



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

KNOWLEDGE ON RENAL CALCULI AMONG PATIENTS IN UROLOGY OPD AT SRM GENERAL HOSPITAL, KATTANKULATHUR, INDIA

SUSEELAL T¹, BABU B², BHARATH A² AND ABINASH D²

1: Associate Professor College of Nursing, SRM Institute of Science and Technology, Kattankulathur,
Kancheepuram district, India

2: B. Sc. (N), College of Nursing SRM Institute of Science and Technology, Kattankulathur,
Kancheepuram district, India

*Corresponding Author: Dr. T. Suseelal; E Mail: suseelal.john@gmail.com

Received 10th Dec. 2024; Revised 25th Dec. 2024; Accepted 28th Jan. 2025; Available online 15th March 2025

<https://doi.org/10.31032/IJBPAS/2025/14.3.1036>

ABSTRACT

Urolithiasis is a recurrent multifactorial condition that results from the interplay of multiple environmental and hereditary variables. This paper assessed the knowledge on Renalcalculi among patients in urology OPD at SRM General Hospital, Kattankulathur. By using quantitative approach and one group pre test design 100 patients attending outpatient department with renal calculi were selected by using a non probability purposive sampling technique. Data was collected with objective type self structured questionnaire 15 on functions of kidney, causes of stone and healthy lifestyle practice. The analysis revealed that out of 100 samples regarding the demographic variables majority of the patients 26% were aged between 35 – 45 years, 71% were males, 75% were married, 41% were graduates, 34% had income of 10,000 – 25,000Rs. Regarding the knowledge on renal calculi 68% had moderate knowledge, 31% had adequate knowledge and 1.0% had inadequate knowledge. The association with demographic variables revealed income had shown statistically significant association with level of knowledge on renal calculi at $p < 0.05$ level and the other demographic variables had not shown any significant association. The study conclude that interventional study can be done to prevent the formation of stone among adult population.

Keywords: Patient satisfaction, Postoperative patients, Caring behaviour, Nurses

INTRODUCTION:

Kidney Stones are also termed as Renal Calculi (Nephrolithiasis). A kidney stone is a hard, crystalline material formed within the kidney or urinary tract. Men are more likely than women to have stone issues. The majority of the patients are in the age range of 20 to 55. Kidney stones are most common in the 30- to 45-year-old age range, and they become less common beyond the age of 50. Fifty percent of patients experience kidney stone recurrence [1].

Different nations have varied rates of urolithiasis. Parts of Maharashtra, Gujarat, Rajasthan, Punjab, Haryana, Delhi, and the northeastern provinces make form the "stones belt" in India. Southern India had less cases of urinary calculi, possibly as a result of tamarind consumption on a regular basis. It is believed that 12% of Indians suffer from urinary stones, and 50% of those cases could result in kidney loss or injury. Additionally, urinary stones afflicted close to 15% of the population in northern India. According to Singh *et al.*, Manipur has an extremely high prevalence rate of urolithiasis, specifically staghorn calculi. Recent reports of urolithiasis in India suggest that the disease is more common in the northwest of the country [2].

A person's age, sex, obesity, geographic location, climate, genetics, and lifestyle can

all contribute to the development of kidney stones. This condition is now more common in both boys and females of all ages, indicating a possible environmental factor in addition to genetic risk. Globally, the prevalence of stone illness is also increasing. For women, the lifetime risk of kidney stones is 6%, whereas for men it is 12%. After five years, 30–40% of people with untreated stones are at risk of developing new stones. All epidemiological statistics point to rising incidence and prevalence rates, hence more research is needed on urolithiasis prevention strategies and medical therapy approaches [3].

Urolithiasis is a recurrent multifactorial condition that results from the interplay of multiple environmental and hereditary variables. It is thought to be the most prevalent urological condition affecting adults [4]. All age categories, genders, and races have seen an increase in incidence over the past few decades [5]. The incidence of this avoidable disease ranges from 7%–13% in North America, 5%–9% in Europe, and 1%–5% in Asia [6].

One of the earliest illnesses that impact people is urolithiasis. Urinary stone illness has become much more common, although there are geographical variations in its epidemiology, with prevalence rates of 7–

13% in North America, 5-9% in Europe, and 1-2% in Asia. Urolithiasis has a lifetime prevalence of 7.9% (5.7–10.8%) in India. On the other hand, 22.4% of Manipur's rural population had urolithiasis. Urolithiasis is a substantial financial burden, with costs ranging from £ 190 million to £324 million in England in 2010 and an estimated \$1.24 billion in increased costs annually by 2030 in the United States [7].

Different nations have varied rates of urolithiasis. Parts of Maharashtra, Gujarat, Rajasthan, Punjab, Haryana, Delhi, and the northeastern provinces make form the "stones belt" in India. Southern India had less cases of urinary calculi, possibly as a result of tamarind consumption on a regular basis. It is believed that 12% of Indians suffer from urinary stones, and 50% of those cases could result in kidney loss or injury. Additionally, urinary stones afflicted close to 15% of the population in northern India. According to Singh *et al.*, Manipur has an extremely high prevalence rate of urolithiasis, specifically staghorn calculi. Recent reports of urolithiasis in India suggest that the disease is more common in the northwest of the country [8].

Due to the increase in urolithiasis prevalence and hospital facility saturation, primary care physicians are first contacted rather than urologists and nephrologists.

Consequently, primary care doctors bear the major obligation for diagnosis, treatment, specialist referrals, and additional follow-up [9].

Kidney stone development can be brought on by genetics, environmental factors, age, sex, obesity, geographic location, climate, and way of life [10]. This condition is now more common in both boys and females of all ages, indicating a possible environmental factor in addition to genetic risk. Globally, there is a growing prevalence of stone illness [11]. For women, the lifetime risk of kidney stones is 6%, whereas for men it is 12% [12]. After five years, 30–40% of people with untreated stones are at risk of developing new stones. Given the increasing incidence and prevalence rates reported in all epidemiological data, more focus needs to be paid to urolithiasis prevention and medical therapy strategies.

Age-related increases in kidney stones are more common in men than in women. Additionally, consuming more water, fruits, and vegetables lowers the chance of kidney stones. Kidney stone risk is decreased by sodium limitation [13]. Recurrence is dependent on both medical and non-medical factors, such as patient coverage and access to urologic treatment [14]. A big study conducted in the US revealed that 11% of

patients with kidney stones had additional ED visits. Kidney stones can be prevented with food and medication, such as drinking more water each day, eating a balanced diet high in fiber and vegetables, and maintaining a normal calcium level with moderation.

Urolithiasis can be treated with medication and food, with dietary modification being a less expensive and more successful option. Patients will be able to recognize signs and symptoms as well as risk factors for urolithiasis with increased understanding of the illness condition [15]. A better understanding of the issue will influence dietary and lifestyle modifications aimed at preventing the occurrence of new episodes or recurrent ones [16, 17]. Hence the researchers were interested to evaluate the knowledge of patients with Renal Calculi.

MATERIAL AND METHODS

A descriptive study with one group pre test design was done among 100 out patients at urology OPD selected by non probability convenient sampling technique. After official permission and explaining about the importance of the study written consent was obtained from the participants. The data was collected from 06/03/2023 to 10/03/2023. Demographic variables includes age, gender, religion, marital status, education, occupation and income. Objective type self structured

knowledge questionnaire totally 15 such as organ for secretion of urine, function of kidney, substance which form renal calculi, relation of renal calculi and stones, warning signs of renal calculi, total amount of intake per day, prevention of renal calculi and diet and foods to be avoided were included. Each correct answer was given a score of 1 and wrong answer was given a score of 0. The reliability of the tool was tested by test retest method. Each sample took approximately 20-25 minute to collect the data. The raw data was tabulated and analysed by using SPSS package 16.0. The participants were informed about the anonymity and confidentiality of the data.

RESULTS

Considering age in years, 26(26%) were between 35-45 years, another 25(25%) between (25-35) years and less than 25 years and 24(24%) were above 45 years. With regards to Gender 71(71%) were Male and 29(29%) were Female. Based on Religion 89(89%) belongs to Hindu,9(9%) belongs to Muslims and 2(2%) belongs to Christian. In marital status, 75(75.0%) are married, 22(22.0%) are single, 3(30%) are widow, None of the persons were Divorced. In education 19(19.0%) are primary school, 16(16%) are Secondary School, 24(24.0%) are higher school, 22(22.0%), 41(41.0%) are

graduate. Considering Occupation 15(15.0%) are Homemaker, 37(37.0%) are Professional worker. 48(48.0%) are Industrial worker. With regard to monthly income 18 (18.0%) are less than 5,000,24(24.0%) monthly income between (5,000-10,000) 34(34%) monthly income between (10,000-25,000),24 (24.0%) were greater than 25,000 Rupees.

Among the patients in urology OPD out of 100 patients, majority 68(68%) of them were categorized to have moderate level of knowledge, 31(31.0%) were belong to adequate 67-100% of Knowledge and 1(1.0%) was formed with inadequate knowledge regarding kidney stone (**Table 1, Figure 1**).

Table 1: Patients in the urology outpatient department's knowledge of renal calculi, by frequency and percentage distribution (N = 100)

Level of Knowledge	Frequency	Percentage
Inadequate (1 – 33%)	1	1.0
Moderate (34 – 66%)	68	68.0
Adequate (67 – 100%)	31	31.0

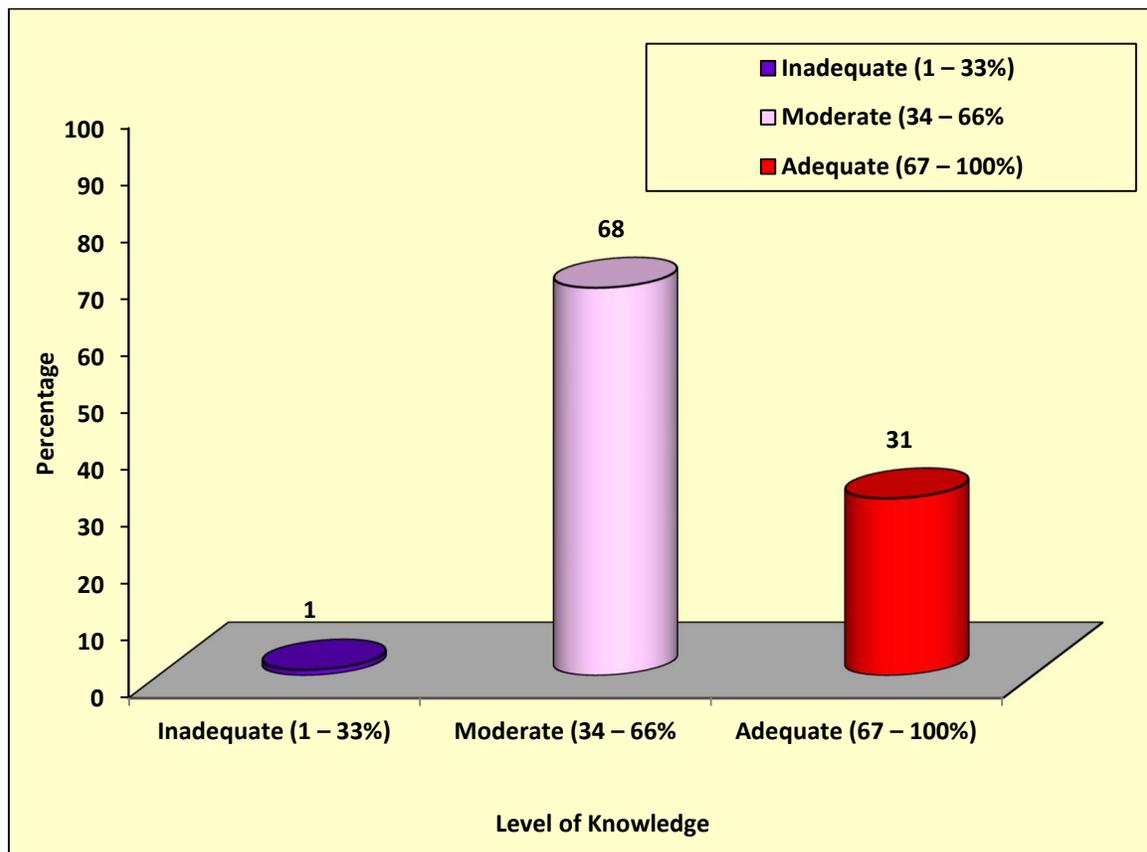


Figure 1: Percentage distribution of knowledge on renal calculi among patients in urology OPD

Table 2: Assessment of knowledge score on renal calculi among patients in urology OPD (N = 100)

Knowledge	P Value
Minimum score	4.0
Maximum score	17.0
Median	13.0
Mean	12.74
S.D	2.20

Above **Table 2** demonstrates the degree of expertise on kidney stone among the 100 participants mean score was 12.74%, S.D 2.20 and with median 13.0, maximum score 17.0 and minimum score 4.0.

Table 3: Association of level of knowledge on renal calculi among patients in urology OPD with their selected demographic variables (N = 100)

S.no.	Demographic variable	Frequency	Percentage
1.	Age	25	$\chi^2=5.351$ d.f=6 p=0.500 N.S
		25	
		26	
		24	
2.	Gender	71	$\chi^2=3.186$ d.f=2 p=0.203 N.S
		29	
3.	Religion	89	$\chi^2=1.505$ d.f=4 p=0.826 N.S
		9	
		2	
4.	Marital Status	22	$\chi^2=2.186$ d.f=4 p=0.702 N.S
		75	
		-	
		3	
5.	Education	19	$\chi^2=6.322$ d.f=6 p=0.388 N.S
		16	
		24	
		41	
6.	Occupation	15	$\chi^2=7.506$ d.f=4 p=0.111 N.S
		37	
		48	
7.	Income	18	$\chi^2=13.92$ d.f=6 p=0.040 S*
		24	
		34	
		24	

Significant $p < 0.05$

The association of selected demographic variables in above **Table 3** shows that the p values corresponding 100 samples, only income was less than $p < 0.05$

Where as all other variables such as age, gender, religion, marital status,

level. This shows that there is statistically significant association between income and level of knowledge on renal calculi among patients in urology OPD.

education & occupation has not were statistically significant association with level

of knowledge on renal calculi and demographic variables.

DISCUSSION

Now a days the medical technologies and treatment is growing in every part of the world even then the disease condition is more and leading to morbidity and morbidity and mortality. Formation of kidney stone has been found more in India and people are treated with medical and surgical treatment. When the stone is becoming big and it obstruct the ureters. If not treated properly patients may end with renal failure. One of the patient had stone with 0.7 mm and his creatinine level increased to 1.8. He was treated with medicines and fluid. Luckily the stone has been passed with out any surgical intervention. Many patients are undergoing lithotripsy to get rid of their stone.

Indian climate is hot and people are not taking proper water intake. Some people are drinking soft drinks like pepsi and Coca-Cola. It's better to create awareness on dietary practice to prevent formation of kidney stone. The present study assessed the knowledge of renal calculi. The result of the study revealed majority of the patients are having 31% of adequate knowledge on disease condition and prevention of renal disease. This study is consistent with the study of Neha Pandey (2019) on Knowledge and Attitude regarding

risk factors and prevention of Renal calculi among patients admitted in the selected kidney Hospitals of Gujarat state with a view to Develop an Information Booklet. The study findings revealed that majority of the patients had average knowledge (77%) [17]. Hence reinforcement on education can be enhanced among the patients with renal calculi.

CONCLUSION

The present study on knowledge of renal disease was done among patients with renal calculi at SRM general hospital, Kattankulathur. Only 31 % had adequate knowledge. The study recommend to do interventional study among patients with renal calculi.

Acknowledgement

The study was conceived and self structured questionnaire was developed by the authors. After explaining to the participants and taking written consent data was collected. The raw data was tabulated and analysis was done by the statistician. Interpretation was done and the manuscript was written by Dr. T. Suseelal. Final correction was done by Dr. T. Suseelal, revision and uploading was done by all authors.

REFERENCES

- [1] National Institute of Diabetes and Digestive and Kidney Disease

- (NIDDK) *Indian J Urol*; 2019; 27(3):310–319. DOI: 10.4103/0970-1591.85423.
- [2] Pearle, M. S. Medical management of kidney stone. 2029; 26:386-91.
- [3] Heilberg, I. P., & Goldfarb, D. S. Optimal nutrition for kidney stone disease 16(5):788-793.
- [4] Seitz. C and Fajkovic H. To assess the effectiveness of planned teaching on Knowledge regarding the prevention of renal calculi among the general populations. *Global Journal for Research Analysis*: 7(2).
- [5] Ahmad F, Nada MO, Farid AB, Haleem MA, Razack SMA., *et al* Knowledge, attitudes, and practice patterns of recurrent urinary stones prevention in Saudi Arabia. *Urolithiasis*, 2015. 44(2):135–43.
- [6] Liu Y, Chen Y, Liao B, Luo D, Wang K, Li H, *et al.* (2018). Epidemiology of urolithiasis in Asia. *Asian J Urol*; 5:205-14.
- [7] Mohammad Shazib Faridi, Khumukchum Somarendra Singh, Preliminary study of prevalence of urolithiasis in North-Eastern city of India. *J Family Med Prim Car* 95939-43.2020.
- [8] Renuka. K, Poongodi. V. Assessment of the Risk Factors for Renal Calculi among its Patients at Nephrology OPD in MGMCRI, Puducherry, with a View to Develop Self-instructional Module. *Pon J Nurse*; 2020, 13(3):60–63.
- [9] Scales CD, Lin L, Saigal CS, Bennett CJ, Ponce NA, Mangione CM, *et al.* (2015). Emergency Department Revisits for Patients with Kidney Stones in California. *Acad Emerg Med.*; 22(4):468–74.
- [10] Dalton DL., Hughes J, Glenn JE., Patient’s perception of kidney stone prevention within the emergency department and its adherence factors: a single institution study. *BMC Emergency Medicine* 1999, 19:48.
- [11] Agarwal MM, Singh SK, Mavuduru R, Mandal AK *etal.*, preventive fluid and dietary therapy for urolithiasis: An appraisal of strength, controversies and lacunae of current literature. *Indian J Urol* 2011 (6);27(3):310-9. doi: 10.4103/0970-1591.85423.
- [12] Rashid A. (2018). A study on an epidemiological profile, mineral metabolic pattern & crystallographic analysis of urolithiasis in Kuwait.

- Asian J Urol. 2018; DOI: 10.1016/j.ajur.2018.08.007.
- [13] Leila M, Fatemeh J, Masoum G, Ramin R, Seyed V.S, Abbas R ETAL., Prevalence and risk factors of kidney stone disease in population aged 40-70 years old in Kharameh cohort study: a cross-sectional population-based study in southern Iran . 2022 ;22(1):205.doi: 10.1186/s12894-022-01161-x.
- [14] Scales CD, Lin L, Saigal CS, Bennett CJ, Ponce NA, Mangione CM, *et al.* Emergency Department Revisits for Patients with Kidney Stones in California. Acad Emerg Med. 2015; 22(4):468–7.
- [15] Binsaleh S, Habous M, Madbouly K., Knowledge, attitudes and practice pattens of recurrent urinary stones prevention in Saudi Arabia. 2016 (4).
- [16] Sowtali SN, Arifin SRM, Nazli NS, Shukri NABM, Khattak MMAK, Rashid IMA, *et al.*, The prevalence of renal stones among local residents in Saudi Arabia. J Family Med Prim Care 2021; 10:974-7.
- [17] Neha Pandey (2019). A Study to assess the Knowledge and Attitude regarding risk factors and prevention of Renal calculi among patients admitted in the selected kidney Hospitals of Gujarat state with a view to Develop an Information Booklet. Asian Journal of Nursing Education and Research. 2019; 9(3).