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Assess the knowledge regarding prevention and management of Renal Calculi among adults residing at Kanyakumari Medical College Asaripallam

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Abstract

Background: Renal calculi, or kidney stones, are a common urinary disorder with high recurrence rates and significant public health impact. Despite evidence that preventive measures such as hydration, dietary modification, and lifestyle changes can reduce risk, knowledge among adults remains limited, particularly in rural and semi-urban regions. **Objective:** To assess the knowledge regarding prevention and management of renal calculi among adults and identify gaps that may inform targeted health education interventions. **Methods:** A quantitative, non-experimental descriptive study was conducted among 30 adults at Kanyakumari Medical College, Asaripallam. Participants aged above 30 years, able to communicate and willing to participate were included. Data were collected using a structured interview schedule addressing demographics and knowledge of renal calculi causes, risk factors, dietary practices, symptoms, and preventive strategies. Descriptive statistics and Chi-square tests were used to analyse data and explore associations between knowledge levels and demographic variables. **Results:** The majority of participants were aged 41–50 years (50%), male (60%), with primary education (30%), engaged in skilled agricultural/fishery occupations (30%), and from nuclear families (66.7%). Most participants demonstrated a moderate level of knowledge (63%), while 20% had inadequate knowledge and 17% exhibited adequate knowledge. Chi-square analysis revealed no significant association between knowledge levels and demographic characteristics ($p > 0.05$). **Conclusion:** Adults demonstrated moderate knowledge regarding renal calculi, with significant gaps in understanding risk factors, symptom recognition, and preventive strategies beyond hydration. These deficits were consistent across demographic groups, highlighting the need for nurse-led educational interventions in community and primary healthcare settings to enhance awareness, preventive practices, and early management.

Keywords: *Renal calculi, Prevention, Management, Adults*

Introduction

Renal calculi, commonly known as kidney stones, are crystalline deposits that form within the urinary tract when urine becomes supersaturated with lithogenic substances such as calcium oxalate, calcium phosphate, and uric acid [1]. Stone formation is influenced by biological, environmental, and behavioral factors, including dehydration, urinary stasis, recurrent infections, and dietary patterns [2]. Diets high in animal protein, sodium, and refined sugars increase the risk of nephrolithiasis, whereas adequate fluid intake is protective [3,4]. Globally, kidney stones affect approximately 10–15% of the population during a lifetime, with similar prevalence trends observed in India, where hot climates and westernized dietary habits contribute to higher risk [5,6]. A major challenge in managing renal calculi is the high recurrence rate, with up to 50% of individuals experiencing recurrence within five years of an initial episode [7,8]. Recurrence is often associated with insufficient knowledge and implementation of preventive strategies, such as hydration, dietary modification, lifestyle changes, and early symptom recognition [8,9]. Despite the availability of evidence-based

preventive measures, awareness among adults, particularly in rural and semi-urban regions, remains limited [9]. Given that renal calculi are largely preventable through simple, evidence-based practices, assessing knowledge among adults is essential for designing effective educational interventions. However, few studies have investigated awareness levels in South Indian healthcare settings. Therefore, this study, titled "A study to assess the knowledge regarding prevention and management of renal calculi among adults," was undertaken to identify existing knowledge gaps and highlight the need for targeted health education programs aimed at reducing the incidence and recurrence of kidney stones.

METHODOLOGY

The research employed an evaluative approach, quantitative non-experimental descriptive research design. The study was conducted at Kanyakumari Medical College, Asaripallam, and a tertiary care institution with a diverse adult population. Adults above 30 years who could understand and respond to interview questions and were willing to participate were included; severely ill and unwilling individuals were excluded. Thirty participants were selected using non-probability convenience sampling. Data were collected via a structured interview schedule comprising two sections: demographics and knowledge on causes, risk factors, dietary practices, symptoms, and preventive strategies for renal calculi. Data were analysed using descriptive statistics (frequency, percentage) and the Chi-square test to explore associations with demographic variables. Ethical approval was obtained, and informed consent, confidentiality, and voluntary participation were ensured.

Result and Discussion

Table 1: Demographic variables

Demographic variables	(F)	(P)
Age		
a) 30-40 years	8	26.7
b) 41-50 years	15	50
c) 51-60 years	6	20
d) Above 60 years	1	3.3
Gender		
a) Male	18	60
b) Female	12	40
Education	0	0
a) Professionals	2	6.6
b) Graduate or Postgraduate	2	6.6
c) Intermediate	3	10
d) High school	8	26.8
e) Middle school	9	30
f) Primary school	6	20
g) Illiterate		
Occupation		
a) Legislators, senior officials & managers	0	0
b) Professionals	0	0
c) Technicians and associate professionals	0	0
d) Clerks	2	6.7
e) Skilled workers, shop & market scale workers	4	13.3
f) Skilled agricultural & fishery worker	9	30
g) Craft & related trade workers	3	10
h) Plant & machine operators & assemblers	2	6.7
i) Elementary occupation	8	26.6
j) Unemployed	2	6.7
Family income		
a) Below Rs.5,000	10	33.3
b) Rs.5,001-10,000	12	40
c) Rs. 10,001-15,000	5	16.7
d) Rs. 15,001-20,000	3	10
e) Above Rs.20,001	0	0
Type of family		
a) Joint family	10	33.3
b) Nuclear family	20	66.7

Marital status		
a) Married	18	60
b) Un Married	11	36.7
c) Widow/Widower	1	3.3
d) Divorced	0	0
Diet		
a) Vegetarian	13	43.3
b) Non-Vegetarian	17	56.7
Life style		
a) Sedentary	19	63.3
b) Moderate	8	26.7
c) Heavy worker	3	10

Table 1 shows that the majority of the respondents were in the age group of 41–50 years (50%), were males (60%), had primary school education (30%), were engaged in skilled agricultural and fishery work (30%), belonged to the monthly income group of Rs. 5,001–10,000 (40%), lived in nuclear families (66.7%), were married (60%), consumed a non-vegetarian diet (56.7%), and followed a sedentary lifestyle (63.3%).

Table 2: Overall level of knowledge

Level of Knowledge	F	P
Adequate	5	17%
Moderate	19	63%
Inadequate	6	20%

Table 2: The majority of the respondents demonstrated a moderate level of knowledge (63%), while (20%) had inadequate knowledge and only (17%) exhibited an adequate level of knowledge.

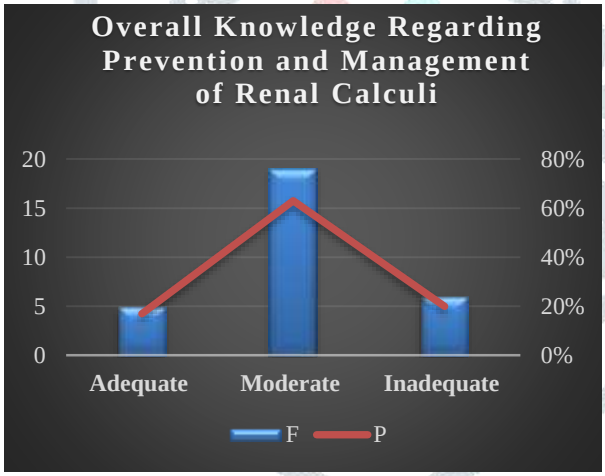

Figure 1 Overall Knowledge Regarding Prevention and Management of Renal Calculi

Table 3: Association between Demographic Characteristics and Knowledge Levels Regarding Renal Calculi among Adults

Demographic Variable	Chi Square calculated value	df	p value
Age in years	5.63	6	0.47
Gender	0.15	2	0.93
Education	14.20	10	0.16
Occupation	7.81	12	0.80
Family income	5.32	6	0.51
Types of family	2.01	2	0.37
Marital status	3.22	4	0.52
Diet	1.34	2	0.51
Life style	3.03	4	0.55

Table 3 shows that there is no statistically significant association between any of the demographic characteristics and have p-values >0.05.

Discussion

The present study found that the majority of participants possessed a moderate level of knowledge regarding renal calculi, while only a small proportion demonstrated adequate awareness. This aligns with prior research showing that public knowledge regarding kidney stone prevention is generally limited across different populations. For instance, studies conducted in Saudi Arabia reported that although hydration was widely recognized as a preventive measure, awareness of other risk factors, symptoms, and management strategies was inadequate [4,5]. Similarly, an Egyptian study found low levels of awareness regarding preventive measures, even among adults with a prior history of kidney stones [6]. These findings indicate that public health messaging has largely emphasized hydration, while dietary modification, lifestyle changes, and early symptom recognition remain underemphasized.

The chi-square analysis revealed no statistically significant association between knowledge level and demographic variables such as age, gender, education, occupation, income, family type, marital status, diet, or lifestyle. This is consistent with prior studies that reported no significant variation in urinary stone–related knowledge across demographic groups [5,7]. Such a pervasive knowledge gap highlights the need for population-wide educational interventions rather than strategies targeted at specific subgroups.

From a clinical and nursing perspective, these findings emphasize the critical role of nurses in promoting awareness and preventive behaviors. Nurses are ideally positioned to deliver patient-centered education on hydration, dietary management, lifestyle modifications, and early symptom recognition. Integrating renal stone prevention education into routine nursing care, outpatient counseling, and community health programs may enhance patient knowledge, support preventive practices, and reduce the risk of recurrence [8,9]. Overall, the findings underscore the importance of developing structured, evidence-based educational programs to address existing knowledge gaps.

Conclusion

The study found that most participants had a moderate level of knowledge regarding renal calculi, with limited awareness of dietary, lifestyle, and symptom-related preventive strategies [4–6]. Knowledge deficits were widespread across demographic groups**,** highlighting the need for nurse-led educational interventions to enhance awareness, encourage preventive behaviours, and support early detection and management of kidney stones [8,9]. Implementing structured, evidence-based educational programs may reduce the incidence and recurrence of renal calculi, improving both patient outcomes and public health.

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