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Consciousness of Saudi General Population towards Chronic Kidney Disease

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ABSTRACT

Background: *The level of awareness towards CKD is considered as an essential part of effective CKD control and management plan, thus, the objective of the present study was to assess the level of awareness of Saudi population towards CKD.* ***Methodology:*** *This is a cross-sectional survey which included 950 apparently healthy Saudi volunteers, their ages ranging from 18 to 65 years old with a mean age of 34 years. A purposeful questionnaire was designed and used for obtaining data on the subject of the CKD.* ***Results:*** *Out of 950 participants, 294 (30.9%) were males and 656 (69.1%) were females, giving males' females' ratio of 0.44: 1.00. Approximately 224/950 (24%), 516/950 (54%) and 210/950 (22%) of the participants have claimed good, poor and nothing knowledge about CKD, correspondingly. For males, about 91/292 (31%), 108/292 (37%) and 95/292 (33%) have claimed good, poor and nothing knowledge about CKD. For females, about 133/656 (20%), 408/656 (62%) and 115/656 (18%) have claimed good, poor and nothing knowledge about CKD.* ***Conclusion:*** *The level of awareness towards CKD is low in Saudi Arabia, which necessitates the urgent need for health strategies that increase public awareness of CKD.*

Keywords: CKD, Awareness, Saudi Arabia, Renal disease

INTRODUCTION

Chronic kidney disease (CKD) is a major global health problem, which is progressively growing in several parts of the world due to an alarming increase in the prevalence of diabetes mellitus (DM), hypertension (HTN) and cardiovascular diseases (CVDs) [1]. Several epidemiological reports have revealed an escalating increase in the risk of CKD, particularly, renal failure among people with specific clinical and socio-demographic features [2].

In the past decade, glomerulonephritis was regarded as the major cause of renal disease, but currently, it has become a less suspect cause of renal disease, particularly in the western world [3]. However, consequent reports indicated that HTN and DM are the most common causes of the CKD worldwide [4,5]. It was well established that early detection of CKD gives a valuable opportunity for effective and suitable intervention, which will regress the burden of the disease and prevents its development into the end-stage renal disease (ESRD) or even kidney failure [6]. Thus, raising public awareness and screening of apparently healthy population who are known to be at a risk may give a good opportunity towards CKD control and prevention [2].

Although most of the studies from Saudi Arabia and other Gulf countries have only reported ESRD [7], a recent comprehensive survey conducted in this context has shown that the prevalence of CKD was 9.4% in Saudi Arabia [8].

Implementation of self-awareness towards CKD and related risk factors is very important, particularly for a population with access to publicly funded health care [9]. To implement and design effective strategies for control and prevention of CKD, there is always a vital need for assessing the level of public awareness in a specific population. Therefore, our

aim in the present study was to assess the level of awareness of Saudi population towards CKD, since prevention of diverse outcomes of CKD could be achieved by evaluating persons with risk factors, to enable earlier detection, and by risk factor decline in persons without CKD, to prevent or slow the development of CKD.

PATIENTS AND METHODS

In this cross-sectional survey, data were obtained from 950 Saudi volunteers living in the city of Hail, the Kingdom of Saudi Arabia (KSA). Participants were randomly selected by simple random method regardless of their age, gender or education level.

The purposeful questionnaire was designed and used for the collection of the required data. The following information was obtained from each participant: age, sex, occupation, education level, prior knowledge about CKD, do you have CKD, the nature of CKD, the type of CKD, a human can live with one kidney, CKD can easily be treated if early detected, CK needs transplantation.

Data Analysis

Statistical package for social sciences (SPSS: version 16) was used for analysis and to perform a Pearson Chi-square test for statistical significance (p-value). The 95% confidence level and confidence intervals were used. The p-value less than 0.05 were considered statistically significant.

Ethical Consent

Each participant was asked to sign a written ethical consent during the questionnaire's interview. The informed ethical consent form was designed and approved by the ethical committee of the College of Medicine (University of Hail, KSA) research board.

RESULTS

In this cross-sectional survey, 950 volunteers living in the city of Hail, Saudi Arabia, were included, their ages ranging from 18 to 65 years with a mean age of 34 years. Out of 950 participants, 294 (30.9%) were males and 656 (69.1%) were females, giving males' females' ratio of 0.44: 1.00.

As described in Table 1 and Figure 1, the majority of the participants were at age range 19-25 years, representing 348 (36.6%) followed by age groups 45-55 years, ≤ 18 years, and ≥ 56 years constituting 179 (18.8%), 167 (17.6%) and 145 (15.3%), respectively. The majority of males were found at age group 45-55 years followed by age groups ≤ 18 years and 19-25 years, representing 86 (29%), 62 (21%), and 56 (19%) of the total males' number, respectively. The majority of females were found at age group 19-25 years followed by age groups ≥ 56 years and ≤18 years, representing 292 (44.5%), 119 (18%), and 105 (16%) of the total females' number, correspondingly.

Table 1 Distribution of the study population by demographical characteristics

Variable	Category	Males	Females	Total
Age (years)	≤ 18 years	62	105	167
	19-25	56	292	348
	26-34	32	10	42
	35-44	32	37	69
	45-55	86	93	179
	≥ 56	26	119	145
	Total	294	656	950
Education	Basic education	22	30	52
	Secondary	164	308	472
	University	108	318	426
	Total	294	656	950

Occupation	Teacher	45	183	228
	Military	72	2	74
	Free work	30	2	32
	Student	61	352	413
	Other	86	117	203
	Total	294	656	950

Most of the study population were found with secondary level of education followed by university and basic education constituting 472 (49.7%), 426 (44.8%) and 52 (5.5%), in this order. For males, most of them were found at secondary level constituting 164/294 (55.8%) of the total males, hence, most females were found with university-level comprising 318/656 (48.5%) of the total females, as described in Table 1 and Figure 1.

With regard to the occupation, most participants were students followed by teachers and others representing 413 (43.5%), 228 (24%) and 203 (21.4%), respectively. For males, most of them were military representing 72/294 (24.5%), hence, most of the females were students comprising 352/656 (53.7%), as described in Table 1 and Figure 1.

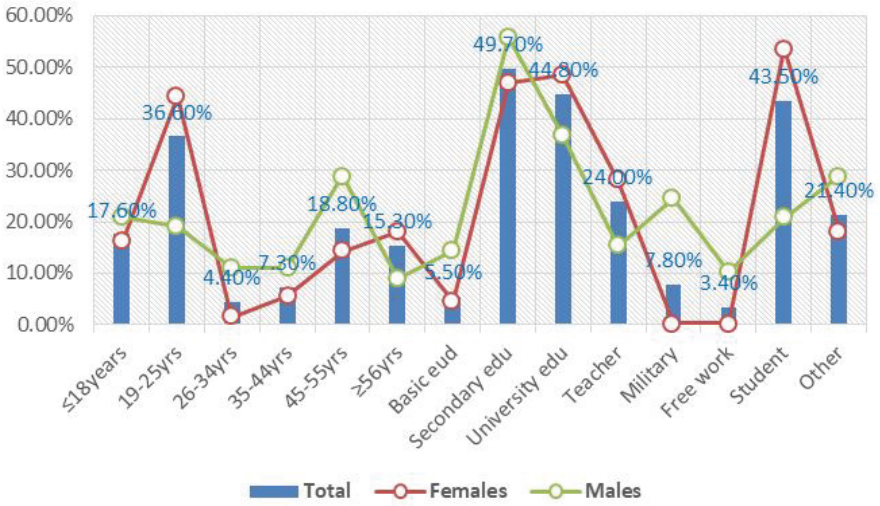

Figure 1 Description of the study population by demographical characteristics

Table 2 summarizes the distribution of the study subjects by their prior knowledge about CKD. About 224/950 (24%), 516/950 (54%) and 210/950 (22%) of the participants have claimed good, poor and nothing knowledge about CKD, correspondingly. For males, about 91/292 (31%), 108/292 (37%) and 95/292 (33%) have claimed good, poor and nothing knowledge about CKD. For females, about 133/656 (20%), 408/656 (62%) and 115/656 (18%) have claimed good, poor and nothing knowledge about CKD, as shown in Figure 2.

Around 16/513 (3%) of the respondent, participants were found with CKD, of whom 12/16 (75%) were males and 4/353 (25%) were females, as indicated in Table 2. On asking the participants about nature of the disease, about 576/950 (61%), 87/950 (9%), 104/950 (16%) and 183/950 (28%) believed that CKD is a renal failure, renal stones, renal cancer, and renal function impairment, respectively. About 86/292 (29%) of those believed that it is renal function impairment were males were compared to only 97/656 (15%) of the females, as shown in Table 2 and Figure 2.

Around 575/880 (65.3%) of the study respondents believed that CKD is acute renal disease, hence, about 305/880 (34.6%) believed that it is a chronic renal disease. Approximately 50% of the males believed that it is a chronic disease, hence only 29.4% of the females believed that it is chronic renal disease, as indicated in Table 2. On asking them whether a human can live with kidney, only 198/950 (21%) have answered "Yes", of whom 101/292 (35%) were males and 93/656 (14.2%) were females. On asking them whether CKD can easily be treated if detected early, only 214/950 (22.5%) have answered "Yes", of whom 31/292 (11%) were males and 183/656 (28%) were females. On asking them whether CKD needs renal transplantation, about 374/950 (39.4%) have answered "Yes", of whom 112/292 (38%) were males and 262/656 (40%) were females (Table 2).

Table 2 Distribution of the study population by prior knowledge about CKD

Variable	Category	Males	Females	Total
Prior knowledge about CKD	Good	91	133	224
	Poor	108	408	516
	Nothing	95	115	210
	Total	294	656	950
Have you CKD	Yes	12	4	16
	No	148	349	497
	Total	160	353	513
The nature of CKD is	Renal failure	161	415	576
	Renal stones	20	67	87
	Renal cancer	27	77	104
	Renal function impairment	86	97	183
	Total	294	656	950
CKD is (disease type)	Acute	112	463	575
	Chronic	112	193	305
Human can live with one kidney	Yes	101	93	198
	No	191	561	752
CKD can easily be treated if early detected	Yes	31	183	214
	No	263	473	736
CK needs transplantation	Yes	112	262	374
	No	182	394	576

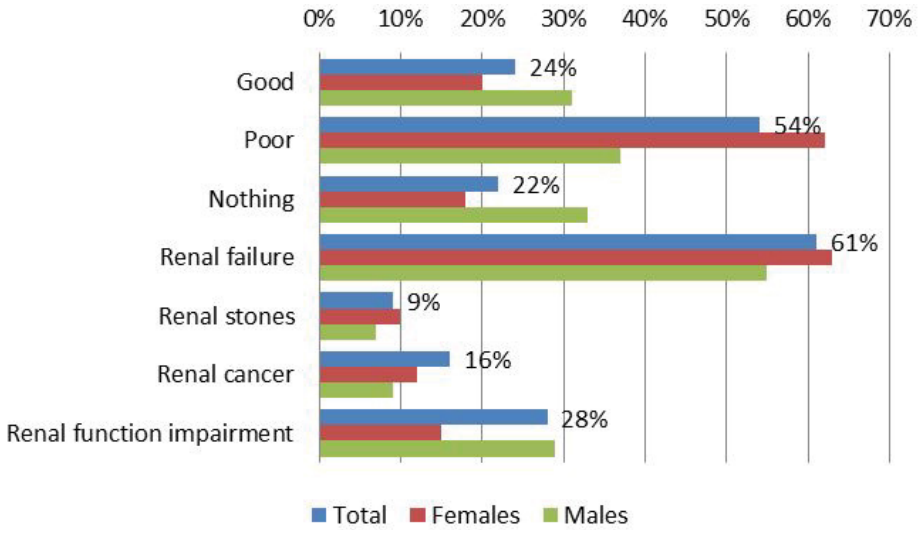

Figure 2 Description of the study population by prior knowledge about CKD and nature of the disease

With regard to the education and prior knowledge about CKD, almost 100% of those with basic education level were found to know nothing about CKD, compared to 105/472 (22%) and 53/426 (12%) of those with secondary and university levels, in this order. Around 125/426 (30%) of those with university level and 99/472 (21%) of those with secondary level claimed a good level of knowledge about CKD, as indicated in Table 3 and Figure 3.

Table 3 Distribution of the prior knowledge about CKD by education

Variable	Category	Basic	Secondary	University	Total
Prior knowledge about CKD	Good	0	99	125	224
	Poor	0	268	248	516
	Nothing	52	105	53	210
	Total	52	472	426	950

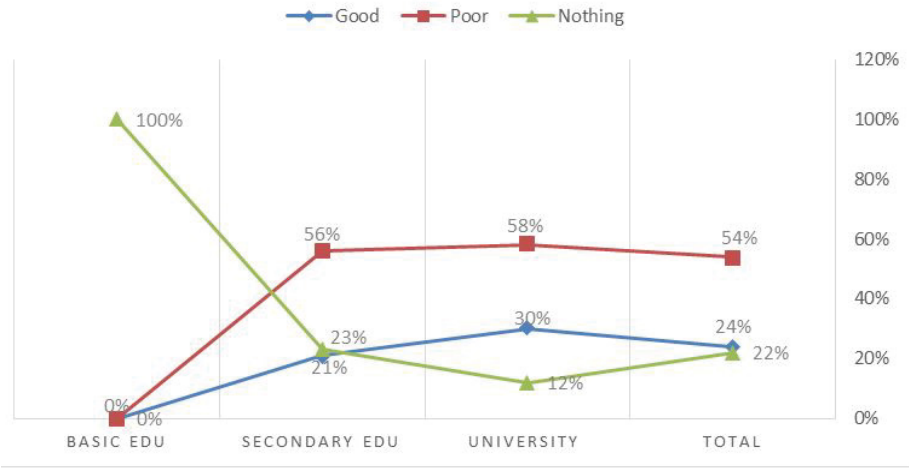

Figure 3 Description of the prior knowledge about CKD by education

With regard to the occupation and prior knowledge about CKD, about 40/228 (17.5%), 32/74 (43.2%), 24/32 (75%), 64/413 (15.5%) and 50/203 (24.6%) of teachers, military, free work, students and others with scattered jobs correspondingly, have revealed that they have no previous knowledge about CKD. However, about 134/228 (58.8%) of the teachers and 17/74 (23%) of the military have indicated good knowledge as shown in Table 4 and Figure 4.

Table 4 Distribution of the prior knowledge about CKD by occupation

Variable	Category	Teachers	Military	Free work	Students	Others	Total
Prior knowledge about CKD	Good	134	17	0	73	0	224
	Poor	54	25	8	276	153	516
	Nothing	40	32	24	64	50	210
	Total	228	74	32	413	203	950

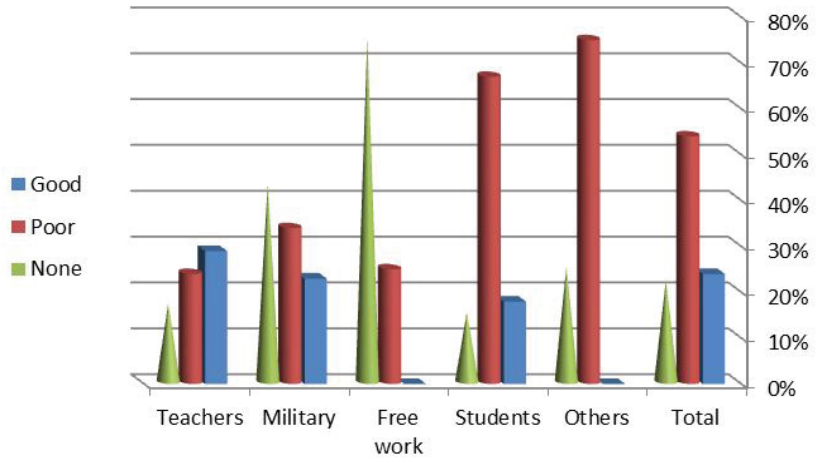

Figure 4 Description of the prior knowledge about CKD by occupation

DISCUSSION

As a result of increasing prevalence rates of hypertension, DM, and obesity in Saudi Arabia, the risk of CKD is expected to be high particularly if the self-awareness is low [10-12]. Therefore, the present study aimed at assessing the level of awareness among Saudi population in order to implement effective CKD preventive measures.

Although the study included a large number of females compared to males, it represents a large section of the population

with regard to age (18 to 65 years), occupation and education levels. However, about 3% of the participants in this randomized sample were found with CKD and this is relatively higher.

On asking the participants about their prior knowledge about CKD, about 24% of the participants have claimed good knowledge, whereas, around 22% indicated "know nothing" about CKD. To the best of our knowledge, there is no study in this context from Saudi Arabia, which indicated the level of awareness towards CKD among the Saudi population. However, some epidemiological studies have reported a high prevalence of CKD and its associated risk factors [8,13]. Yet, some studies in this regard have reported a high proportion of awareness. In a study from Japan, which surveyed 355 participants their mean age was 63.9 years, found that the awareness about CKD among the participants, excluding medical professionals, was 58% [14]. This study investigated the elder population compared to our population in the current study (their mean age was 34 years). Such population may render a cumulative knowledge about several diseases. With regard to the sex, the percentage of males "know nothing" about CKD (33%) were more than females (18%) in this regard. On the other hand, the proportion of males with good knowledge about CKD (31%) were more than females (20%). However, these variations may be attributed to the variability of the number of participants in each group.

On asking the participants about the "nature of the disease", only 28% of the participants have revealed that it is "renal function impairment". This might indicate the true level of awareness of the population about CKD in Saudi Arabia, which is relatively low compared to other international educations, though most of these studies included patients [15,16]. Nonetheless, some studies from the United States have reported the more declined level of awareness towards CKD [17,18].

In the present study, about 65.3% of the study respondents believed that CKD is an acute renal disease, which indicated very low medical knowledge. On asking them whether a human can live with one kidney, only 21% have answered "Yes", of whom 35% were males and 14.2% were females. Although all study subjects have a low level of medical knowledge, males tend to be better than females.

On asking the participants whether CKD can easily be treated if detected early, only 22.5% have answered "Yes", of whom 11% were males and 28% were females. It was well established that earlier detection among those at risk would allow the introduction of low-cost medical management strategies and patient education necessary to slow the progression of kidney disease, reduce the associated co-morbidities, and better prepare those who do progress to renal failure for dialysis or transplantation [19,20].

With regard to the relationship between education and the level of awareness, the level of medical knowledge and awareness was more common among more educated people. Although, the assessment in this study based on general education, the CKD oriented education might be of beneficial influence, which can reduce the risk of getting the disease. CKD health education may increase both objectives and perceived CKD knowledge among patients [21]. Although much CKD patients' education research has focused on patients with ESRD, health education has improved outcomes across the CKD field [22].

With regard to occupation, the majority of those with relatively better health knowledge were teachers and students. Although the present study has provided data that can stimulate further actions in term of more research and prompt health strategies actions, it has a limitation of its cross-sectional settings.

CONCLUSION

The level of awareness towards CKD is low in Saudi Arabia, which necessitates the urgent need for health strategies that increase public awareness of CKD. Substantial prevention efforts to improve recognition and early detection of CKD can be achieved from the public and patient education.

DECLARATIONS

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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