudi Arabia were selected in order to assess their knowledge and awareness of organ donation and brain death.

2.3 Data Collection

A standardized questionnaire was used to collect information upon knowledge and awareness of organ donation and brain death. The study population was randomly selected from a number of different venues in Al-ahsa in order to increase the generalizability of the findings. After obtaining informed consent, The questionnaire was distributed to the participants in schools, universities, malls, restaurants, gyms, and gardens. The respondents were assured that their confidentiality would be maintained. The

questionnaire consisted of four sections: (i) socio-demographic data, (ii) systemic regulation of organ donation in Saudi Arabia, (iii) knowledge and attitude regarding organ donation. (iv) knowledge about brain death. The questionnaire was pre-tested and translated into Arabic language and then back-translated to English to validate the translation. The questionnaire was constructed based on similar research [7-14-15] but adapted to suit the Saudi context. Simple random probability sampling was performed, The Sample size was determined by using the Raosoft sample size calculator using a margin of error of 5%, a confidence interval of 95%, a population size of 1,063,112 people, and an expected response of 50%. The minimum sample size estimated for the study was 384. Assuming a response rate of 50%, a larger sample size of 405 was expected in the study.

2.4 Data Analysis

Internal consistency and reliability were assessed by applying a Cronbach's alpha test (at a minimal $\alpha = 0.71$). Data analysis was performed using SPSS Version 24 software. P-values were considered statistically significant if $P < 0.05$.

3. RESULTS AND DISCUSSION

Four hundred and ten (410) participants were included in this study, all of them from Al-Ahssa city which is located in the eastern region in Saudi-Arabia.

3.1 Demographic Data

The great majority of the study population was female (62.7%), between 20-29 years old (52.9%), Muslim (98.5%), with bachelor's degree (61.2%) (Table 1).

3.2 Sources of Information

Majority of the sample 331 (80.7%) reported social media as the main source of information, followed by symposium and campaign 28 (6.8%) (Table 2).

3.3 Knowledge of the Systemic Regulation of Organ Donation in Saudi Arabia

The participants were asked if they knew the regulation system and the way of organ donation in Saudi Arabia, majority of the sample 342

(83.4%) were not aware of the regulation system, and only 68 (16.6%) know the system of organ donation in Saudi Arabia. A significantly higher percentage 395 (96.3%) of the respondents did not have the card of organ donation.

Table 1. General characteristics of the respondents (N=410)

Characteristics	N (%)
Gender:	
Male	257 (62.7)
Female	153 (37.3)
Age (years):	
15-20	106 (25.9)
20-29	217 (52.9)
30-39	61 (14.9)
40-49	19 (4.6)
50-55	7 (1.7)
Religion:	
Muslim	404 (98.5)
Non-Muslim	6 (1.5)
Education level:	
High School	136 (33.2)
bachelor's degree	251 (61.2)
master or Ph.D. degree	23 (5.6)

Table 2. Sources of information about organ donation (N=410)

Sources	N (%)
Internet and Social media	331 (80.7%)
Television	39 (9.5%)
Radio	2 (0.5%)
Newspaper and magazine	10 (2.4%)
Symposiums and campaign	28 (6.8%)

3.4 Knowledge and Behavior of Participants about Organ Donation

Regarding the willingness for organ donation, 141 (34.4%) of participants were willing to donate while 70 (17.1%) did not want to donate their organs and 19 (4.8%) not sure if they will donate their organs or not. when respondents were asked about who should have the decision for organ donate, 290 (75.7%) answered that the family should decide against the doctors, And 120 (24.3%) answered that the doctor should take the decision. 86 (21%) incorrectly answered that deceased donor can save a 1-2 lives, 153 (37.3%) said 3-4 lives, 92 (22.4%) said 5-6 lives, and only 79 (19.3%) of the participants answered correctly that deceased donor can save 7-8 lives.

Table 3 shows us the reasons for refusal of organ donations.

Table 3. Causes of populations refusal of organ donation (N=410)

Causes	N (%)
Family reasons	211 (51.5)
Religious reasons	81 (19.7)
Medical reasons	30 (7.3)
Body disfiguration	24 (5.9)
Others	64 (15.6)

The respondents were asked about what could promote to increase the organ donation and 255 (62.2%) suggest to provide educational and health insurance to the family while 155 (37.8%) suggest financial rewards to the donor.

Participants were asked about which organs can be donated during life and which organs can be donated afterlife and their answers in the following table (Table 4).

Table 4. Knowledge about donated organs (N=410)

Organs	Yes N (%)	No N (%)
During life:		
One kidney	365 (89)	45 (11)
Part of Liver	329 (80.2)	81(19.8)
Bone marrow	154 (37.6)	256 (62.4)
Afterlife:		
Kidneys	310 (75.6)	100 (24.4)
liver	284 (69.3)	126 (30.7)
heart	334 (81.5)	76 (18.5)
lungs	214 (52.2)	196 (47.8)
pancreas	155 (37.8)	255 (62.2)
cornea	247 (60.2)	163 (39.8)

3.5 Knowledge about Brain Death

We asked the population about the definition of brain death and 347 (84.6%) answered correctly that brain death is an irreversible death of brain function, 59 (14.4%) agreed that brain death is a reversible stop in brain function and only 4 (1%) said that brain death is stopping of heart function.

249 (60.7%) of the respondents correctly agreed that brain dead patient can donate his/her organs while 28 (6.8%) said no and 133 (32.4%) do not know if brain dead patient can donate or not. 131 (32%) of the respondents incorrectly agreed that brain dead patient can be cured 138 (33.7%) said no and 141 (34.4%) do not know if brain dead patient can be cured or not.

Finally, 334 (81.5%) of participants would like to know more information about organs donation.

4. DISCUSSION

The study shows that populations have inadequate knowledge about organ donation.

In our result, we find that participants with bachelor degree have more knowledge than others, we found that younger participants tend to donated more than others and that's might be due to their frequent uses of the internet and social media. Many reports concluded that female gender was significantly associated with positive attitude towards organ donation [15,16,17]. In our study we found that the major source of information was the internet and social media, only 6.8% gained knowledge through campaigns and symposiums, This shows that the internet plays a key role in raising awareness of organ donation. Also the study showed that 34.4% of participants were willing to donate their organs which is very low when compared it with the data reported by [5], which showed than 62.2% were willing to donate organs and to another study reported by [18], showed that 85% of the respondents were willing to donate their organs. Our study showed that Family and religious reasons were the most common reasons for a significant proportion of unwillingness for organ donation. In different studies, health concerns were the main causes to oppose donation including fear of living with one kidney, fear of operation, and other medical reasons, in addition to inadequate information on organ donation [19-20]. Our study showed that most of the participants did not know the regulation system and how can they proceed if they want to donate, more than 90% did not hear about donation card that used in Saudi Arabia. And we noticed that about 50% of respondents did not know if they will donate or not, therefore we must encourage this population to take the right decision. Our study also shows also 84.6% knew the concept of brain death which is high when compare it to a study done by [21], which reported that only 38% knew the concept of brain death. 32% of participants incorrectly agreed that brain dead patient can be cured which is high if we compare it with a data reported by [22], which showed that 22.5% have this misconception.

We recommend providing promotions to encourage population for organ donation as answered by more than half of our respondents to provide education and health insurance to the family.

And finally, we need to increase population education, especially that more than 80% of respondents would like to know more information regard organ donation, so we can use several things internet and social media, and to dedicate and arrange public campaigns and workshops to raise the awareness of the general population.

5. LIMITATION

This study was conducted in different locations in urban areas. Therefore, the result of this study may not represent the entire city. To improve this issue, a larger scale study needs to be performed in different places, including rural areas, to obtain a diversified study population

6. CONCLUSION

In this study we concluded that population in Al-Ahsa, Saudi Arabia, had inadequate knowledge overall of organ donation and brain death, Increasing population awareness would be important to increase population knowledge and comprehension about organ donation processes,

Some suggestions would be using the internet, social media and educational campaigns to increase the knowledge about organ donation and brain death.

CONSENT

All authors declare that informed consent was obtained from the participants for publication of this study.

ETHICAL APPROVAL

All authors hereby declare that the study approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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