

# Organ Donation In Bahrain

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**Introduction:** Organ-donation research is vital to save human lives and to give people in need hope and longer lives. There are three ways to donate an organ: in the event of brain-stem or circulatory death, and living donation. Organ donation can be done for two reasons: medical research and transplantation into another person in need of that organ. Transplanted organs include kidneys, lungs, hearts, pancreas, bone marrow, bones, skin, corneas, and intestines. There are some organs that can be donated while the donor is still alive, such as part of the liver, kidney, part of the pancreas, part of the lung, and part of the intestine, with the rest occurring after the donor is dead.

**Objective:** The purpose of this research was to present the history of organ donation in Bahrain, how people in Bahrain are aware of organ donation, and who decides to donate their organs, do not accept donation of their organs, and those who are still thinking about it. Moreover, interviewing specialists and studying the record of transplant surgery will give us knowledge of organs available in Bahrain, the number of the transplants that have taken place, and surgery that has not taken place yet. It is hoped that this research will encourage people to donate their organs, help patients to have a completely normal life again, and motivate more researchers to explore this area.

**Methods:** The technique used in this study was based on data collected from different and various resources and studies about organ donation and transplantation in general and Bahrain in particular. In order to enrich this research, an interview with an expert in the field is held. In addition to that, a deep questionnaire was used to assess the number of participants in the organ-donor registry and those waiting for an organ transplant, in addition to getting a look into their history to see if they had ever gone under transplant surgery, whether as a donor, recipient, or neither, and to know their position regarding different organ-donation aspects.

**Results:** Quantitative parameters were extracted from responses and participants' views. The results showed that Bahrain has few people on the organ-donor register, few waiting for transplant surgery, and few who had undergone transplant surgery, in addition to very different responses regarding willingness to donate organs: many were not willing to donate their organs or not sure. Few knew about laws and regulations in Bahrain, which might have been the reason for the low numbers on the organ-donor register. Also, those willing to donate their organs were aged 18–24 years, but despite that, most would donate an organ for their loved ones, while on the other hand most would not donate family member's organs. The results also showed that most would not donate for money.

**Conclusion:** The data extracted from this study can be used in a quantitative description of organ donation in Bahrain in many aspects. Overall results show how to prevent the problem of organ failure by lessening prevalence its main factors and to spread awareness of donating organs.

**Keywords:** organ, donation, Bahrain, transplantation, donor, recipient, surgery, organ failure

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## Introduction

In recent times, organ donation has become an important issue. It has a huge impact on recipients, donors, and their relatives. It would hardly be an exaggeration to say that this is

one of the important issues this century deserving attention from all over the world. Bahraini citizens have a high prevalence of organ failure, specifically due to kidney-failure risk factors, eg, diabetes.<sup>1</sup> An equally significant aspect of organ donation is societal awareness of this issue, and for that reason this research explores Bahraini citizens' thoughts and beliefs. This research aimed to focus on the history and future of organ donation in Bahrain and the views of Bahraini citizens on this issue. A global organ-transplantation study showed via expert review or literature and web-based searches that Bahrain is currently engaged in transplantation activity.<sup>2</sup>

## History Of Organ Donation In Bahrain

In 1971, there was renal replacement therapy with a single dialysis machine. Hemodialysis started in 1980 with an artificial-kidney unit being established.<sup>3</sup> Bahrain finally agreed to organ transplantation in 1998, with surgery being able to be performed with written consent from the recipient and the donor after making sure that both were fit to go through with this procedure. According to Bahraini law, the donor has the right to withdraw his/her consent before the surgery takes place.<sup>4-7</sup> The first renal transplant conducted in Bahrain in 1995 by Dr George Abouna,<sup>8</sup> and there were six transplant operations performed by the same doctor in that year.<sup>3</sup> Live related donations began in 1996, and the physicians were Drs George Abouna and Ahmed Al-Arrayed.<sup>9</sup> Dr George Abouna did an incredible job during his stay in Bahrain (-1994-1999), performing 58 renal transplants.<sup>10</sup> According to a study published in 2013, in 2012 there were no organ-transplant operations except renal transplantation, of which there were ten, all from living donors. Total renal transplantations in Bahrain numbered 120, 20 of which were from deceased donors and the rest from living donors.<sup>8</sup> Bahrain is a member of the World Health Organization, and organization statistica showed that 57% of its members were at least engaged in some organ transplantation between 2006 and 2011.<sup>11</sup> Bahrain also cooperates with the Saudi Transplant Center and Jordanian medical teams, and many transplants have been conducted over the years, such as livers and kidneys.<sup>12,13</sup> In 2012, there were eight countries — Bahrain and another seven Middle Eastern countries — that had no deceased donations.<sup>8</sup>

## Kidney Transplants In Bahrain

A study conducted in 2014 with 1,200 participants showed that 53% knew what chronic renal failure was; however, only 31% knew how to treat it and 31.1% had heard about kidney transplantation in Bahrain.<sup>14</sup> Transplantation from a deceased

donor is still rare in Arab countries,<sup>15</sup> and unfortunately a review of a recent 44 studies by the Gulf Cooperation Council showed that the prevalence of end-stage renal disease has increased.<sup>15</sup> Between the first renal transplant in 1995 and December 2013, 125 renal transplants were performed on 81 males and 44 females aged 3-66 years. There were 115 living donors and 20 deceased donors. After the transplant, the follow-up period was 1-216 months. Unfortunately, 22 patients had acute rejection: 15 had severe infections and seven due to this infection. As diabetes is a prevalent risk factor for kidney failure, diabetic nephropathy was responsible for 22.4% of end-stage kidney disease.<sup>14</sup> Despite this result, a study showed that as much as diabetes was considered risk factor for kidney failure, it did not affect surgery in terms of survival and complications.<sup>16</sup>

## Bahrain Citizens' Views on Organ Donation

A useful starting point for this study was a questionnaire done by the newspaper *Al-Watan* that 71% of Bahraini citizens were ready to donate their organs, 2% had already donated, and 27% were against donating their organs, as shown in Figure 1. The sample comprised 1,004 participants who answered the question: "Would you donate an organ while alive or are you going to donate after your death?"<sup>17</sup> There are contrasting views in Bahrain when it comes to organ donation. Some people are against organ donation for various reasons. A study conducted in 2014 showed that 35.5% of participants feared that organ donations may conflict with their religion, 25.6% believed it had no benefits, and 39.4% were afraid of surgery.<sup>18</sup>

Would you donate an organ while alive or are you going to donate after your death?

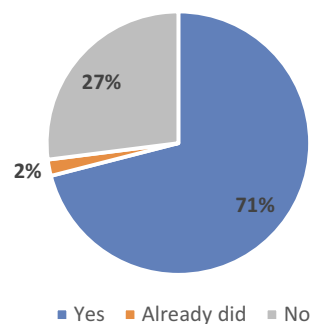


Figure 1 *Al-Watan* questionnaire.

## Bahrain Compared To Other Middle Eastern Countries

To examine different aspects of this issue, this research aimed to compare Bahrain with other Middle Eastern countries, such as Saudi Arabia and Jordan, in terms of organ donation and transplants activities in 2004 and 2005 according to international data on organ donation and transplantations. Bahrain did not have many organ donations or transplantation in 2004. Only 30 kidney transplants of all transplants were from living donors, but in 2005 the situation had improved, with three organ donations from deceased donors and 27 from living donors. However, there were 34 organ transplants: 27 of these were from living donors and the other seven from deceased donors. Compared to Saudi Arabia and Jordan, Bahrain organ donations and transplantations are few in number in Saudi Arabia in 2004, there were 267 organ donations, of which 208 were from living donors and 59 from deceased donors. There were three types of organ transplants in Saudi Arabia: kidney transplants, with 294 surgeries, 208 from living donors and 86 from deceased donors; liver transplants, with 70 surgeries, 40 from living donors and 29 from deceased donors; and a lung transplant, which was the only surgery conducted in 2004, from a deceased donor. Moreover, in 2005 Saudi Arabia performed 289 surgeries, 68 from deceased donors and 221 from living donors. Organ donation and transplantation saw a new type of transplant surgery: heart transplants, with eight surgeries and of course all from deceased donors. Also, the other types of surgery increased compared to 2004: kidney transplants (316 surgeries, 221 from living donors and 95 from deceased donors, liver transplants (decreased compared to 2004, with 60 surgeries, 32 from living donors and 28 from deceased donors, lung transplants (just two surgeries). Jordan was also considered active in 2004 and 2005 compared to Bahrain. In 2004, there were only kidney transplants: 185 surgeries, 183 from living donors and two from deceased donors. However, in 2005 the number of kidney transplants decreased: 166 surgeries, all from living donors. However, there was a new type of transplant surgery in Jordan: liver transplants, with six surgeries, all from living donors as well. To sum up, all these data show that Bahrain is very much less active than Saudi Arabia and Jordan.<sup>19</sup>

## Methods

This study set out to investigate Bahraini citizen knowledge on organ donation and their opinions on different directions related to that subject, with an aim of raising awareness regarding organ donation. The study design was approved

by the Ethical Committee of the College of Arts and Science at the Applied Science University, Bahrain. Written consent was obtained after informing participants about the goal of the survey and that their responses would be used prior to answering survey questions. The survey generated many different responses.

## Data Collection

Data were collected from various resources and studies about organ donation and transplantation in general and Bahrain in particular. In order to enrich this research, an interview with an expert in the field was done with Dr Ahmed Salem Al, who participated in the first ever transplant surgery in Bahrain by Dr George Abouna in 1995 at Bahrain Defence Force Hospital — a kidney transplant.

Law 16 on the transfer and transplantation of human organs was adopted in Bahrain in 1998 by Shaikh Isa bin Salman Al Khalifa. From the first transplant surgery till 2001, 58 kidney transplants donated by relatives were performed at Salmaniya Hospital, and now 105 kidney transplants have been performed by Bahraini, Saudi, and Jordanian doctors. Organ-transplant surgeries total 150, with five from dead brain-stem dead donors, donated with the consent of the parents. Bahrain has not conducted any organ transplant surgery other than kidney transplants, while liver, lung, and heart transplants surgeries take place in Saudi Arabia. The Ministry of Health is seeking to continue these surgeries and hopes to perform these transplants with the help of Arabian Gulf countries, especially Saudi Arabia. The Kidney Patients Association was established in 1989, and its main objective is to encourage people to donate their organs. Donation cards can be obtained from Yusuf Al-Moayed at the Kidney Diseases Unit, Salmaniya Hospital.

A questionnaire was conducted to assess the number of participants in the organ-donor registry and those waiting for a transplant, whether they had ever undergone transplant surgery as a donor, recipient, or neither, their position on donating their organs after death (not sure/just some or all of their organ/not willing to donate), their level of awareness of laws and regulation in Bahrain (a little bit/enough/a lot/none), whether they would donate their organs to their loved ones (might be/do not know/no), whether they would donate loved ones' organs if they wanted to help others, were sure that person would like to donate, could not donate because they could not do it for their loved ones or were not sure if that person would like to donate, or simply did not know, and finally to determine if they would donate for

money (might be/do not know/no). Both sexes and all age-groups (<18, 19–24, 25–34, 35–44, 45–54, 55–64, and 65+ years) were included. This cross-sectional study included 580 people to spread awareness of organ donation due to its importance.

The questionnaire showed that 95.17% of the sample were not on the organ-donor registry, while 4.83% were on the registry, and 92.41% were not waiting for organ transplantation, 7.59% were waiting for organ transplantation, 93.10% had never undergone transplant surgery, and 2.07% of them had undergone transplant surgery as a recipient. One of the most interesting questions of this questionnaire showed that 40% of the sample were not sure if they were willing to donate their organs, while 11.03% wanted to donate some of their organs after death. Regarding knowledge of organ-donation laws and regulations in Bahrain, 71.72% of the sample did not know about laws and regulations, while 5.52% knew a lot. Moreover, 55.86% would donate an organ for their loved ones, while 8.97% did not know if they would. One of the hardest questions in the questionnaire showed that 35.86% of the sample could not donate a family member’s organs, while 11.72% of them would donate their family member’s organs if they were sure that the family member would have liked to donate or just wanted to help other people. Finally, 75.86% of the sample will not donate an organ for money while 5.52% would donate for money. Of

the sample, 48.97% were aged 18–24 years, while 2.07% were aged 55–64 years.

## Results And Discussion

The majority of the 580 participants were female — 87.59% (Figure 2).

With regard to age, the majority were 18–24 years old, 48.97% 35–44 years old, 15.17% 25–34 years old, 14.48% <18 years old comes with 11.72% also the range from 45–54 years old with 7.59%. Finally, those aged 55–64 years came at the bottom of the list, with 2.07% (Figure 3).

Only 4.83% of the participants were on the organ-donor registry (Figure 4), while 95.17% were not.

In sum, 7.59% of participants were waiting for a transplant, while 92.41% were not (Figure 5).

In sum, 93.10% of participants had never undergone a transplant surgery, 4.83% had as a donor, and 2.07% had as a recipient (Figure 6).

Willingness to donate an organ after death had many different responses: 40% were not sure, 35.17% were not willing, 13.79% were willing to donate all their organs, and 11.03% were willing to donate some of their organs (Figure 7).

Most participants did not know about Bahraini laws and regulations (71.72%), 16.55% knew a little bit, 6.21% knew enough, and only 5.21% knew a lot (Figure 8).

Participants gave different responses on whether they would donate to their beloved ones if they needed

### What is your sex?

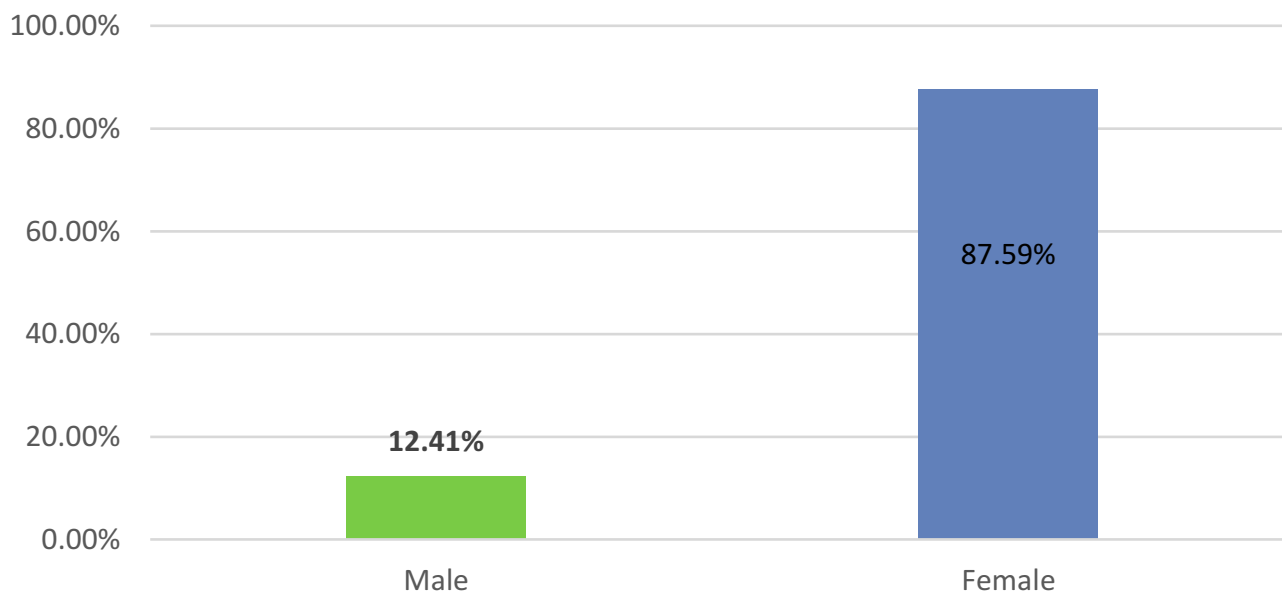
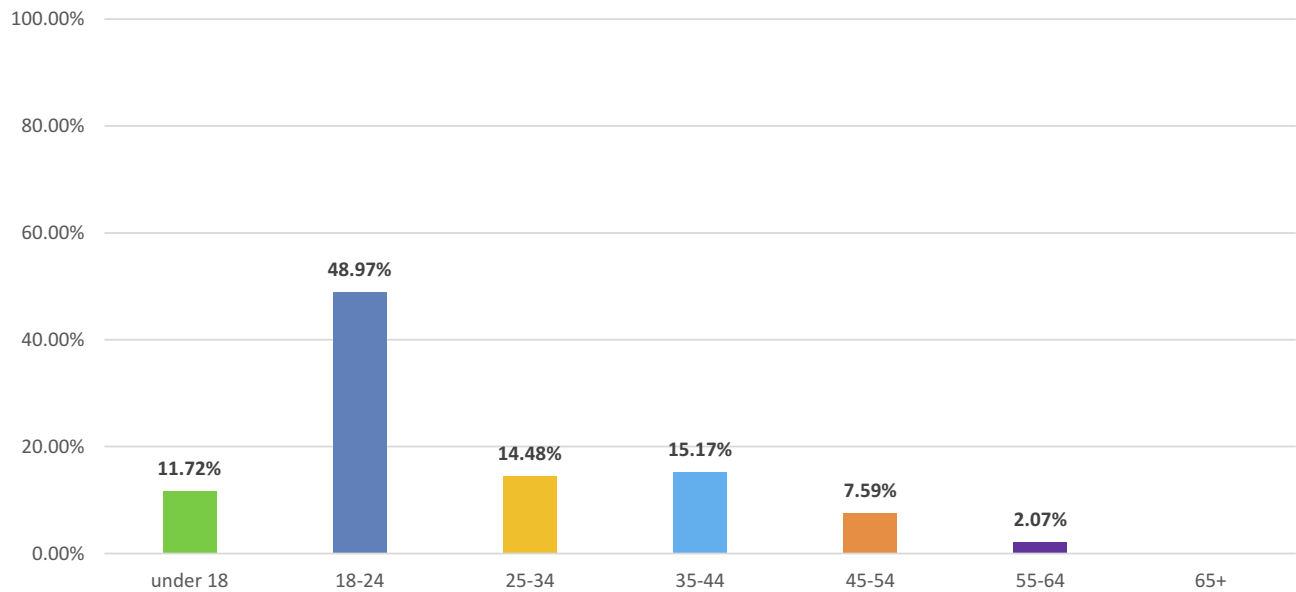


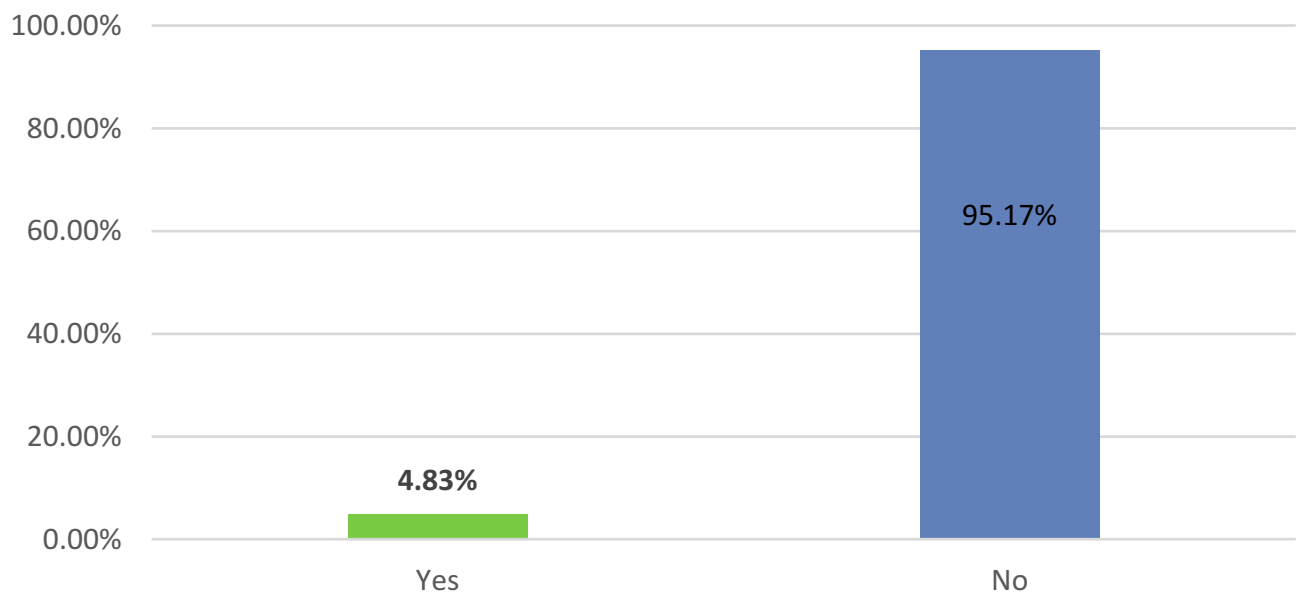
Figure 2 Sex of participants.

### What is your age?



**Figure 3** Age of participants.

### Are you on the organ donor register?



**Figure 4** Organ-donor registries.

a transplant: 55.86% would, 20% might, 15.17% would not, and 8.97% did not know if they could (Figure 9).

Perhaps the hardest question based on the very similar percentages was whether they would donate a family member's organs: 35.86% would not if they were not sure if that person would have liked to donate, while 23.45% did not know. Also, as

shown in Figure 10, the same percentage on they are going to donate their family member to help others and if they are sure that person would like to donate with 11.72%.

Finally, most participants would not donate their organs for money (75.86%) 9.66% did not know, 8.97% might, and 5.52% would (Figure 11).

## Are you waiting for an organ transplant ?

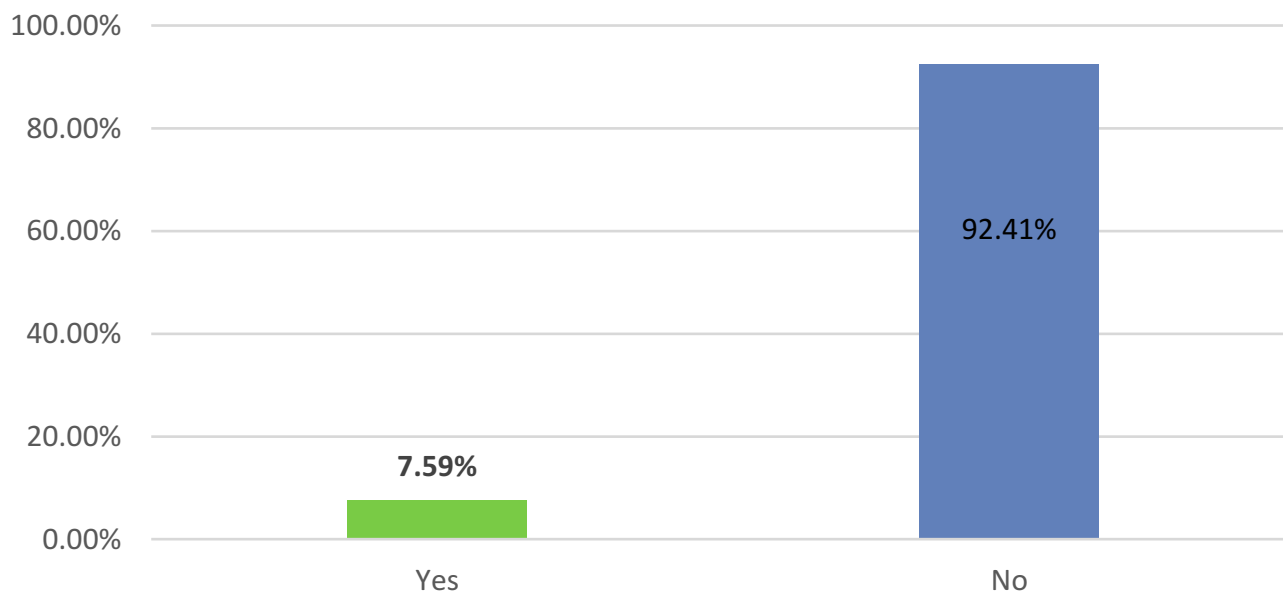


Figure 5 Numbers waiting for organ transplants.

## Have you ever went under a transplant surgery as a donor or a a recipient ?

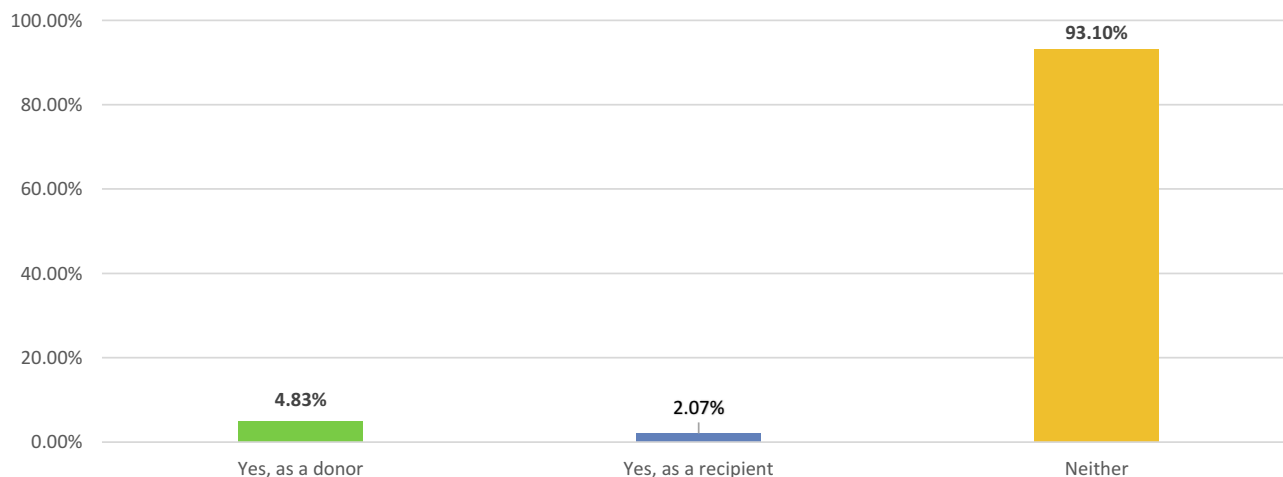


Figure 6 Organ-donor registries.

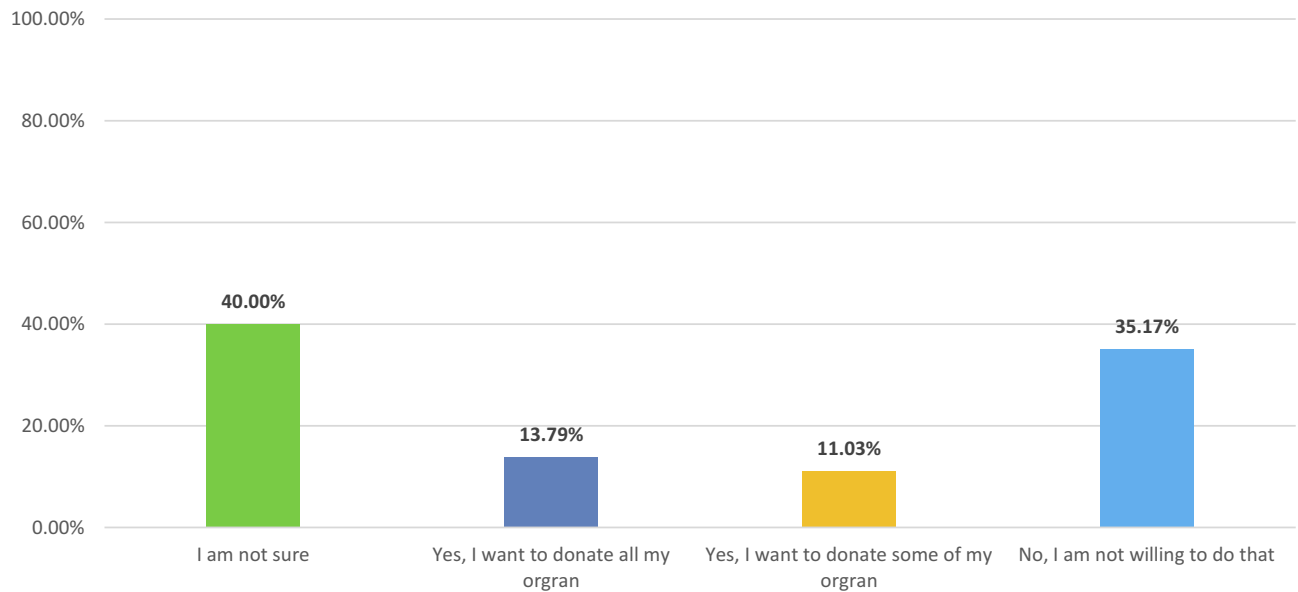
The results showed that Bahrain has few people on the organ-donor registry, waiting for transplant surgery, and ththat have undergone transplant surgery, with with very different responses one willingness to donate organs: many were not willing or were not sure. Most knew about laws and regulations in Bahrain which might have been the reason for the low numbers on the registry. Most of those willing to donate their organs were aged 18–24 years. Most participants would donate an organ to

a loved one. Most would not donate a family member’s organs. Most would not donate for money.

### The Future Of Organ Donation In Bahrain

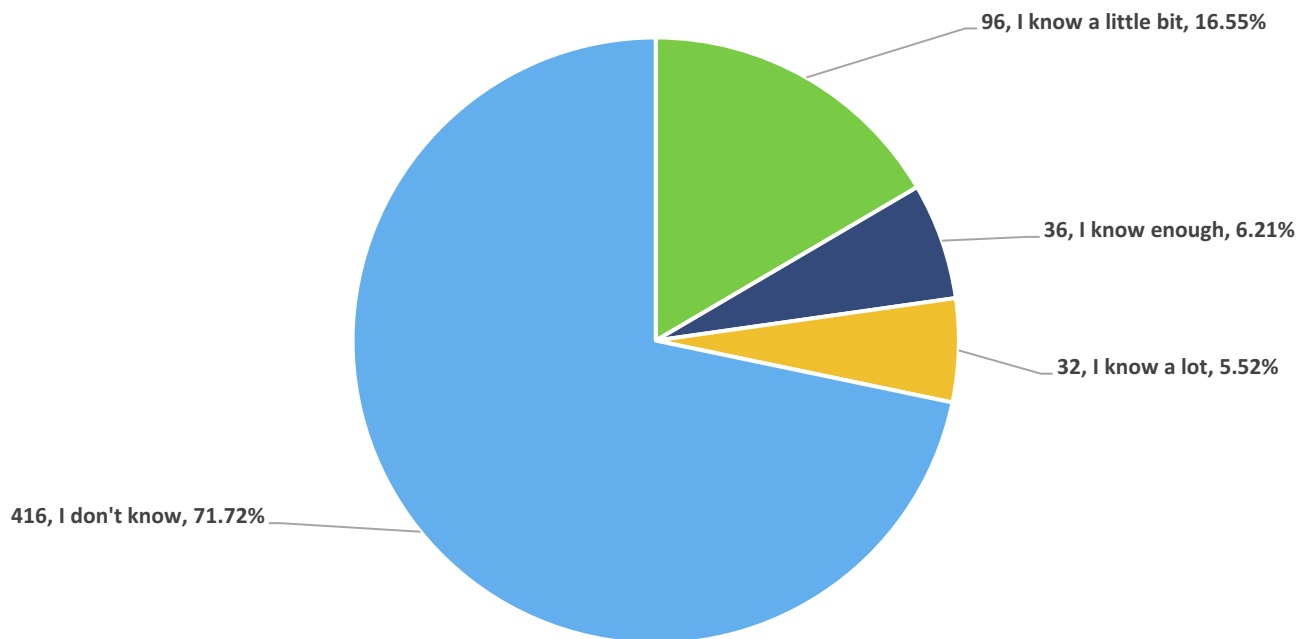
Bahrain is focusing on improving the renal center in Salmanyia Medical Complex and signing an agreement with Saudia Arabia and Jordan on organ donation, especially kidney donation.<sup>20</sup> Reducing the number of people who are

### Are you willing to donate your organ after death?



**Figure 7** Numbers willing to donate their organs after death.

### Do you have an idea about organ donation laws and regulations in Bahrain?



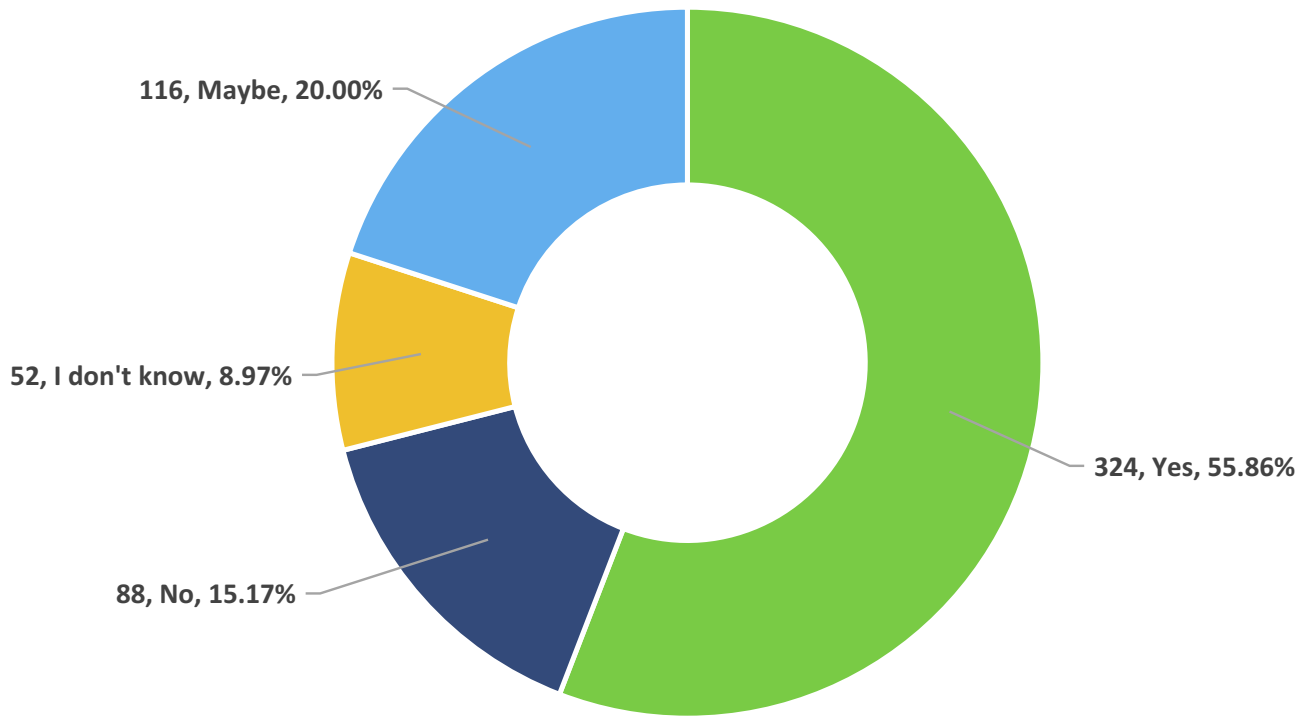
**Figure 8** Awareness of organ-donation laws and regulations in Bahrain.

suffering from diabetes will prevent renal failure.<sup>15</sup> Another positive point is that Bahrain is about to launch a database for organ donation.<sup>21</sup> The Gulf Cooperation Council's *Unified Manual for Organ Transfer and Transplant* recently became effective. This guideline aims at unification of procedures

and collaboration among the council states Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, the UAE, and Yemen in the field of organ transplantation.<sup>5</sup>

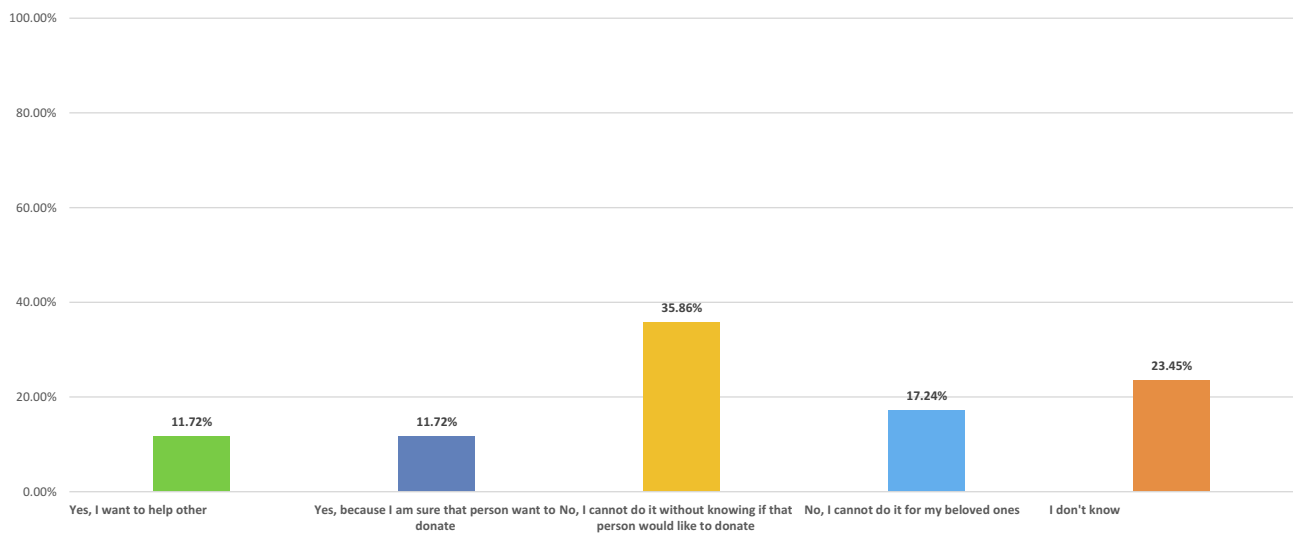
Many studies have explored the legal side of organ transplant in Bahrain and current laws and procedures, trying to

## Would you donate an organ to a loved one if they were desperately waiting for a transplant??



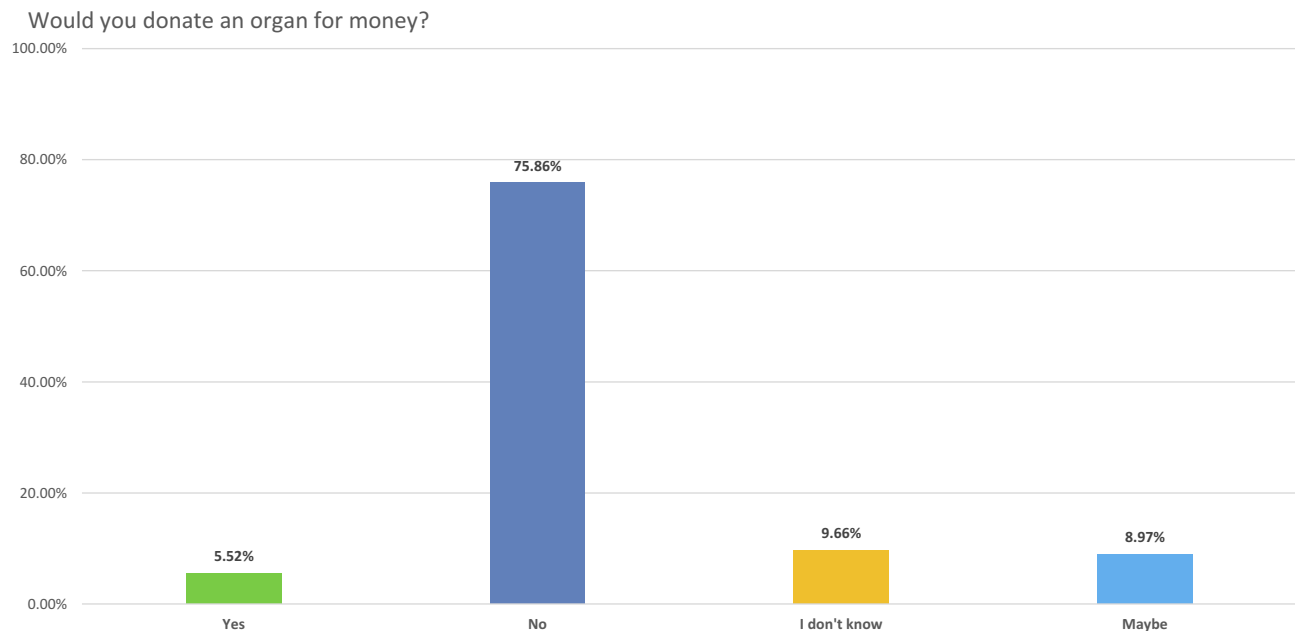
**Figure 9** Numbers willing to donate organs to loved ones.

If a family member passed away and they were not on the organ-donor registry, would you be willing thereafter to donate an organ?



**Figure 10** Numbers willing to donate organs after their death.





**Figure 11** Numbers that would donate organs for money.

highlight strengths and recommend modifications to make laws and acts that help donors and recipients. Two examples are “The legality of human organs transplantation according the Bahraini law”<sup>7</sup> and “The legal capacity of the donor and his right to receive a reward in the field of human organ transplantation (comparative study)”<sup>6</sup>.

## Future Work

Plans are to extending this research to include all Arabian Gulf countries and evaluate all organ-transplants surgeries held in Arabic Gulf countries, the number of people who are waiting for a transplant, who has undergone transplant surgery in Arabic Gulf countries, and the number of people who have donated or are going to donate their organs.

## Conclusion And Recommendations

Organ donation is an important topic that needs everyone's attention. This research sought to cover Bahrain history in regard to organ donations and Bahraini citizens' thoughts on donating organs. The overall results show how to prevent the problem of organ failure by lowering its main factors and spread awareness towards donating organs. To help in spreading awareness of organ donation, the following recommendations are proposed:

1. Post posters related to organ donation in hospitals and conduct awareness seminars — Ministry of Health.

2. Students must learn about organ donation and taken to seminars related to organ donation — Ministry of Education.
3. Provide healthy food in school and take sports classes more seriously to help students not fall victim to diabetes — Ministry of Education.
4. Make programs related to organ donation to increase society knowledge and awareness of — Ministry of Information Affairs.
5. Clarify religion issues against or for organ donation in light of the current laws and acts — Ministry of Justice, Islamic Affairs and Awqaf.

## Disclosure

The authors report no conflicts of interest in this work.

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