

## Awareness of Chronic Kidney Disease in Hail Region

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### ABSTRACT

**Background:** Chronic kidney disease (CKD) is a common and growing problem worldwide; Earlier recognition of chronic kidney disease (CKD) could slow progression, prevent complications, and reduce cardiovascular-related outcomes. **Study objective:** to show the knowledge of the population Hail region on CKD and its causes, risk factors, appropriate treatment, and consequences.

**Methods:** A cross sectional study carried out in Hail region during the period from 1 October to 31 December. Data was collected by personal interview using a predesigned questionnaire containing all the relevant questions.

**Results:** Majority (60%) of participant have a good knowledge about CKD, 678 (71.4%) of participant think that alcohol drinking are the most cause of CKD, 81.2% think smoking, 62.7% think DM and 60.7% think that hypertension is the cause. Side pain are the most (84.4%) known symptom of CKD followed by difficulty urination known in 74.4%, Oliguria in 67.8% and hypertension in 34.4%. About the risk factors of the disease, 96.6% think that some food was the risk factors of CKD, 89.8% think about obesity, 81.5% think about Analgesic, 56.0% think about DM and 30.5% think about positive family history of CKD. It's found also that 85.6% of participant know that CKD 85.6% can't be treated without renal transplantation, 83.3% with dialysis and 71.2% by drugs also large number of them know that it can be treated in high percentage. Almost all of them say that CKD can be decreased by performing muscular exercises.

**Conclusion:** Current estimates of CKD awareness indicate that awareness remains unsatisfactory. Also, little is known regarding whether increased awareness improves clinical outcomes for CKD patients. Further research is necessary to continue to design and refine awareness campaigns aimed at dissemination of basic CKD information, given both the high prevalence of CKD and its risk factors and the low estimated awareness of CKD.

**Keywords:** chronic kidney disease, awareness, knowledge, population, Hail region.

### INTRODUCTION

Chronic Kidney Disease (CKD) is becoming a major health concern worldwide. For many patients, CKD is associated with substantial morbidity and mortality <sup>[1,2]</sup>. Chronic kidney disease (CKD) is defined as abnormalities of kidney structure or function, present for >3 months,

with implications for health <sup>[3]</sup>. Since the initial stages of CKD can be asymptomatic, early disease detection is difficult. In undiagnosed and untreated individuals CKD may gradually progress to End Stage Renal Disease (ESRD), the terminal stage of CKD when costly Renal Replacement Therapy (RRT) via dialysis or renal transplantation becomes necessary to sustain the patient's life <sup>[4]</sup>. However, earlier-stage CKD can lead to several complications, such as anemia and bone mineral metabolism disorders, and poor outcomes, including cardiovascular events, morbidity, and mortality <sup>[5]</sup>. Identification of CKD requires high level of awareness about the disease, continuous checkup, recognition of individual risk and appropriate laboratory testing (serum creatinine and/or urinary protein) <sup>[6]</sup>. The major challenge of CKD patients in developing countries is the late

presentation with most patients in an advanced stage. This could have stemmed from a poor level of awareness and knowledge of the disease as

reported by many authors <sup>[7,8]</sup>. Despite recent attempts to increase individual and public awareness about CKD through dissemination of clinical practice guidelines and recommendations for patients with CKD or its risk factors to providers [9,10], community awareness events such as World Kidney Day <sup>[11,12]</sup>, and free screening efforts for high-risk individuals like the Kidney Early Evaluation Program (KEEP) <sup>[13, 14]</sup>, it remains low. Epidemiological studies in developed countries have also shown a low level of awareness, knowledge and risk factors of CKD. Several studies have demonstrated that individuals who are provided with appropriate information and knowledge about CKD and its risk factors are more likely to engage in health-promoting behaviors and life style modifications to decrease the risk of CKD incidence. Therefore, improving the public's knowledge about CKD and its risk factors is an important strategy for CKD prevention. The aim of this survey is to explore the baseline knowledge of Hail region community

about CKD definition, its risk factors, appropriate treatment, and consequences.

## OBJECTIVES

This study was obtained to determine the knowledge of the population of Hail region on CKD and its causes, risk factors, appropriate treatment, and consequences.

Methodology:

**Study design and setting:** A cross-sectional study was carried out on the population of Hail region during the period from 1 October to 31 December; 2017.

**Sampling:** The sample size was calculated using the sample size equation:  $n = z^2 p(1-p)/e^2$ .

**Sampling technique:** Systematic simple random technique was followed as we choose the participants randomly. The data was collected by means of personal interview using a predesigned questionnaire containing all the relevant questions.

## Statistical analysis

Collected data was coded and analysis was done using statistical package for social sciences (SPSS, version 20). P values equal to or less than 0.05 was considered statistically significant.

## Ethical considerations:

All the participants were informed that the participating is completely voluntary. The participants were assured that their data will be dealt with confidentiality. Informed consent was obtained from each participant before starting interview. No names were written in the forms and the data was kept safely.

## RESULTS

Table (1) shows the socio-demographic characteristics and chronic diseases among the studied population. It's found that, females represent 69%, 41% aged from 25 – 34 years and about half reach secondary stage of education, 24.0% were teachers and 43% were university students. Most of participants (97%) resident in hail city. As regards chronic diseases, 13% of them had DM, 9.2% had hypertension and 1.7% had chronic renal failure.

Table (2) discusses the general knowledge of participants about causes, manifestations and risk factors of CKD. We found that 80% of the participants had previous knowledge about CKD and 63% know the acute CKD, 74% know that human can live with one or two kidney, 15% of them had previous renal function test and only 1.7% had abnormal results so 1.7% of them had CKD and in 1.2% cases were detected by doctors.

Table (3) discusses the knowledge of participants about causes, manifestations and risk factors of CKD. The majority (60%) of participant have a good knowledge about CKD, 678(71.4%) of participant think that alcohol drinking is the most cause of CKD, 81.2% think smoking, 62.7% think DM and 60.7% think that hypertension is the cause. Side pain are the most (84.4%) known symptom of CKD followed by difficulty urination known in 74.4%, Oliguria in 67.8% and hypertension in 34.4%. About the risk factors of the disease, 96.6% think that some food was the risk factors of CKD, 89.8% think about obesity, 81.5% think about analgesic, 56.0% think about DM and 30.5% think about positive family history of CKD.

Table 4 shows the knowledge of participants about controlling, treatment, factors decreasing, source of knowledge about CKD and using of NSAID drugs. It was found that 85.6% of the participant know that CKD 85.6% cannot be treated without renal transplantation, 83.3% with dialysis and 71.2% by drugs also large number of them know that it can be treated in high percentage. Almost all of them say that CKD can be decreased by performing muscular exercises. When they were asked about their source of knowledge about CKD, 94.5% said that they get it from social media and 32% of the cases use NSAID drugs in intensive way with prescription.

Table (5) illustrates the attitude of participants from kidney donation, importance of awareness and its sources. When they were asked about their attitude from kidney donation 94.9% agreed. **Awareness** of the public plays a very important role to control CKD as 96% of them agreed on its importance, and 93.7% agreed on the importance of awareness through social media, while 69.7% said that awareness should be through doctors. On studying of the relationship between education and CKD knowledge and attitude of participants from CKD we found that 77% of participant have previous knowledge about CKD and 70% of secondary education had a good knowledge about CKD.

Regarding the attitude from kidney donation all of participant who reach basic stage, 94.9% of secondary and 94.4% of university education agreed on it. Almost all of participant agreed on the importance of awareness. All of the participant who reach secondary and university stage reported the importance of making awareness through campaigns and social media (able 6).

**Table (1): Socio-demographic characteristics and chronic diseases among the studied population, Hail, KSA, 2018 (N=950)**

Age group	No. (N=950)	%
<25	167	17.6
25-34	390	41.1
35-45	248	26.1
46-55	111	11.7
>55	34	3.6
<25	167	17.6
25-34	390	41.1
<b>Gender</b>		
Male	294	30.9
Female	656	69.1
<b>Education</b>		
Basic	52	5.5
Secondary	472	49.7
University	426	44.8
<b>Marriage</b>		
Yes	481	50.6
No	469	49.4
<b>Residence</b>		
In Hail City	927	97.6
Outside Hail	23	2.4
<b>Occupation</b>		
Teacher	228	24.0
Military	74	7.8
Free work	32	3.4
Student	413	43.5
Other	203	21.4
<b>Chronic diseases</b>		
DM	128	13.5
Hypertension	87	9.2
Renal failure	16	1.7

**Table (2): General knowledge of participants about causes, manifestations and risk factors of CKD, Hail, KSA, 2018 (N=950)**

Having CKD knowledge	No.	%
I've previous knowledge	740	77.9
No I don't have	210	22.1
<b>CKD can be</b>		
chronic	305	32.1
acute	605	63.7
easily treated	214	22.5
Need transplantation	374	39.4
<b>Known common CKD</b>		
Renal failure	576	60.6
Renal stone	87	9.2
Renal cancer	104	10.9
Renal function impairment	183	19.3
<b>Human can live with</b>		
One kidney	198	20.8
Two kidneys	47	4.9
Both answer correct	705	74.2
<b>Previous renal function test</b>		
Yes	150	15.8
No	800	84.2
<b>Previous renal test was</b>		
Normal	134	14.1
Abnormal	16	1.7
Missing	800	84.2
<b>Having CKD</b>		
Yes	16	1.7
No	497	52.3
Missing	437	46.0
<b>Having CKD detected by:</b>		
Doctor visit	11	1.2
Symptoms	2	.2
Comprehensive investigations	3	.3
Missing	934	98.3

**Table (3): Knowledge of participants about causes, manifestations and risk factors of CKD, Hail, KSA, 2018 (N=950)**

<b>CKD Knowledge (participant opinion)</b>	<b>No. (N=950)</b>	<b>%</b>
Excellent	284	29.9
Good	570	60.0
Poor	96	10.1
<b>Knowledge about causes of CKD</b>		
Hypertension	577	60.7
Diabetes Mellitus	596	62.7
Salt intake	537	56.5
Genetic causes	397	41.8
Excess meat intake	404	42.5
Alcohol drinking	678	71.4
Smoking	771	81.2
<b>Knowledge about manifestations of CKD</b>		
Side pain	802	84.4
Difficulty urination	707	74.4
Urine smell change	686	72.2
Oliguria	644	67.8
Polyuria	170	17.9
Thirst	156	16.4
No signs	108	11.4
Hypertension ( HTN )	327	34.4
<b>Knowledge about risk factors of CKD</b>		
Some food	918	96.6
HTN	268	28.2
DM	532	56.0
Obesity	853	89.8
Cardiac disease	346	36.4
Analgesic	774	81.5
Others	203	21.4
Positive family history of CKD	290	30.5

**Table (4): Knowledge of participants about controlling, treatment, factors decreasing, source of knowledge about CKD and using of NSAID drugs, Hail, KSA, 2018 (N=950)**

<b>Knowledge about CKD controlling</b>	<b>No. (N=950)</b>	<b>%</b>
<b>CKD treated with:</b>		
Drug	676	71.2
Dialysis	791	83.3
Transplantation	813	85.6
Others	116	12.2
<b>Cure rate of CKD:</b>		
High	682	71.8
Average	226	23.8
Nil	42	4.4
<b>Factors decreasing CKD</b>		
Sports	915	96.3
Continuous check up	832	87.6
<b>Source of your knowledge about CKD</b>		
Doctor	762	80.2
Social media	898	94.5
Community	654	68.8
Other sources	238	25.1
<b>Using of NSAID drugs</b>		
Yes intensive with prescription	304	32.0
Yes intensive without prescription	51	5.4
Yes not intensive with prescription	267	28.1
yes without prescription and littler	145	15.3
Rare	183	19.3

**Table (5): Attitude of participants from kidney donation, importance of awareness and its sources**

	<b>No. (N=950)</b>	<b>%</b>
<b>Attitude from kidney donation</b>		
Positive	902	94.9
Negative	48	5.1
<b>Attitude from importance of awareness</b>		
Positive	914	96.2
Negative	36	3.8
<b>Attitude from importance of awareness through campaign</b>		
Positive	914	96.2
Negative	36	3.8
<b>Attitude from importance of awareness through social media</b>		
Positive	890	93.7
Negative	60	6.3
<b>Attitude from importance of awareness from doctors</b>		
Positive	662	69.7
Negative	288	30.3

**Table (6): Relationship between education and CKD knowledge and attitude of participants from CKD, Hail, KSA, 2018 (N=950)**

Variables	Education			Total (n=950)	P value
	Basic (n=52)	Secondary (n=472)	University (n=426)		
I've previous knowledge	0	380	360	740	0.001
	.0%	80.5%	84.5%	77.9%	
Don't have previous knowledge	52	92	66	210	
	100.0%	19.5%	15.5%	22.1%	
<b>CKD Knowledge (participant opinion)</b>					
Excellent	0	159	125	284	0.001
	.0%	33.7%	29.3%	29.9%	
Good	0	269	301	570	
	.0%	57.0%	70.7%	60.0%	
Poor	52	44	0	96	
	100.0%	9.3%	.0%	10.1%	
<b>Attitude from kidney donation</b>					
Yes	52	448	402	902	0.216
	100.0%	94.9%	94.4%	94.9%	
No	0	24	24	48	
	.0%	5.1%	5.6%	5.1%	
<b>Attitude from importance of awareness</b>					
Yes	17	472	425	914	0.001
	32.7%	100.0%	99.8%	96.2%	
No	35	0	1	36	
	67.3%	.0%	.2%	3.8%	
<b>Attitude from importance of awareness through campaign</b>					
Yes	17	472	425	914	0.002
	32.7%	100.0%	99.8%	96.2%	
No	35	0	1	36	
	67.3%	.0%	.2%	3.8%	
<b>Attitude from importance of awareness through social media</b>					
Yes	0	472	418	890	0.001
	.0%	100.0%	98.1%	93.7%	
No	52	0	8	60	
	100.0%	.0%	1.9%	6.3%	
<b>Attitude from importance of awareness from doctors</b>					
Yes	52	301	309	662	0.001
	100.0%	63.8%	72.5%	69.7%	
No	0	171	117	288	
	.0%	36.2%	27.5%	30.3%	

**DISCUSSION**

This study was done to show the knowledge of the population of Hail region on CKD and its causes, risk factors, appropriate treatment, and consequences. The study included 950 participants, 69.1% of them were females and 30.9% were males, 67.2% of them were between 25 and 45 in age. Current estimates of CKD

awareness indicated that awareness remains unsatisfactory. In this study the reported knowledge level (according to the participants' opinion) was excellent in 29.9%, good in 60% and poor in 10.1%. 77.9% of the participants reported that they had a previous knowledge about CKD and 22.1% had no previous idea about the disease. The level of awareness and knowledge of kidney

disease is also low in the study done by *Rotimi et al.*<sup>[15]</sup>. The awareness level of CKD was 34% and the knowledge level was good in 27.1%. In another study done on the population of moderate and high cardiovascular risk by *Coronado et al.*<sup>[16]</sup>, the recorded prevalence of CKD was 34.8% and the overall awareness was 70.9% and 48.2% by the health care system and the patient respectively.

The most frequent answers to the question "What is the known common CKD?" were renal failure (60.6%), renal function impairment (19.3%), renal cancer (10.9%) and renal stone (9.2%).

In *Roomizadeh et al.*<sup>[17]</sup>, the participants thought that the known common CKD were an inflammation of the kidneys (28.2%) and reduction in kidneys' ability to remove wastes from blood (27.8%). Other frequent answers were infection of the kidneys (18.0%), kidney stone (17.6%), and do not know/no response (8.3%). 60.7% and 62.7% of our participants reported hypertension and diabetes mellitus respectively as a cause of CKD. The findings are comparable to previous CKD knowledge surveys from those of developed countries. A survey in a large number of African-American adult populations revealed that only 13.6% knew diabetes and 12.1% knew hypertension was a CKD risk factor<sup>[18]</sup>. Also in *Roomizadeh et al.* study<sup>[17]</sup>, only 14.4% reported hypertension and 12.7% reported diabetes mellitus as a main cause or risk factor of CKD. These observations suggest that a considerable number of our participants are adequately informed on the subject of the significant role of unmanaged diabetes/hypertension in the development of CKD. Our participants also reported other causes of CKD like salt intake (56.5%), genetic causes (41.8%), excess meat intake (42.5%), alcohol drinking (71.4%) and smoking (81.2%).

In our study only 32.1% of the participants recorded that CKD can be chronic, 63.7% recorded that it can be acute, 22.5% recorded that it can be easily treated and 39.4% thought that it needs transplantation.

However; a lower level of knowledge about CKD was found in a survey of urban African-American adults, <3% named kidney disease as an important health problem, compared to 61% and 55% naming hypertension and diabetes, respectively<sup>[18]</sup>.

Another study was done to estimate the patient awareness of CKD, found that CKD awareness among U.S. adults with CKD, was generally quite low. Even at CKD stage 4, fewer than half of the persons with CKD were aware of their disease<sup>[19]</sup>.

We also evaluated the participants' knowledge about manifestations of CKD by asking about the symptoms of CKD. The answer was side pain in (84.4%), difficulty urination (74.4%), urine smell change (72.2%) and no signs in (11.4%). In *Roomizadeh et al.* study<sup>[17]</sup>, when respondents were asked "Which of the following symptoms/signs can manifest in CKD", 28.3% responded "pain in the flanks", 21.8% responded "difficulty in urination", 14.4% responded "urinating too much", 10.4% responded "change in smell/color of the urine", and 10.3% responded "urinating too little". Only 10.4% identified the correct answer "CKD can be asymptomatic until advanced stages"; which are similar results to ours.

The general knowledge of the respondents about CKD risk factors was quite low. When respondents were asked about CKD risk factors; they most frequently selected some food (96.6%) and obesity (89.8%). Only 56% identified diabetes mellitus and 28.2% identified hypertension as the correct answers. This results are supported by *Roomizadeh et al.*<sup>[17]</sup>, who found a low level of knowledge about CKD risk factors too.

We found a significant correlation between educational level and having knowledge about CKD, attitude from importance of awareness, attitude from importance of awareness through campaign, attitude from importance of awareness through social media and attitude from importance of awareness from doctors.

## CONCLUSION

Current estimates of CKD awareness indicate that awareness remains unsatisfactory. Also, little is known regarding whether increased awareness improves clinical outcomes for CKD patients. Further research is necessary to continue to design and refine awareness campaigns aimed at dissemination of basic CKD information, given both the high prevalence of CKD and its risk factors and the low estimated awareness of CKD.

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