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Original Article

Awareness of chronic kidney disease and the perception of the community towards organ donation and renal transplantation in Riyadh province of Saudi Arabia

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ABSTRACT

Background: Chronic kidney disease (CKD) is a significant health problem associated with increased mortality and morbidity. Awareness of CKD in people is crucial to decrease mortality, morbidity, and complications. CKD can lead to end-stage renal failure that needs renal transplantation.

Objectives: This study aimed to evaluate the awareness of chronic kidney disease and the community's perception of organ donation and renal transplantation.

Methods: This cross-sectional study was conducted on 503 Saudi adults between June and September 2022 in Riyadh Province of Saudi Arabia. We distributed online self-administered questionnaires among the general adult population utilizing convenient sampling.

Results: Most of the participants had university degrees (67.2%). Of the total, 40.6%, 24.5% and 29.2% of participants knew that painkillers, hypertension (HTN) and diabetes mellitus (DM) are risk factors for CKD, respectively. A significant relationship was observed between knowledge about risk factors of CKD and educational level ($p < 0.05$), but an insignificant relation with gender ($p > 0.05$). Most of the participants (53.3%) supported organ donation, and a significant relationship was observed with the gender and educational level of participants ($p < 0.05$).

Conclusion: The current study showed low awareness of CKD and poor knowledge about kidney transplantation and organ donation in the community of Saudi Arabia. Mass media and campaigns can be central in raising awareness about CKD and organ donation to help facilitate disease identification and prevention.

Keywords: Chronic renal disease, hypertension, diabetes mellitus, non-steroidal anti-inflammatory drugs, attitude

INTRODUCTION

Chronic kidney disease (CKD) is a global public health problem, affecting over 750 million persons worldwide.^[1] CKD is attributable to a more significant proportion of the old age population and non-communicable diseases such as diabetes mellitus (DM), hypertension (HTN), and cardiovascular diseases

(CVDs).^[2,3] Both CKD and CVDs are entangled and accentuate the bidirectional progression of the disease.^[3] Along with these co-morbidities, CKD financially burdens these patients' healthcare providers and families.^[4] Since a substantial medical, social, and financial burden is associated with CKD and associated complications, slowing the disease progression is a challenge worldwide.^[5,6] However, coincidentally, CKD progression can be controlled by diagnosing the disease early, proper treatment and diet, and avoiding nephrotoxic drugs like non-steroidal anti-inflammatory drugs (NSAIDs).^[7] If not controlled, CKD can progress to end-stage renal disease (ESRD), having high mortality and requiring kidney transplantation.^[8]

Organ transplantation is considered a standard treatment for patients with end-stage organ disease.^[9] In 1982, Saudi Arabia approved living organ donation between human beings and established the National Kidney Foundation in 1985.^[10] The National Kidney Foundation was expanded to the Saudi Center for Organ Transplantation (SCOT) in 1993 in Riyadh, which coordinates end-stage organ disease medical facilities.^[10] Organs like kidneys, hearts, and lungs can be transplanted to patients who are at the end stage of organ failure. In recent decades, organ transplantation has emerged as a very effective strategy to increase patient survival and improve thousands of quality lives.^[11]

Organ donation is the foremost step in the process of transplantation. However, there is a shortage of organs to donate worldwide. Organ donation can be done in two ways. The first is a live donation, in which the person donates as he is alive. Kidney and blood can be donated in this way. The second way of organ donation is deceased donation. This type is called cadaveric organ donation (COD). After death, organs such as the heart, lungs, kidneys, liver, small bowel, pancreas, corneas, tissue, bone marrow and others can be donated and transplanted to the patient seeking transplantation.^[12-14]

Although organ donation and transplantation save many lives, it involves ethical, medical, legal, organizational, and social factors.^[15] Increasing public awareness of organ donation and transplantation is crucial.^[16] Lack of awareness, relevant information, myths, misconceptions, and various religious reasons hinder organ donation and transplantation.^[17] It is crucial to know the local community's perception towards organ donation and knowledge about CKD risk factors. We found a limited number of studies in Saudi Arabia regarding the public awareness of CKD and organ donation compared to other countries.^[18-20] Therefore, the purpose of this cross-sectional study was to evaluate the public's knowledge about CKD risk factors and diagnosis and the community's perception towards organ donation and renal transplantation in Riyadh Province of Saudi Arabia.

METHODS

A descriptive cross-sectional study was designed and conducted between June and September 2022 in Riyadh Province of Saudi Arabia. We distributed online self-administered questionnaires among the general adult population utilizing convenient sampling. We created online Google Forms, available in Arabic and English and disseminated to participants through media platforms (WhatsApp, Telegram, Twitter, and Facebook). The completion of the survey was purely voluntary. The questionnaire assessed the community's awareness and perception of chronic kidney disease, organ donation, and transplantation. Inclusion criteria, the participants were Saudi citizens from Riyadh province, the adult population (≥ 18 years old), either women or men and citizens eager to participate.

Questionnaire

We finalized the questionnaire after reviewing the literature of studies and using the relevant questionnaires.^[18,19] A non-relevant question was removed after piloting on ten people to maintain the rationality and reliability of the study. The Saudi co-authors prepared the Arabic version of the

questionnaire. The questionnaire consisted of 23 questions and was divided into three sections. The first section for sociodemographic characteristics had nine questions, and the second section was related to awareness of CKD and had five questions. The third section was related to respondents' perceptions of organ donation and renal transplantation and had nine questions.

Sample size

The minimum sample size was calculated by considering the proportion of the adult Saudi population (age ≥ 18 years) in Riyadh Province by the report of the Saudi census by the General Authority of Statistics for the year 2017. For the population of 2786653 people, the minimum sample size was calculated manually and with the help of EZ Survey software.^[21] With a 5% margin of error, 95% confidence level, and response distribution of 50%, the minimum sample size was 385. However, this number was exceeded, and the total number of participants in the study was 503.

Data collection and consent of respondents

The study was an online Google form-based cross-sectional survey in which all the participants were more than 18 years of age. Additionally, nothing related to the respondents' identities was sought, and respondents were free to ignore the questionnaire or withdraw from the study at any time. We took the 'consent' of the participants before filling out the questionnaire in the Google form.

Statistical analysis

Data were entered and evaluated using IBM SPSS statistics, version 25. Demographics and clinical characteristics were analyzed using descriptive statistics. Categorical and qualitative variable summaries included the frequency and percentage of participants in specific categories. We applied a Chi-square test of significance for comparisons. All comparisons were considered significant at $P < 0.05$.

Ethical approval

The study obtained ethical approval from the Institutional Ethics Committee at Shaqra University with approval number (ERC_SU_20220075).

RESULTS

A total of 600 questionnaires were circulated, of which 503 (83.8% response rate) subjects completed the online survey. The present study found that most participants were between 18 and 25 years old (41%), and most of the respondents were female (61%). Regarding educational level and family income, 67.2% of the participants had a university degree, and 56.5% had a family income of more than 10,000 SAR. Regarding marital status, 49.1% were married, and 50.9% were single. Of the total, 22.6% of the participants had a history of diabetes mellitus, 21.1% had hypertension, 5.9% had CKD, and 2.9% had a history of dyslipidemia. 30.2% of the participants' relatives had a history of CKD [Table 1].

Participant's awareness and perception of CKD by gender

As shown in Table 2, nearly 40% of the participants knew that diabetes, hypertension, and painkiller medicines are the main risk factors for CKD, and no significant differences were found between male's and female's knowledge ($p > 0.05$). Regarding the diagnosis of CKD, 52.3% believe that history and examination by the doctor can diagnose CKD, and 50.9% of the respondents reported that a simple urine analysis can diagnose CKD. However, no significant differences were found between males and females ($p > 0.05$). When asked whether it is possible to live with only one normal kidney, many females replied

yes compared to males ($p < 0.05$). Regarding the best mode of educating people about CKD and organ donation, the majority of the participants opted for the Internet (45.3%) and campaigns (25.8%) as the best mode of educating and no significant association was found with gender knowledge ($p > 0.05$).

Table 1: Socio-demographic characteristics of the participants

Variables		Total participants (n =503) n (%)
Age groups (In years)	18-25	206 (41)
	26-35	79 (15.7)
	36-45	77 (15.3)
	>45	141(28)
Gender	Male	196 (39)
	Female	307 (61)
Education Level	Primary School	30 (6)
	Secondary School	135 (26.8)
	University	338 (67.2)
Married	Yes	247 (49.1)
	No	256 (50.9)
Family Income	<3000SR	75 (14.9)
	3000-10,000SR	144 (28.6)
	>10,000SR	284 (56.5)
History of any of the diseases	Diabetes Mellitus (DM)	114 (22.6)
	Hypertension (HTN)	107 (21.2)
	CKD	30 (5.9)
	Dyslipidemia	15 (2.9)
Any relative with CKD	Yes	152 (30.2)
	No	351 (69.8)

n: frequency; %: percentage; CKD: chronic kidney disease

Table 2: Participant’s awareness and perception of CKD by gender

Variables		Total (n=503) n (%)	Male (n=196) n (%)	Female (n=307) n (%)	p-value
Knowledge about Risk factors of CKD	Diabetes Mellitus (DM)	147 (29.2)	73 (37.2)	74 (24.1)	0.428
	Hypertension (HTN)	123 (24.5)	66 (33.7)	57 (18.6)	
	DM and HTN	214 (42.5)	108 (55.1)	106 (34.5)	
	Pain killer medicines (NSAIDs)	204 (40.6)	100 (51)	104 (33.9)	
	Smoking	147 (29.2)	78 (39.8)	69 (22.5)	
	Genetics	174 (34.6)	90 (45.9)	84 (27.4)	
	Obesity	137 (27.2)	57 (29.1)	80 (26.1)	
	Soft drinks	246 (48.9)	123 (62.7)	123 (40.1)	
I don’t know	114 (22.7)	66 (33.7)	48 (15.6)		
Diagnosis of CKD	Examination by the doctor	263(52.3)	112 (57.1)	151 (49.2)	0.809
	Blood tests	191 (38)	84 (42.9)	107 (34.8)	
	Simple urine analysis	256 (50.9)	101 (51.5)	155 (50.5)	
	Imaging in a hospital	100 (19.9)	44 (22.5)	56 (18.2)	
	Kidney biopsy	140 (27.8)	60 (30.6)	80 (26.1)	
	I don’t know	132 (26.2)	62 (31.6)	70 (22.8)	
Someone can live with one normal kidney	Yes	455 (90.5)	171 (87.2)	284 (92.5)	0.041*
	No	11 (2.2)	8 (30)	3 (0.9)	
	Not Sure	37(7.4)	17 (20)	20 (6.5)	

What is the best mode of educating people about CKD and organ donation?	Hospitals and clinics	55 (10.9)	20 (10.2)	35 (11.4)	0.770
	Campaigns	130 (25.8)	52 (25.4)	78 (25.4)	
	Internet	228 (45.3)	92 (46.9)	136 (44.3)	
	Magazines and newspapers	9 (1.8)	5 (2.6)	4 (1.3)	
	Television & radio	47 (9.3)	16 (8.2)	31 (10.1)	
	Posters & banners	34 (6.8)	11 (5.6)	23 (7.5)	

n: frequency; %: percentage; NSAIDs: non-steroidal anti-inflammatory drugs; CKD: chronic kidney disease; **p* significant <0.05.

Participant's awareness and perception of CKD are categorized by education

As shown in Table 3, most University degree participants identified that diabetes, hypertension and painkiller medicines are major risk factors for CKD, and significant associations were observed with the educational level of participants ($p < 0.05$). Similarly, in the case of diagnosis of CKD, the majority of the participants believed that simple urine tests and the history of patients are suitable methods to diagnose CKD and significant association were seen with the educational level of participants ($p < 0.001$). When asked whether it is possible to live with only one normal kidney, 88.5% of the non-university degree-holder respondents and 91.4% of university degree-holder respondents replied yes; however, no significant association were found ($p > 0.05$). Regarding the best mode of educating people about CKD, the majority of the university degree and non-university degree holder participants opted for the Internet (44.8% and 37.4%, respectively) and campaigns (28.1% and 17.9%, respectively); however, no significant association was observed with the educational level of participants ($p > 0.05$).

Table 3: Participant's awareness and perception of CKD categorized by educational level

Variables		Total (n=503) n (%)	Less than University (n=165) n (%)	University level (n=338) n (%)	<i>p</i> -value
Knowledge about Risk factors of CKD	Diabetes Mellitus (DM)	147 (29.2)	32 (19.4)	115 (34)	0.036*
	Hypertension (HTN)	123 (24.5)	35 (21.2)	98 (29)	
	DM and HTN	214 (42.5)	50 (30.3)	164 (48.5)	
	Pain killer medicine (NSAIDs)	204 (40.6)	46 (27.9)	158 (46.7)	
	Smoking	147 (29.2)	35 (21.2)	112 (33.1)	
	Genetics	174 (34.6)	49 (29.7)	125 (37)	
	Obesity	137 (27.2)	54 (32.7)	83 (24.5)	
	Soft drinks	246 (48.9)	80 (48.5)	166 (49.1)	
I don't know	114 (22.7)	49 (29.7)	65 (19.2)		
Diagnosis of CKD	Examination by the doctor	263 (52.3)	71 (43)	192 (56.8)	0.000***
	Blood tests in the Laboratory	191 (38)	61 (37)	130 (38.5)	
	Urine tests in the Laboratory	256 (50.9)	63 (38.2)	193 (57.1)	
	Imaging in a Hospital	100 (19.9)	17 (10.3)	83 (24.5)	
	Kidney biopsy	140 (27.8)	23 (26)	117 (34.6)	
	I don't know	132 (26.2)	68 (41.2)	64 (18.9)	
Can someone live with one normal kidney?	Yes	455(90.5)	146 (88.5)	309 (91.4)	0.279
	No	11(2.2)	6 (36.4)	5 (1.5)	
	Not Sure	37 (7.4)	13 (78.8)	24 (7.1)	
What is the best mode of educating people about CKD?	Hospitals and clinics	55 (10.9)	23 (11.8)	32 (9.4)	0.291
	Campaigns	130 (25.8)	35 (17.9)	95 (28.1)	
	Internet	228 (45.3)	73 (37.4)	155 (45.8)	
	Magazines and newspapers	9 (1.8)	3 (1.5)	6 (1.8)	
	Television & radio	47 (9.3)	20 (10.2)	27 (8)	
	Posters & banners	34 (6.8)	11 (5.6)	23 (6.8)	

n: frequency; %: percentage; NSAIDs: non-steroidal anti-inflammatory drugs; CKD: chronic kidney disease;
p* significant <0.05, **p* highly significant <0.001

Participant's awareness and attitude toward organ donation and renal transplantation by gender

As shown in Table 4, 56.6% of the male participants support organ donation, and significant differences were observed between males and females ($P < 0.001$). Interestingly, 16.1% were not supporting to donate their organs. The majority were willing to donate their organs to family (64%); however, no significant association was observed with gender ($p > 0.05$). 67.6% of the respondents heard about the Saudi Centre for organ donation, and no significant association were observed with gender ($p > 0.05$). 46.5% of the participants did not know any organ donation centers in Saudi Arabia.

Table 4: Awareness and attitude toward organ donation and renal transplantation characterized by gender

Variables	Category	Total (n=503) n (%)	Male (n=196) n (%)	Female (n=307) n (%)	<i>p</i> -value
Do you support organ donation?	Yes	268 (53.3)	111 (56.6)	157 (51.1)	0.024*
	No	81 (16.1)	38 (19.4)	43 (14)	
	Not-sure	154 (30.6)	47 (24)	107 (34.9)	
Organ donation can be done when a person is	Living	112 (22.2)	49 (25)	63 (20.5)	0.013**
	Dead	61 (12.1)	17 (8.7)	44 (14.3)	
	Living or dead	222 (40.2)	64 (32.6)	158 (51.5)	
	I do not know	108 (21.5)	58 (29.6)	50 (16.3)	
Organs should be donated to	Family	322 (64)	124 (63.3)	198 (64.5)	0.136
	Friends	12 (2.4)	8 (4.1)	4 (1.3)	
	Anyone/stranger	169 (33.6)	64 (32.6)	105 (34.2)	
Have you any relatives on dialysis for CKD?	Yes	186 (37)	59 (30.1)	127 (41.4)	0.011**
	No	317 (63)	137 (69.9)	180 (58.6)	
Have you any relatives who underwent kidney transplantation?	Yes	132 (26.2)	49 (25)	83 (27)	0.613
	No	371 (73.8)	147 (75)	224 (73)	
Do you know about SCOT?	Yes	148 (29.4)	56 (28.6)	92 (30)	0.288
	No	234 (46.5)	99 (50.5)	135 (44)	
	Not Sure	121 (24.1)	41 (20.9)	80 (26)	
Why do people hesitate to donate organs after death?	Mutilation of the body	63 (12.5)	28 (14.3)	35 (11.4)	0.233
	Unclear religious views about it	260 (51.7)	97 (49.5)	163 (53.1)	
	Fear about non-respect for donated organs	78 (15.5)	25 (12.8)	53 (17.3)	
	Other reasons	102 (20.3)	46 (23.4)	56 (18.2)	

n: frequency; %: percentage; CKD: chronic kidney disease; SCOT: Saudi center for organ donation & transplantation;
p* significant <0.05; *p* highly significant <0.01

Awareness and attitude towards organ donation and renal transplantation by educational level

As shown in Table 5, the majority of the university degree participants were more willing to donate their organs (56.2%) compared to the non-university degree participants (47.3%), and significant associations were observed with the educational level of participants ($p > 0.05$). Nearly half of the university degree participants agreed to receive the organ from a person either alive or died in a hospital and found significant association with the educational level of participants ($p < 0.001$). Concerning organ donation, the majority of the participants were willing to donate the organ to their families. However, no significant association were observed with the educational level of participants ($p > 0.05$).

Table 5: Awareness and attitude towards organ donation and renal transplantation by educational level

Variables	Category	Total (n=503) n (%)	Less than University (n=165) n (%)	University level (n=338) n (%)	p-value
Do you support organ donation?	Yes	268 (53.3)	78 (47.3)	190 (56.2)	0.021*
	No	81 (16.1)	23 (13.9)	58 (17.1)	
	Not sure	154 (30.6)	64 (38.8)	90 (26.6)	
Organ donation can be done when a person is	Living	112 (22.2)	35 (21.2)	77 (22.7)	0.000***
	Died in a hospital	61 (12.1)	8 (4.8)	53 (15.7)	
	Living or died in a hospital	222 (40.2)	54 (32.7)	168 (49.7)	
	I do not know	108 (21.5)	60 (36.4)	48 (14.2)	
Organs should be donated to	Family	322 (64)	103 (62.4)	219 (64.8)	0.872
	Friends	12 (2.4)	4 (2.4)	8 (2.3)	
	Anyone/stranger	169 (33.6)	58 (35.2)	111 (32.8)	
Have you any relatives on dialysis for CKD?	Yes	186(37)	66 (40)	120 (35.5)	0.327
	No	317(63)	99 (60)	218 (64.5)	
Have you any relatives who underwent kidney transplantation?	Yes	132(26.2)	42 (25.5)	90 (26.6)	0.779
	No	371(73.8)	123 (74.5)	248 (73.4)	
Do you know about SCOT?	Yes	148 (29.4)	44 (26.7)	104 (30.8)	0.553
	No	234 (46.5)	82 (49.7)	152 (45)	
	Not Sure	121 (24.1)	39 (23.6)	82 (24.2)	
Why do people hesitate to donate organs after death?	Mutilation of the body	63 (12.5)	16 (9.7)	47 (13.9)	0.416
	Unclear religious views about it	260 (51.7)	87 (52.7)	173 (51.2)	
	Fear about non-respect for donated organs	78 (15.5)	30 (18.2)	48 (14.2)	
	Other reasons	102 (20.3)	32 (19.4)	70 (20.7)	

n: frequency; %: percentage; CKD: chronic kidney disease; SCOT: Saudi center for organ donation & transplantation;

*p significant <0.05; ***p highly significant <0.001

DISCUSSION

The incidence and prevalence of CKD are increasing, and it has become a significant health problem worldwide.^[22] It is crucial to increase awareness about CKD among people to decrease mortality, morbidity and complications related to this disease. CKD can lead to end-stage renal failure that needs renal transplantation. Organ transplantation is usually preferred for patients with end-stage organ disease. It involves replacing the recipient's damaged organ with the donor's healthy organ, which results in survival benefits and a better life.^[23] A community's perception of organ donation is influenced by several factors that ultimately define the donor's willingness to donate organs. Awareness among the general public and healthcare practitioners is vital for increasing organ donation.^[24]

Studies in Saudi Arabia reported low awareness rates of CKD and organ donation in the community.^[18-20] Thus, these studies emphasize that CKD and organ donation awareness should be raised in the community and among patients to decrease the prevalence and progression of the disease. This study aimed to evaluate awareness of CKD and organ donation and identify demographic variables associated with knowledge levels among the Saudi adult community.

The findings revealed that most participants were female and between 18 and 25 years old. These demographic characteristics are compatible with previous studies conducted in the UAE^[25] and Morocco.^[26] Regarding educational levels, 67.2% of the participants had a University degree, which is lower than the previous local study (80%) reported by Somaili et al. in Jazan^[18] and the UAE study

(82.4%) reported by Janahi et al.^[25] However, the percentage difference could be attributed to the fact that the study of Somaili et al. was conducted with a larger sample size of 1019 participants.

Concerning the history of any disease among the participants, the current study showed the prevalence of DM, HTN, CKD, and dyslipidemia to be 22.6%, 21%, 5.9%, and 2.9% as against 9%, 10.4%, 6.7%, and 6.7% by Al-Husayni et al. in Jeddah.^[19] Various previously done studies support that DM and HTN patients have a higher prevalence and progression to CKD^[27,28] and low self-awareness of dyslipidemia.^[29,30]

Diseases such as DM, HTN, and obesity and the use of painkillers (NSAIDs) are associated with kidney injury and are risk factors for CKD.^[31] In the current study, 40.6%, 24.5% and 29.2% of the participants knew that painkillers, HTN and DM are risk factors for CKD, respectively. Knowledge about CKD risk factors is lower in Saudi Arabia when compared to a study in the USA, which showed that 61% and 55% of the African American population believed HTN and DM are CKD risk factors, respectively.^[32] Another local study revealed that about 53.7% of respondents believed that painkillers are major risk factors for CKD.^[19]

In the present study, most participants believed that history and examination by a doctor (52.3%) and simple urine analysis (50.9%) were the primary diagnoses for CKD. Our study results are consistent with the previous local study^[19], which reported that 54% of participants thought CKD could be diagnosed from a simple urine analysis. However, our results exhibited higher awareness compared to the USA^[32] and Taiwan^[33] studies, which reported 23.7% and 8%, respectively. Concerning people with one kidney, 90.5% of respondents strongly believed that people could live with one kidney. Our study results showed a higher awareness (90.5%) than the previous study done by Al-Husayni et al.^[19] which reported 68.6%. Moreover, female participants are showing more belief. It may be due to most current study participants having university certificates.

Regarding the best mode of educating people about CKD and organ donation, the majority of the participants opted for the Internet (45.3%) and campaigns (25.8%) as the best modes, showing the vital role of media and campaigns in raising awareness and present study results are consistent with previous local studies.^[34,35] However, this is inconsistent with the international studies, 70% of the respondents opted for mass media in Turkey, 44.7% opted for newspapers in Pakistan, and 47% opted for hospitals or doctors in India.^[36-38]

In the current study, about 53.3% of the participants strongly supported organ donation. Of the participants, 64% were willing to donate to their families. Similarly, another study showed 57.4% of Pakistanis,^[37] 37.8% of Qataris,^[39] and 77.7% of Saudis^[40] support organ donation, with the most critical factors affecting donation being the health status of the recipient and the relationship with the recipient.^[41] 40.2% believe that organ donation could be made by living or cadavers. It was higher than that of Pakistan (23%), as reported by Saleem et al.^[37] Furthermore, this is consistent with Oman (42%), reported by Mohsin et al.^[42] and Saudi (39.7%), reported by Somali et al.^[18] Moreover, only 29.4% of the respondents knew about the Saudi Center for organ donation & transplantation (SCOT). It was lower than that of Oman (43%), reported by Mohsin et al.^[42]

Positive belief regarding organ donation and transplantation is low in Saudi Arabia compared to a study in UAE^[25], which showed 74.6% of the population had positive religious sentiments. We observed several causes of hesitation for not agreeing to organ donation after death in society, including unclear religious views (51.7%), mutilation of the body (12.5%), and fear of non-respect of donated organs (15.5%). Similarly, a previous study about public opinion on organ donation in Turkey,^[36] Pakistan,^[37] and Saudi Arabia^[20,43] showed that religious reasons and a lack of information were major factors opposing organ donation.

Limitations

Certain limitations may have affected our study including the low number of male respondents who took part in the survey compared to females, which may limit the generalizability of the study; Our study used convenience sampling, which may only be representative of some populations; We recruited participants from within Riyadh province, mainly from Dawadmi, Shaqra, and Afif; such a population may not represent the broader population in Saudi Arabia; The study only focused on characterizing the knowledge of CKD risk factors and organ donation, thereby needing an assessment of attitudes and behaviors towards organ donation and CKD risk factors and diagnosis.

CONCLUSION

Our study concluded that there is a wide gap in terms of knowledge about CKD risk factors and diagnosis and organ donation, especially in those who do not have graduate degrees and female participants. Regarding renal transplantation and organ donation, only 29.4% of the participants knew about the Saudi Center for Organ Donation & transplantation (SCOT), with the majority not knowing where to go to become organ donors. People who can donate are reluctant to donate their organs to those in need due to a lack of knowledge, unclear religious views, and fear of non-respect for donated organs. Adequate knowledge may change people's attitudes towards organ donation. Awareness campaigns and social media (internet) were identified as the most effective tools for disseminating awareness about organ donation and CKD risk factors. Most of the participants had unclear religious views over organ donation, and these contribute to a negative perspective on organ donation, observed more in females than males. Multi-sectorial approaches such as electronic and print media, campaigns, religious scholars, doctors and teachers can be central in raising awareness about CKD risk factors and organ donation. Our study recommends the need for further studies to increase the awareness of CKD risk factors and diagnosis and assess the attitudes and willingness of the public to donate organs in Saudi Arabia.

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Conflict of Interest

The authors declare that there is no conflict of interest relevant to this article.

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