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Saudi Awareness of Chronic Kidney Disease Risk Factors

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ABSTRACT

Background: Complex disorder CKD involves excessive fluid and waste buildup in the circulation, causing structural or functional damage to the kidneys. This article used general Saudi population data to assess public understanding of chronic kidney disease risk factor among adults.

Methodology: The present study is a cross-sectional investigation that included a sample of 1111 participants from the Kingdom of Saudi Arabia, all of whom were above the age of eighteen and represented both genders. The data was analyzed utilizing Microsoft Excel and SPSS software. The findings of this study encompassed a total of 1111 participants, with 67.9% identifying as females and 32.1% as males. A total of 23.7% of the participants indicated that they had a family member who had been diagnosed with renal illness. Among this group, 51% reported that the affected family member belonged to the first-class category. A majority of respondents (71.6%) indicated possessing a moderate level of knowledge, while a smaller proportion (17.5%) reported having little knowledge. Conversely, only 11% of participants claimed to possess a high level of knowledge. A total of 44.9% of participants indicated a moderate attitude, while 39.9% reported a low attitude score. Only 15.2% of respondents reported a high attitude score.

Conclusion: Based on the present research, it was determined that the participants exhibited a commendable comprehension of chronic kidney diseases (CKDs), with findings aligning with previous investigations conducted in Saudi Arabia and surpassing those from diverse nations. Furthermore, the participants in our research had a favorable disposition towards chronic kidney diseases (CKDs), aligning with findings from previous studies.

KEYWORD: Chronic kidney disease, CKD, Prevalence, Knowledge, Saudi Arabia.

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1. INTRODUCTION

Chronic kidney disease (CKD) is a multifaceted condition characterized by the accumulation of fluid and waste in the bloodstream, leading to impaired renal function as a consequence of structural or functional impairments. Chronic kidney disease (CKD) exerts a significant financial burden on global healthcare systems, as shown by Mosleh et al. (2020). Chronic kidney disease (CKD) progresses to end-stage renal disease (ESRD) in the absence of treatment and provided the patient survives the detrimental effects on cardiovascular health and other associated complications. At this stage, the patient's life cannot be sustained without the intervention of dialysis or a kidney transplant (Li et al., 2020). According to Stolpe et al. (2021), the timely commencement and effective administration of medication for risk factors associated with chronic kidney disease (CKD), such as hypertension, can help mitigate the decline in renal function. Chronic kidney disease (CKD) is a substantial health issue of increasing global prevalence (Al-Husayni et al., 2021). Based on estimations, the global prevalence of chronic kidney disease is said to range between 8% and 16% (Alateeq et al., 2018). According to Ngendahayo et al. (2019), individuals with diabetes mellitus, hypertension, and HIV (human immunodeficiency virus) are considered high-risk categories and are more

susceptible to chronic kidney disease (CKD), which has a prevalence rate of 32.3%. When chronic kidney disease (CKD) advances to end-stage renal disease (ESRD), it necessitates long-term dialysis or renal replacement therapy. However, this condition is also linked to an increased likelihood of morbidity, notably cardiovascular disease (CVD), as well as death, hospitalization, and cognitive dysfunction (Ji et al., 2019).

Since 1990, chronic kidney disease (CKD) has been responsible for causing over half a million fatalities on a global scale. According to Gheewala et al. (2018), there was a significant increase of around 37% in the age-standardized mortality rate for chronic renal disease worldwide during the period from 2005 to 2013. According to a 2010 epidemiological study, it was determined that the prevalence of chronic kidney disease (CKD) affects approximately 5.7 percent of the general population. In the specific context of Saudi Arabia, the year 2017 had a notable incidence of over 2 million instances of CKD, resulting in 3818 fatalities attributed to this condition (Alobaidi, 2021). Chronic kidney disease (CKD) is commonly recognized as the twelfth and seventeenth primary causes of mortality and morbidity on a global scale. According to Alshahrani et al. (2022), a considerable global population of about 500 million individuals is afflicted by various chronic renal illnesses, hence impacting approximately 10-13 percent of the total populace. However, there is a scarcity of study pertaining to the comprehension of risk factors associated with chronic kidney disease (CKD), particularly in the context of Saudi Arabia. Chronic Kidney Disease (CKD) is experiencing a noticeable rise in the Kingdom of Saudi Arabia (KSA) and has emerged as a global health concern. This can be attributed to its elevated prevalence and the resulting burden it places on healthcare systems. To mitigate the impact of CKD and reduce associated comorbidities like hypertension, diabetes, and hyperlipidemia, it is imperative to focus on disease management through early screening initiatives and preventive programs.

Despite the establishment of numerous hospitals and health centers across Saudi Arabia, the prevalence of certain diseases, particularly chronic renal failure, remains a significant concern. Chronic renal failure is a perilous and chronic ailment that has been spreading. Consequently, this research aims to shed light on the intricacies of this disease. The study aims to investigate the spatial distribution of chronic renal failure and explore the potential associations between various natural and human factors in the transmission of this disease. By doing so, we hope to identify the key factors and underlying causes that contribute to the development and prevalence of chronic renal failure, as well as the lack of public awareness surrounding this condition. The objective of this study is to evaluate the level of awareness and knowledge pertaining to risk factors associated with chronic renal disease within the Saudi population.

2. MATERIALS AND METHODS

Study design

From February 2022 to November 2022, Saudi Arabia conducted this cross-sectional survey. **Study setting:**

Participants, recruitment and sampling procedure

The study involved the distribution of an online questionnaire among the population of Saudi Arabia. The questionnaire aimed to assess the level of public awareness on the risk factors associated with chronic kidney disease (CKD). The study population consisted of Saudi individuals aged eighteen years and older.

Inclusion and Exclusion criteria

The study population comprises of healthy adult individuals, aged eighteen and above, encompassing both genders residing in the Kingdom of Saudi Arabia (KSA). Exclusions encompass adult patients, individuals under the age of eighteen, and non-Saudi residents.

Sample size

The sample size was established using the Qualtrics calculator with a confidence level of 99%, margin of error 1%; a sample size of 666.

The Sample size was established using the formula: n= P (1-P) * $Z\alpha^2$ / d^2 with a confidence level of 95%; n: Calculated sample size

Z: The z-value for the selected level of confidence (1- a) = 1.96.

P: An established prevalence of knowledge

Q: (1 – 0.50) = 50%, i.e., 0.50

D: The maximum acceptable error = 0.01. So, the calculated minimum sample size was: n = $(1.96)^2$ X 0.50 X 0.50/ $(0.01)^2$ = 666.

Method for data collection and instrument (Data collection Technique and tools)

The data was obtained through administering an online questionnaire, which served as the primary instrument for this investigation. The tool utilized in this study was acquired from Alshahrani et al. (2022). The CKD knowledge questionnaire comprised 30 questions that were categorized into three primary parts. The first section encompassed inquiries pertaining to socioeconomic background characteristics, family history, and medical history. The subsequent section provides an overview of chronic kidney disease (CKD), encompassing the disease's definition, symptoms, and associated risk factors. The third section of the study comprises inquiries pertaining to the level of knowledge regarding chronic kidney disease (CKD) and the attitudes exhibited by patients towards CKD.

Pilot test

The opinion survey was administered to a sample of 20 participants who were requested to complete it. The purpose of conducting this activity was to assess the ease of use of the questionnaire and to evaluate the practicality of the study. The data from the pilot research was omitted from the final dataset of the study.

Scoring system

The structured questionnaire utilized in this study was derived from a previously completed study. The CKD knowledge questionnaire consists of a total of 30 questions. The knowledge component consists of 13 questions, each offering three potential responses: "True," "False," and "I am uncertain." The correct responses were assigned a score of 1, and the incorrect responses were assigned a value of 0. Due to the perceived lack of scholarly merit in the aforementioned statement, it has been assigned a grade of zero. The complete score is partitioned into three ordinal scales that are proportionate: Low (0–4), moderate (5–9), and high (10–13). The score falls within the range of 10-13. The responses to the six questions in the attitude portion were recorded using a 5-point Likert scale. The response option labeled as "Strongly agree" was assigned a numerical value of 5, whilst the response options labeled as "Agree," "Natural," "Strongly disagree," and "Disagree" were assigned numerical values of 4, 3, 2, and 1, respectively. The composite score is categorized into three tiers: Low (ranging from 18 to 30), moderate (ranging from 31 to 43), and high (ranging from 44 to 56).

Analyzes and entry method

The data was inputted into the computer system utilizing the "Microsoft Office Excel Software" application (2016) designed for the Windows operating system. The data was subsequently transferred to the Statistical Package of Social Science Software (SPSS) program, specifically version 20 (IBM SPSS Statistics for Windows, Version 20.0, Armonk, NY: IBM Corp.), for the purpose of conducting statistical analysis. The Chi-square test was employed to determine the statistical significance of the correlation, and the findings were presented using tables and figures.

3. RESULTS

Table 1 presents the socio-demographic characteristics of the study participants, which consisted of a total of 1111 individuals. Among these participants, 67.9% were identified as females, while 32.1% were identified as males. The study revealed that 50.7% of the participants identified as single, while 45.7% reported being married. In terms of age distribution, 45.2% fell between the 20–30-year range, 16.2% were aged 41-50 years, 15% were between 31-40 years, and 12.3% were below the age of 20. Approximately one-third of the participants (33.4%) were from the Western region, while 24.7% were from the Eastern region. The North region accounted for 22.3% of the participants, while the Southern region included 13.1% of the participants. In terms of educational attainment, the majority of participants (71.4%) possessed a college degree or higher, while 24.8% had completed secondary education. A total of 38.4% of the individuals surveyed identified themselves as students, while 25.4% reported being unhealthy employees and 23.8% said that they were
jobless.

Table 1 Socio demographic characteristics of participants (n=1111)

Parameter		No.	%
Gender	Male	357	32.1
	Female	754	67.9
Nationality	Saudi		
	Non- Saudi		
Marital status	Single	563	50.7
	Married	508	45.7
	Divorced or widow	40	3.6
Age	Less than 20	137	12.3
	20-30	502	45.2
	31-40	167	15.0
	41-50	180	16.2
	51-60	96	8.6
	More than 60	29	2.6
place of residence	Southern	146	13.1
	Eastern	274	24.7
	North	248	22.3
	Western	371	33.4
	Central	72	6.5

Educational qualification	Primary / lowe	6	.5
	Medium	37	3.3
	Secondary	275	24.8
	College or above	793	71.4
Occupation	Student	427	38.4
	Unhealthy employee	282	25.4
	health sector employee	56	5.0
	Retired	82	7.4
	Unemployed	264	23.8

Table 2 presents the data on family history and medical history. It is observed that 23.7% of the participants reported having a family member with kidney illness, as depicted in Figure 1. Furthermore, among those participants, it was found that 51% of the affected family members belonged to the first class. The findings indicate that a significant proportion of participants, specifically 80%, do not exhibit symptoms of chronic disease. Additionally, a substantial majority of 93.5% do not display signs of kidney disease. In instances involving renal disease, a significant proportion of individuals (48.6%) indicated that the onset of their condition occurred more than one year prior. Figure 2 illustrates the distribution of participants' knowledge scores on chronic kidney disease (CKD). It is observed that the majority of participants, specifically 71.5%, possessed a moderate level of knowledge. A smaller proportion, 17.5%, exhibited low knowledge, while a mere 11% demonstrated high knowledge on the subject matter.

Table 2 Family history of CKD among participants (n=1111).

Parameter		No.	%
A family member with kidney disease	Yes	263	23.7
	No	848	76.3
If the answer is yes, what is the relationship?	From first class	134	51.0
	Second class	74	28.1
	Other relatives	55	20.9
Do you have chronic diseases?	Hypertension	55	5.0
	Kidney disease	16	1.4
	Diabetes	65	5.9
	Immune disease	18	1.6
	Other	68	6.1
	There is no	889	80.0
If you have kidney disease, mention it	Kidney cysts	9	.8
	Kidney stones	33	3.0
	Kidney infection/inflammation	15	1.4
	Renal failure	15	1.4
	There is no	1039	93.5
If you have kidney disease, for how long (per month)	Less than a month	10	13.9
	1-3 months	10	13.9
	4-6 months	6	8.3
	7-9 months	7	9.7
	10-12 months	4	5.6
	More than a year	35	48.6

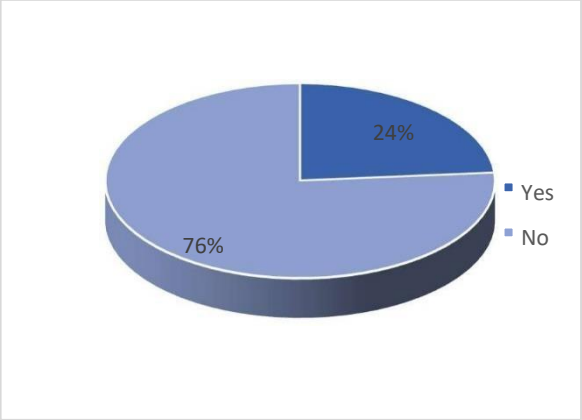

Figure 1 Show family member with kidney disease.

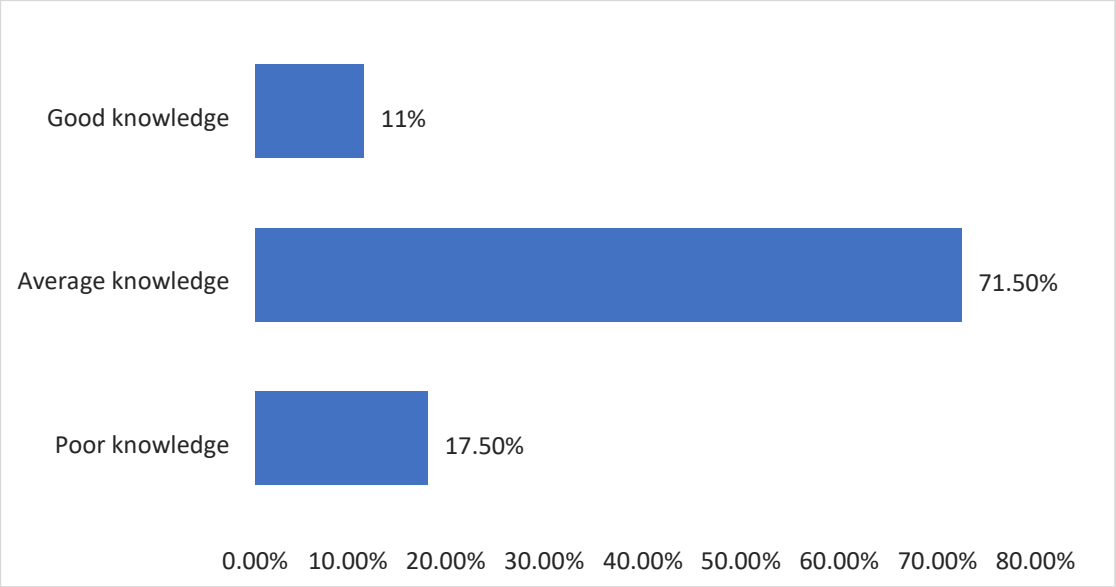

Figure 2 Participants' knowledge score towards CKD (n= 1111)

As depicted in Table 3, the correlation between the knowledge score of chronic kidney disease (CKD) and socio-demographic characteristics revealed no statistically significant link between knowledge score and variables such as gender, age, marital status, educational degree, occupation, and location of residence ($p > 0.05$).

According to the data presented in Figure 3, the participants' attitude scores towards chronic kidney disease (CKD) were distributed as follows: 44.9% reported a moderate attitude, 39.9% reported a low attitude, and only 15.2% reported a high attitude score.

Table 3 Association between participants knowledge scores with their socio demographic characters (n=1111)

		Knowledge score			Total (N=1111)	P value
		Low level	Average level	High level		
Gender	Male	150	57	150	357	0.409
		33.9%	33.7%	30.1%	32.1%	
	Female	293	112	349	754	
		66.1%	66.3%	69.9%	67.9%	
Age	Less than 20	65	19	53	137	0.088
		14.7%	11.2%	10.6%	12.3%	
	20 -30	207	70	225	502	
		46.7%	41.4%	45.1%	45.2%	
	31 - 40	66	21	80	167	

		14.9%	12.4%	16.0%	15.0%	
	41 -50	64	29	87	180	
		14.4%	17.2%	17.4%	16.2%	
	51 - 60	29	25	42	96	
		6.5%	14.8%	8.4%	8.6%	
	More than 60	12	5	12	29	
		2.7%	3.0%	2.4%	2.6%	
Marital status	Married	186	84	238	508	0.239
		42.0%	49.7%	47.7%	45.7%	
	Single	241	77	245	563	
		54.4%	45.6%	49.1%	50.7%	
	Divorced or widow	16	8	16	40	
		3.6%	4.7%	3.2%	3.6%	
Educational qualification	Primary / lower	3	0	3	6	0.395
		0.7%	0.0%	0.6%	0.5%	
	Medium	21	3	13	37	
		4.7%	1.8%	2.6%	3.3%	
	Secondary	106	41	128	275	
		23.9%	24.3%	25.7%	24.8%	
	College or above	313	125	355	793	
		70.7%	74.0%	71.1%	71.4%	
Occupation	Student	174	65	188	427	0.300
		39.3%	38.5%	37.7%	38.4%	
	Unhealthy employee	110	49	123	282	
		24.8%	29.0%	24.6%	25.4%	
	Health sector employee	15	12	29	56	
		3.4%	7.1%	5.8%	5.0%	
	Retired	32	14	36	82	
		7.2%	8.3%	7.2%	7.4%	
	Unemployed	112	29	123	264	
		25.3%	17.2%	24.6%	23.8%	
place of residence	Southern	54	21	71	146	0.596
		12.2%	12.4%	14.2%	13.1%	
	Eastern	107	43	124	274	
		24.2%	25.4%	24.8%	24.7%	
	North	95	47	106	248	
		21.4%	27.8%	21.2%	22.3%	
	Western	154	51	166	371	
		34.8%	30.2%	33.3%	33.4%	

	Central	33	7	32	72	
		7.4%	4.1%	6.4%	6.5%	

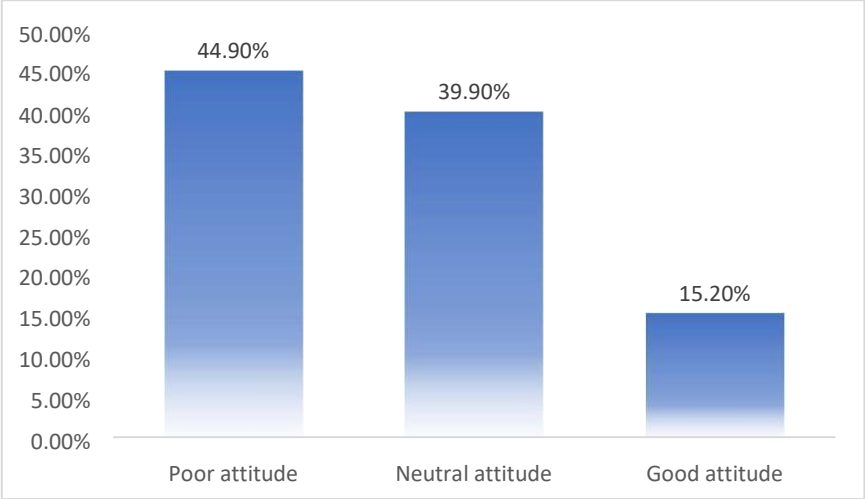

Figure 3 Participants' practice towards CKD (n= 1111)

Table 6 is an illustration of the correlation between the attitude score of chronic kidney disease (CKD) and several socio-demographic characteristics. A statistically significant correlation was seen between attitude score and gender (p=0.001), age (p=0.005), educational qualification (p=0.021), and occupation (p=0.021). However, no statistically significant association was discovered between attitude score and marital status or location of residence (p>0.05).

Table 6 Association between participants attitude scores with their socio demographic characters (n=1111)

		Attitude score			Total (N=1111)	P value
		Low level	Average level	High level		
Gender	Male	108	560	86	754	0.001
		55.7%	70.4%	70.5%	67.9%	
	Female	86	235	36	357	
		44.3%	29.6%	29.5%	32.1%	
Age	Less than 20	27	103	7	137	0.005
		13.9%	13.0%	5.7%	12.3%	
	20 -30	82	368	52	502	
		42.3%	46.3%	42.6%	45.2%	
	31 - 40	39	116	12	167	
		20.1%	14.6%	9.8%	15.0%	
	41 -50	33	118	29	180	
		17.0%	14.8%	23.8%	16.2%	
	51 - 60	9	70	17	96	
		4.6%	8.8%	13.9%	8.6%	
	More than 60	4	20	5	29	
		2.1%	2.5%	4.1%	2.6%	
Marital status	Married	93	357	58	508	0.248
		47.9%	44.9%	47.5%	45.7%	
	Single	93	414	56	563	
		47.9%	52.1%	45.9%	50.7%	
		8	24	8	40	

	Divorced or widow	4.1%	3.0%	6.6%	3.6%	
Educational qualification	Primary / lower	4	2	0	6	0.021
		2.1%	0.3%	0.0%	0.5%	
	Medium	52	198	25	275	
		26.8%	24.9%	20.5%	24.8%	
	Secondary	9	26	2	37	
		4.6%	3.3%	1.6%	3.3%	
	College or above	129	569	95	793	
		66.5%	71.6%	77.9%	71.4%	
Occupation	Student	57	328	42	427	0.021
		29.4%	41.3%	34.4%	38.4%	
	Unhealthy employee	55	191	36	282	
		28.4%	24.0%	29.5%	25.4%	
	Health sector employee	8	40	8	56	
		4.1%	5.0%	6.6%	5.0%	
	Retired	15	53	14	82	
		7.7%	6.7%	11.5%	7.4%	
	Unemployed	59	183	22	264	
		30.4%	23.0%	18.0%	23.8%	
place of residence	Southern	28	101	17	146	0.159
		14.4%	12.7%	13.9%	13.1%	
	Eastern	55	184	35	274	
		28.4%	23.1%	28.7%	24.7%	
	North	29	188	31	248	
		14.9%	23.6%	25.4%	22.3%	
	Western	71	268	32	371	
		36.6%	33.7%	26.2%	33.4%	
	Central	11	54	7	72	
		5.7%	6.8%	5.7%	6.5%	

4. DISCUSSION

Chronic kidney disease (CKD) is characterized by a progressive and permanent deterioration in renal function lasting for a minimum of three months. This deterioration affects the glomerulus, tubules, and their endocrine function. Clinically, CKD is diagnosed by a decrease in the glomerular filtration rate below 60 mL/min/1.73 m2 and/or an increase in urinary albumin excretion (Debone et al., 2017; Jha et al., 2013). The condition in question has a prevalence above 10 percent among the global population, thereby emerging as a significant public health concern on a global scale in recent years. According to Bikbov et al. (2020), the prevalence of chronic kidney disease (CKD) on a global scale was projected to be 9.1% in the year 2017, with around 1.2 million deaths being related to this condition. A comprehensive understanding and timely detection of chronic kidney disease (CKD) can play a crucial role in mitigating the advancement of the condition during its first phases and minimizing unfavorable consequences. Ahmed et al. (2018) argue that an increased rate of early identification of communities at heightened risk of chronic kidney disease (CKD) or those harboring individuals with undiagnosed or early-stage illnesses might effectively mitigate the spread of CKD by enhancing knowledge and awareness among affected individuals. This article presents the findings of a study done among a sample of 1,111 individuals from the Saudi population.

The objective of this study was to evaluate the level of awareness and knowledge of risk factors associated with chronic renal disease among the population of Saudi Arabia. Based on the assessment of participants' knowledge scores pertaining to chronic kidney disease (CKD), the findings indicate that 71.6% of respondents claimed possessing a moderate level of knowledge, while 17.5% indicated a poor level of knowledge. Conversely, a mere 11% of participants reported possessing a high level of knowledge on the subject matter. Consistent with the findings of a separate study conducted among a sample of 401 persons from Medina,

Saudi Arabia, it was observed that 64.1% of participants shown adequate awareness, whereas 35.9% exhibited inadequate awareness regarding chronic kidney disease (CKD) (Alharbi et al., 2018). According to Ahmed et al. (2018b), the survey revealed that 60.8% of participants perceived diabetes mellitus (DM) as a risk factor for chronic kidney disease (CKD). Additionally, 59.6% and 50.9% of respondents acknowledged hypertension (HTN) and coronary heart disease (CHD) as risk factors for CKD, respectively. A descriptive cross-sectional study was conducted in Southern Saudi Arabia, with 1317 participants. The findings revealed that 28.6% of the participants had a good level of awareness of chronic kidney diseases (CKDs), while 71.4% had a poor level of awareness (Alshahrani et al., 2022). Furthermore, a further investigation carried out in Jeddah revealed a limited degree of awareness, indicating a lack of understanding of renal illness among the 268 respondents (Al-Husayni et al., 2021). A substantial proportion of the survey respondents, over 50%, recognized the utilization of nonsteroidal anti-inflammatory drugs (NSAIDs) as a noteworthy determinant of risk. Furthermore, nearly 33% of the participants acknowledged that both diabetes and hypertension are recognized risk factors for chronic kidney disease (CKD) (Al-Husayni et al., 2021).

A study conducted in Jazan Province, Saudi Arabia, examined a sample of 440 participants to assess their knowledge on chronic kidney disease (CKD). The findings revealed that a small proportion of participants (27.3%) possessed good knowledge, while the majority exhibited either moderate knowledge (36.6%) or low knowledge (36.1%) regarding CKD. The study conducted by Assiry et al. (2022) revealed that a minority of participants, specifically 7.5% and 9.3% respectively, demonstrated a comprehensive comprehension of the risk factors and consequences linked to chronic kidney disease (CKD). Conversely, a significant majority of participants, accounting for 68.4% and 81.8% respectively, exhibited a limited awareness regarding the risk factors and complications associated with CKD. A crosssectional online survey was conducted among 983 individuals from the population of Saudi Arabia. The findings of the study indicated that the participants exhibited a generally low level of knowledge regarding chronic kidney disease (CKD). The average knowledge score among the study participants was 11.99 (± 4.70), with scores ranging from 0 to 22. Approximately 42.9% of the individuals obtained knowledge scores below 11. Furthermore, more than half of the participants correctly identified diabetes mellitus (DM), hypertension (HTN), and obesity as risk factors for CKD (Alobaidi, 2021). Furthermore, a study conducted in Malaysia examined a sample of 103 adult males and females, revealing that a significant proportion of persons (69.9%) exhibited inadequate knowledge regarding the risks associated with chronic kidney disease (CKD) (Yusoff et al., 2016). In a study conducted in Tanzania, it was found that there was a limited comprehension of renal disease among individuals. The participants reported an overall weighted mean knowledge score of 3.28 (95% CI 2.94, 3.63) out of a total of ten points (Stanifer et al., 2016). In a recent study conducted in India, Sahu et al. (2022) reported that among a sample of 250 participants, 36.4% exhibited excellent knowledge whereas 63.6% exhibited inadequate knowledge. In relation to the participants' attitudes regarding chronic kidney disease (CKD), it was found that 44.9% reported a moderate attitude, followed by 39.9% reporting a low attitude, while only 15.2% indicated a high attitude score.

In alignment with our findings, a separate study conducted in the Kingdom of Saudi Arabia (KSA) revealed that participants exhibited a positive attitude towards chronic kidney diseases (CKDs) and the associated risk factors. Our current study demonstrates that a significant majority of 90.7% of the participants expressed agreement with the notion of seeking medical attention at a health facility upon experiencing symptoms of kidney disease. Furthermore, 89.4% of the participants acknowledged the importance of early detection in mitigating the progression of CKD. According to a study conducted by Alshahrani et al. (2022), a significant proportion of participants, specifically 76.9%, acknowledged that chronic kidney disease is associated with a substantial risk of mortality. Furthermore, 75.6% of respondents expressed the belief that it is feasible to avoid the onset of chronic kidney disease. However, only 46.2% of participants held the view that the cost of undergoing a kidney screening test is not prohibitively expensive. Additionally, a study conducted in Malaysia revealed that a majority of the participants had a high degree of positive attitude (68.9%) and excellent habits (88.3%) in relation to the risk of chronic kidney disease (CKD) (Yusoff et al., 2016). However, Umeukeje et al. (2018) conducted a separate study among individuals of African American descent in order to assess their attitudes towards early diagnosis and screening for kidney disease. The findings of this study revealed that a significant majority had unfavorable attitudes towards the prevention of chronic kidney disease (CKD).

Furthermore, a recent study conducted in India revealed that a significant proportion of participants (51.6%) exhibited suboptimal attitudes on the risk associated with chronic kidney disease (CKD) (Sahu et al., 2022).

Based on the analysis of the association between knowledge scores of chronic kidney disease (CKD) and socio-demographic characteristics, no statistically significant correlation was found between knowledge scores and variables such as gender, age, marital status, educational degree, occupation, and location of residence ($p > 0.05$). Regarding the association between attitude score of chronic kidney disease (CKD) and socio-demographic characteristics, the findings indicate significant associations between attitude score and gender ($P=0.001$), age ($p=0.005$), educational qualification ($p=0.021$), and occupation ($p=0.021$). However, no significant association was found with marital status and place of residence ($P>0.05$). In

contrast to the findings obtained in Medina, Saudi Arabia, a separate study conducted by Alharbi et al. (2018) revealed a noteworthy disparity between knowledge and the average age (P-value=0.006). The level of education was also identified as a significant contributing factor (P=0.035), with individuals possessing university, high school, and secondary education demonstrating a greater propensity for adequate knowledge. Furthermore, gender was found to be a significant factor (P=0.029) in relation to knowledge about CKD. However, marital status did not emerge as a significant influencing factor in the study. Additionally, a separate study revealed a statistically significant correlation between the knowledge level of participants and their age (p=0.011). The study conducted by Alshahrani et al. (2022) identified a higher degree of knowledge on chronic kidney diseases (CKDs) among older participants compared to those aged 18-34 years. The results also indicated a significant association between knowledge level and married status (p=0.001) as well as work (p=0.001). However, no significant relationship was discovered between knowledge level and gender or educational level (p>0.05).

The findings of a separate study conducted in Jazan indicated a significant correlation between participants' knowledge and their student or employment status ($p < 0.001$), completion of graduate studies ($p < 0.001$), residence in urban areas ($p < 0.001$), and belonging to the age group of 18-39 years. However, gender and nationality did not demonstrate any statistically significant impact, which aligns with the results of our own study (Assiry et al., 2022). The study conducted by Alobaidi (2021) revealed noteworthy correlations between the score of kidney disease knowledge and various demographic factors. Specifically, age ($p = 0.014$), educational level ($p = 0.018$), and marital status ($p = 0.023$) were found to be significantly associated with the knowledge score of kidney disease. The study further indicated that participants with higher age, higher educational attainments, and who were married exhibited significantly higher scores in CKD knowledge. Furthermore, a separate study carried out in Malaysia revealed noteworthy correlations between gender and knowledge ($p = 0.046$), age groups ($p = 0.016$), education and knowledge ($p = 0.001$), occupation ($p = 0.001$), and family income and knowledge ($p = 0.001$). Nevertheless, Yusoff et al. (2016) found no statistically significant correlation between marital status and knowledge. Regarding attitude, the study found significant connections between gender and levels of attitudes (p=0.028), age groups (p=0.035), married status (p=0.002), and occupation with levels of attitudes (p=0.001). Yusoff et al. (2016) found no statistically significant correlation between educational attainment and attitude levels ($p= 0.612$). Another study indicated that a substantial link was identified between education and knowledge ($p < 0.050$) and significant association was also observed between education and occupation with attitude ($p < 0.001$ and $p < 0.050$, respectively) (Sahu et al., 2022).

5. CONCLUSION

Based on the findings of this study, it can be inferred that the participants exhibited a commendable level of knowledge on chronic kidney diseases (CKDs). Moreover, these results align with previous research conducted in Saudi Arabia, while surpassing the outcomes observed in studies conducted in other countries. Additionally, the participants in our study had a positive attitude towards chronic kidney diseases (CKDs), a finding that aligns with previous research. It is recommended to implement awareness campaigns in order to enhance the level of awareness among the general people in Saudi Arabia regarding chronic renal disease.

RECOMMENDATIONS

It is recommended that more educational efforts be initiated in order to enhance awareness of chronic renal disease among the general public in Saudi Arabia.

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