Assessment Of Prevalence Of Kidney Issues And Risk Factors Among Saudi Adults In KSA

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ABSTRACT

Objective:

The main objectives of the study are as follows:

1. To count the number of adults in different parts of Saudi Arabia who have kidney-related health problems, including those who are not yet diagnosed.
2. To find and examine the main clinical, lifestyle, and demographic risk factors for renal disease in Saudi adults.
3. To assess healthcare-seeking behaviors and public awareness of kidney disease, its symptoms, prevention, and treatment.
4. To investigate differences in risk profiles and prevalence by location, offering information for focused public health initiatives.

Methods: It will be performed on the chosen cases from the study's prospective sample. To determine the level of precision of the statistical tools and even the patient selection criteria based on inclusion and exclusion criteria, a pilot research including 10% of the respondents may be carried out. The pilot study will be conducted according to the aforementioned procedure, and the results will be examined. Additionally, the viability, duration, and manner

will be assessed. The necessary changes will be described. The study tool should at least be pretested if this isn't possible.
Results: The study included 660 participants. The study included 660 participants. The most frequent Age among them was 18-28 years old (n=329, 49.8%), followed by 40-49 and 50 -59 years old (n=98, 14.8%), then 29-39 years old (n=88, 13.3%). The most frequent gender among study participants was male (n= 399, 60.5%), and female (n= 261, 39.5%). The most frequent nationality among study participants was Saudi (n= 510, 77.3%), followed by non-Saudi (n= 150, 22.7%). Educational level among study participants, with most of them having a university degree (n=495, 75%), followed by Secondary (n=146, 22.1%), then Primary (n=15, 2.3%), and at least no formal education (n=4, 0.6%). The smoker of study participants most of them were Non-Smokers (n=505, 76.5%), followed by smokers (n=11, 17%), then Former smokers (n=43, 6.5%). Participants were asked if they drink alcohol. Most of them had never drunk alcohol (n=630, 95.5%), followed by Sometimes (n=26, 3.9%), then Regularly (n=4, 0.6%). Participants were asked if they drink 2L of water. Most of them had drunk less than 2L (n=391, 59.2%), followed by drunk 2L (n=269, 40.8%). Participants were asked about their stress level in general. The most frequent was moderate stress (n= 378, 57.3%), followed by high (n= 153, 23.2%), then low (n=129, 19.5%). Participants take painkillers; most of them said Rarely (n=231, 35%), followed by Never (n=223, 33.8%), then Sometimes (n=176, 26.7%), and yes, frequently (n=30, 4.5%). Physical activity was average among most of the participants. No activity (n= 393, 59.5%) and yes, 267 participants (40.5%).
Conclusion: The study results showed that most participants were between 18 and 28 years old. The majority were Saudi nationals and male. Most participants reported no family history of kidney issues and had low levels of physical activity. Additionally, moderate stress levels were common among the respondents. These findings indicate that demographic and lifestyle factors significantly impact the risk of kidney disease, emphasizing the need for public health awareness and preventive interventions.

INTRODUCTION

One of the most prevalent illnesses in the world, kidney disease affects millions of people. Numerous factors, including mortality, financial stress, physical and mental health, and quality of life, are impacted by this significant load. Around 700 million cases of kidney disease, or 9.1% of the world's population, were believed to be impacted by the condition as of 2017. According to the report, the age-standardized prevalence of renal illness has not changed since 1990, despite a 29.3% increase in the total frequency. Approximately 32 million people lived in Saudi Arabia as of the 2022 census. **Lshehri et al (2025)**

Compared to other nations, kidney disease is a major health concern in the Kingdom of Saudi Arabia (KSA). Currently, 9,810 patients are receiving follow-up care following kidney transplantation, and over 20,000 patients are receiving dialysis in Saudi Arabia. According to estimates, there are 294.3 cases of renal replacement therapy for every million people in Saudi Arabia. Compared to estimates for Western Europe (5,446 per 100,000) and North America (7,919 per 100,000), Saudi Arabia has a higher age-standardized prevalence of kidney disease (stages 1-2, 3, 4, and 5, excluding renal replacement treatment) at 9,892 per 100,000. **Kovesdy et al (2022); Bikbov et al (2020)**

Adult kidney disease prevalence in the United States of America (US) is 11.7%, according to the National Health and Nutrition Examination Survey (NHANES).3- The Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation and the modification of diet in

renal disease (MDRD)-3 equation were used in a study to estimate the prevalence of CKD in this Saudi population segment at 5.3% and 5.7%, respectively. A significant family history of CKD puts a person at a higher risk of developing CKD.5,S1–S3 Research conducted in the United States has verified that a significant number of relatives of patients with end-stage kidney disease (ESKD) have chronic kidney disease (CKD), with 14% of screened relatives having a GFR of less than 60 ml/min/1.73 m2. **Bikbov et al (2020); Mousa et al (2022)**
In addition to having a two to three times higher risk of developing ESKD, first- or second-degree relatives of patients with the disease are also more likely to be obese and have undiagnosed hypertension.6. S1, S4, S5 As a result, people with a family history of chronic kidney disease (CKD), hypertension, diabetes, and people over 65 are all at high risk. **Alsuwaida et al (2021)**
Thirteen administrative regions, each with unique characteristics, make up the nation's administrative and geographic division. The Ministry of Health oversees the healthcare programs and services in each region through a branch. Determining variations in the frequency of renal illness or certain trends among various regions can assist policymakers in concentrating on particular elements and more efficiently allocating funds. With a sizable percentage under 30, the population is primarily young. **Hassanien et al (2022); Levey et al (2019)**
28,256 people in Saudi Arabia were estimated to have end-stage renal disease (ESRD) in 2019, according to the Saudi Center for Organ Transplantation (SCOT). Because of the nation's unified dialysis and transplant care, patients with end-stage renal disease (ESRD), including those who have received transplants, have a wealth of documented information. However, studies to date have had small sample sizes, been restricted to particular geographic locations, or have focused on populations known to be at risk, thus data on the non-dialysis population of renal disease patients in Saudi Arabia may be much better. In Saudi Arabia, diabetes mellitus (DM) and hypertension are the main causes of end-stage renal disease (ESRD). A nationwide survey indicates that in some age groups, the prevalence of DM in Saudi Arabia can approach 39%. **Mousa et al (2021)**

METHODS

Study design

This present study will be cross sectional nature, where the researcher will consider a single chunk of sample. Then on the other hand some of the path-breaking studies conducted in the recent past will also be touched to get suitable reach the respective research questions and objectives of the study.

Study approach

It will be performed on the chosen cases from the study's prospective sample. To determine the level of precision of the statistical tools and even the patient selection criteria based on inclusion and exclusion criteria, a pilot research including 10% of the respondents may be carried out. The pilot study will be conducted according to the aforementioned procedure, and the results will be examined. Additionally, the viability, duration, and manner will be assessed. The necessary changes will be described. The study tool should at least be pretested if this isn't possible.

Study population

The population of the study was the total number of patients visiting the selected medical colleges and hospitals in -------, Saudi Arabia with a suspicion of kidney disease in respective department. All the patients above the age of 18 will be included in the study.

Study sample

This study will be conducted approximately 660 patients matching the above description. Some of the other demographic information of the patients was also collected to support the clinical assessment and reasons to find the risk factors associated with the kidney diseases.

Study tool

For the current study, a questionnaire was used for data collection and was also considered a study tool.

Data collection

The Excel-structured data collection sheet template comprised the categories of age, gender, and BMI. This collected data will be analyzed using SPSS Ver. 27.0.

Data analysis

The measures' distribution will be evaluated using either the Chi-square test or the ANOVA test (one-way), to find out the variation in treatment planning and medication acceptance on one had and variation in the responses related to associated risk factors of kidney diseases. The remaining analysis will be conducted using descriptive statistics.

Ethical considerations

Informed consent from the participants after making them understand the research aims and objectives and the harms associated with the study was obtained. The data collected was stored in password-protected folders in a computer that was accessible only by the author to eliminate the chance of bias and false reporting.

RESULTS

The study included 660 participants. The most frequent Age among them was 18-28 years old (n=329, 49.8%), followed by 40-49 and 50 -59 years old (n=98, 14.8%), then 29-39 years old (n=88, 13.3%). Figure 1 shows the age distribution among study participants. The most frequent gender among study participants was male (n= 399, 60.5%), and female (n= 261, 39.5%). Figure 2 shows the gender distribution among study participants. The most frequent nationality among study participants was Saudi (n= 510, 77.3%), followed by non-Saudi (n= 150, 22.7%). Figure 3 shows the distribution of Gender among study participants.

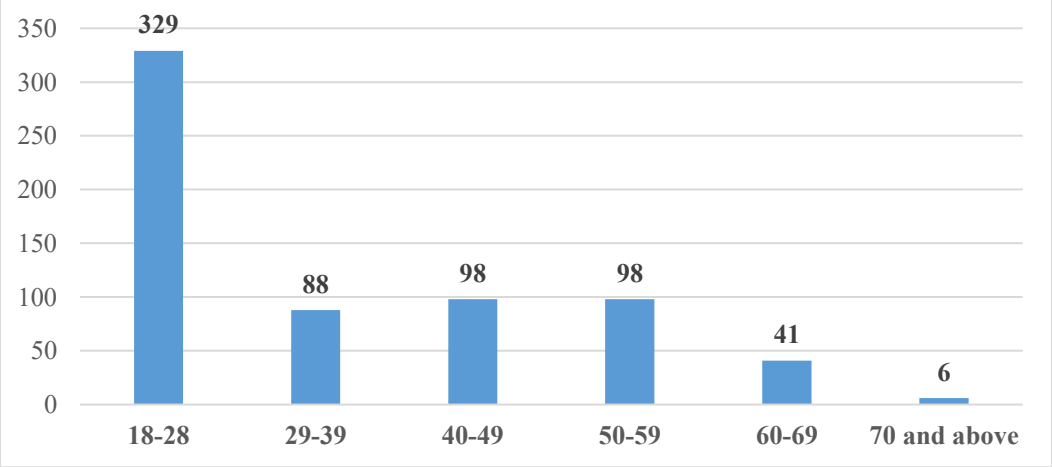

Figure 1: Age distribution among study participants

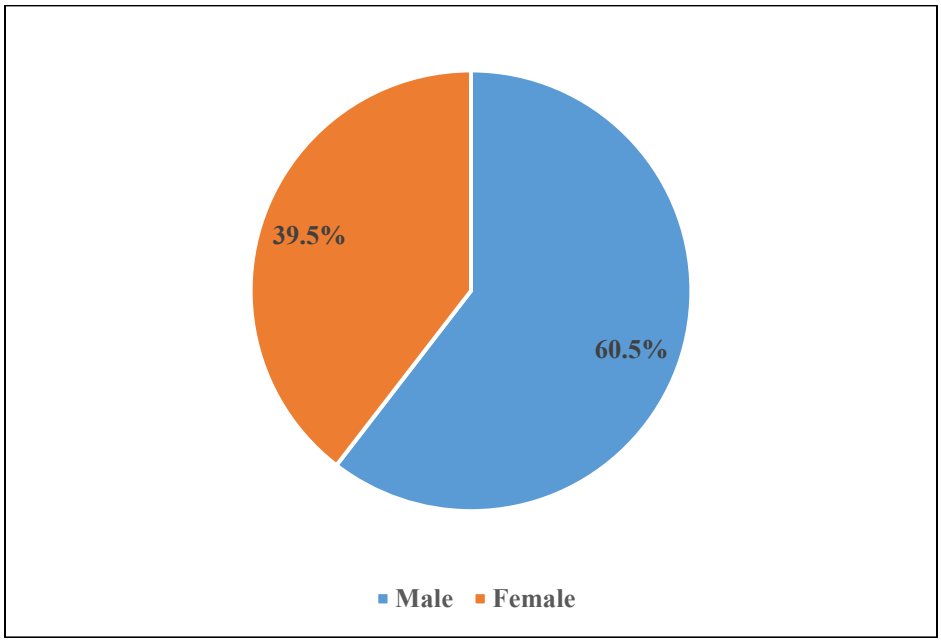

Figure 2: Gender distribution among study participants

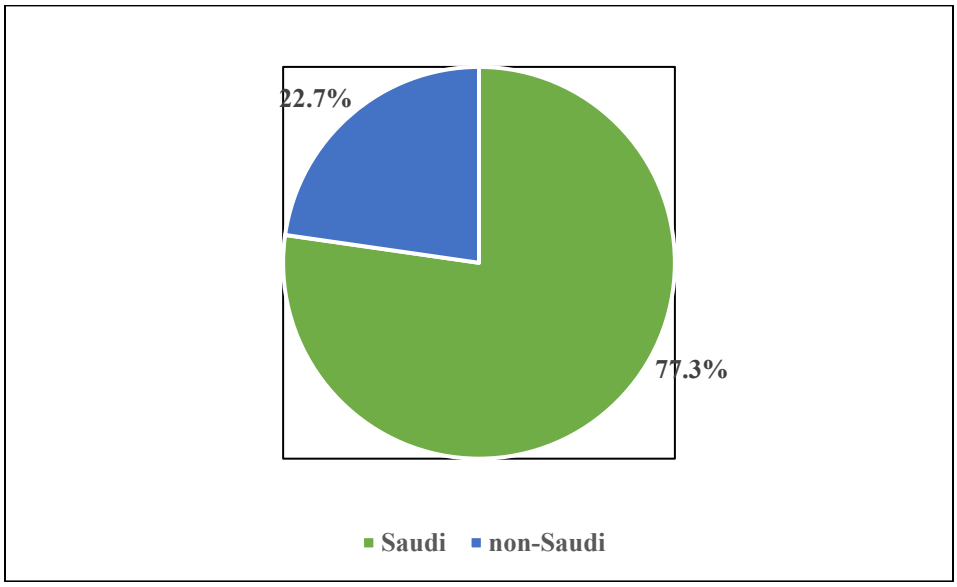

Figure 3: Nationality distribution among study participants

Educational level among study participants, with most of them having a university degree (n=495, 75%), followed by Secondary (n=146, 22.1%), then Primary (n=15, 2.3%), and at least no formal education (n=4, 0.6%).

The smoker of study participants most of them were Non-Smokers (n=505, 76.5%), followed by smokers (n=11, 17%), then Former smokers (n=43, 6.5%). The smoker is presented in Figure 4.

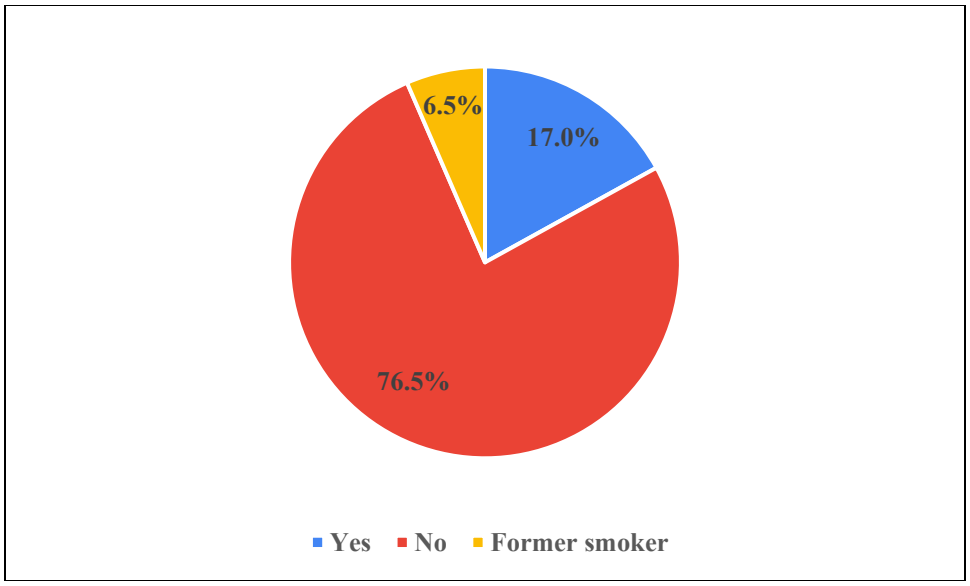

Figure 4: Smoker distribution among study participants

Participants were asked if they drink alcohol. Most of them had never drunk alcohol (n=630, 95.5%), followed by Sometimes (n=26, 3.9%), then Regularly (n=4, 0.6%).
Participants were asked if they drink 2L of water. Most of them had drunk less than 2L (n=391, 59.2%), followed by drunk 2L (n=269, 40.8%).
Participants were asked about kidney Issues. Their responses and results are presented in Table 1.

Table 1: Kidney Issues among study participants

Survey item		Frequency (%)
When was the last time you had a kidney function test (creatinine or urea)?	Within the last 6 months	164 (24.8%)
	More than one year ago	119 (18.0%)
	I have never had this test before	377 (57.1%)
What was the result of the test?	Normal	277 (42.0%)
	Abnormal	23 (3.5%)
	I have not done the test	360 (54.5%)
Have you ever been diagnosed with any kidney disease in the past?	Yes	18 (2.7%)
	No	642 (97.3%)

Participants were asked about their stress level in general. The most frequent was moderate stress (n= 378, 57.3%), followed by high (n= 153, 23.2%), then low (n=129, 19.5%).

Participants take painkillers; most of them said Rarely (n=231, 35%), followed by Never (n=223, 33.8%), then Sometimes (n=176, 26.7%), and Yes, frequently (n=30, 4.5%). Figure 5 shows participants' use of painkillers.

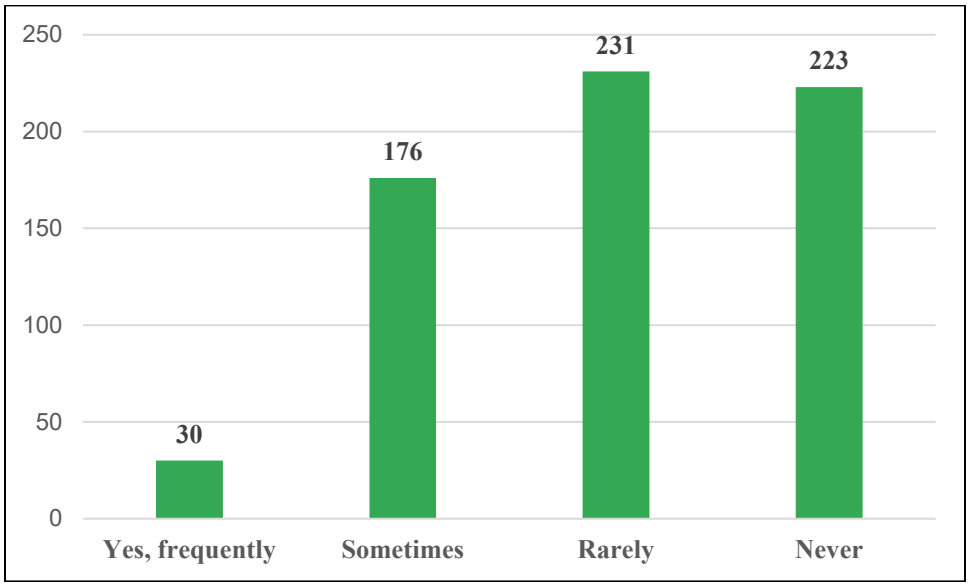

Figure 5: Painkiller distribution among study participants

Physical activity was average among most of the participants. No activity (n= 393, 59.5%) and yes, 267 participants (40.5%).

CONCLUSION

The study results showed that most participants were between 18 and 28 years old. The majority were Saudi nationals and male. Most participants reported no family history of kidney issues and had low levels of physical activity. Additionally, moderate stress levels were common among the respondents. These findings indicate that demographic and lifestyle factors significantly impact the risk of kidney disease, emphasizing the need for public health awareness and preventive interventions.

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ANNEX 1: DATA COLLECTION TOOL

1. Age:
a) 18-28
b) 29-39
c) 40-49
d) 50-59
e) 60-69
f) 70 and above

2. Gender:
a) Male
b) Female

3. Nationality:
a) Saudi
b) Non-Saudi

4. Education Level:
a) No formal education
b) Primary
c) Secondary
d) University

5. Occupation:
a) Employed
b) Unemployed
c) Retired
d) Student
6. Do you smoke?
a) Yes
b) No
c) Former smoker

7. Have you ever been diagnosed with:
* High blood pressure
* Diabetes
*Heart diseases
*Obesity
*Recurrent urinary tract infections
*Kidney stones
*None

8. Family history of kidney disease?
a) Yes
b) No

c) Don't know

9. How often do you consume processed or salty foods per week?
a) Never
b) 1–2 times
a) 3–5 times
b) Daily

10. Do you drink alcohol?
a) Never
b) Sometimes
c) Regularly

11. Average daily water intake:
a) 2L
b) Less than 2 liters

12. Physical activity (30 minutes or more per day)?
a) Yes
b) No

13. Stress levels in general:
a) Low
b) Moderate
c) High

14. Do you take painkillers regularly (such as Ibuprofen, Voltaren)?
a) Yes, frequently
b) Sometimes
c) Rarely
d) Never

15. Have you experienced any of the following symptoms during the past three months? *(You may select more than one option)*
- Swelling in the feet or face
- Difficulty urinating or decreased urine output
- Foam or blood in the urine
- Severe fatigue or general weakness
- None of the above

16. When was the last time you had a kidney function test (creatinine or urea)?
a) Within the last 6 months
b) More than one year ago
c) I have never had this test before
17. What was the result of the test?
a) Normal
b) Abnormal

c) I have not done the test

18. Have you ever been diagnosed with any kidney disease in the past?
a)Yes
b)No

Questions related to kidney patients
19. Type of kidney disease: _____
20. Year of diagnosis: _____
21. Treatment currently receiving: _____

22. Do you regularly monitor your kidney function (such as creatinine, GFR, etc.)?
a) Yes
b) No

23. Are you aware of the preventive measures for kidney disease?
a) Yes
b) No

24. How often do you go for health check-ups?
a) Annually
b) Occasionally
c)Only when sick
d)Never

APPENDIX 2: Participants' responses to scale items

Age		
	Frequency	Percent
18-28	329	49.8
29-39	88	13.3
40-49	98	14.8
50-59	98	14.8
60-69	41	6.2
70 and above	6	0.9
Total	660	100.0

Gender		
	Frequency	Percent
Male	399	60.5%
Female	261	39.5%
Total	660	100.0

Nationality		
	Frequency	Percent
Saudi	510	77.3
non-Saudi	150	22.7
Total	660	100.0

Educational level

	Frequency	Percent
No formal education	4	0.6
Primary	15	2.3
Secondary	146	22.1
University	495	75.0
Total	660	100.0

Occupation		
	Frequency	Percent
Employed	313	47.4
Unemployed	112	17.0
Retired	102	15.5
Student	133	20.2
Total	660	100.0

Smoke		
	Frequency	Percent
Yes	112	17.0
No	505	76.5
Former smoker	43	6.5
Total	660	100.0

Family history		
	Frequency	Percent
Yes	88	13.3
No	486	73.6

Don't know	86	13.0
Total	660	100.0

alcohol		
	Frequency	Percent
Never	630	95.5
Sometimes	26	3.9
Regularly	4	0.6
Total	660	100.0

water

	Frequency	Percent
2 L	269	40.8
Less than 2 L	391	59.2
Total	660	100.0

Physical activity		
	Frequency	Percent
Yes	267	40.5
No	393	59.5
Total	660	100.0

Stress level		
	Frequency	Percent
low	129	19.5
moderate	378	57.3
high	153	23.2
Total	660	100.0

painkillers		
	Frequency	Percent
Yes, frequently	30	4.5
Sometimes	176	26.7

Rarely	231	35.0
Never	223	33.8
Total	660	100.0

Kidney test		
	Frequency	Percent
Within the last 6 months	164	24.8
More than one year ago	119	18.0
I have never had this test before	377	57.1
Total	660	100.0

Result of the test		
	Frequency	Percent
Normal	277	42.0
Abnormal	23	3.5
I have not done the test	360	54.5
Total	660	100.0

Diagnosed with any kidney disease		
	Frequency	Percent
Yes	18	2.7
No	642	97.3
Total	660	100.0

Table 1: Kidney Issues among study participants

Survey item		Frequency (%)
When was the last time you had a kidney function test (creatinine or urea)?	Within the last 6 months	164 (24.8%)
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	I have never had this test before	377 (57.1%)

What was the result of the test?	Normal	277 (42.0%)
	Abnormal	23 (3.5%)
	I have not done the test	360 (54.5%)
Have you ever been diagnosed with any kidney disease in the past?	Yes	18 (2.7%)
	No	642 (97.3%)

Chi-Square:

Test Statistics

	Age	Gender	Nationality	Educational. level	Occupation	diagnosed. any.kidney. disease	Smoke	Family.history	consume. processed. salty.foods	alcohol	water	physical. activity
Chi-Square	584.636[a]	28.855[b]	196.364[b]	955.648[c]	180.036[c]	589.964[b]	564.627[d]	482.436[d]	201.467[c]	1147.236[d]	22.552[b]	24.055[b]
df	5	1	1	3	3	1	2	2	3	2	1	1
Asymp. Sig.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 110.0.

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 330.0.

c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 165.0.

d. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 220.0.

p-value (Sig.) =0> 0.05

The Chi-square test results revealed statistically significant associations between kidney health and all the age, gender, nationality, education level, employment status, smoking habits, medical history, dietary patterns, alcohol consumption, water intake, and physical activity. Demographic and lifestyle factors significantly impact kidney disease risk, highlighting the need for public health awareness and prevention.