

Research Article

A Study to Assess the Prevalence of Urolithiasis Among the Sedentary Workers Working in Selected Areas of Vijayapura District, Karnataka

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Abstract

Objective: The main objective of this study is to determine the prevalence and risk factors of urolithiasis among sedentary workers working in selected areas of Vijayapura.

Methods: A cross-sectional survey was conducted in June 2021 in Vijayapura district. Data were obtained through direct interviews with participants using an 18-question self-questionnaire, inquiring about demographic data (age, gender, weight, height, location, and occupation), educational level, history of renal stone disease (symptoms, modality of diagnosis, hospital admission, and previous treatment), and risk factors of stone formation such as family history, daily fluid intake, and type of fluid.

Results: A total of 300 individuals were interviewed. The overall percentage of those diagnosed with urolithiasis was 5.4%, including 5.6% males and 5.2% females ($P = 0.05$). Of those with stones, 4% were medically treated, 1.4% were hospitalized, and 1.1% were surgically managed for stones. There was a positive linear correlation between the prevalence of stones and participants' age group ($r = 0.87$, $P = 0.01$). More than 80% of participants were highly educated, which did not impact the prevalence of stone formation ($P = 0.12$). Urolithiasis was reported by 7.4% of obese participants, 4.8% of overweight participants, and 5.2% of participants with normal body mass index ($r = 0.68$, $P = 0.02$). When stratified by jobs, stone prevalence significantly increased in retired participants (12.2%) compared to workers (6.8%) ($P < 0.001$). There was no significant difference between urolithiasis and type of drinking water ($P = 0.52$).

Conclusion: The prevalence of urolithiasis in the Vijayapura district is quite common. It seems that the middle-aged population in their third decade of life, those who are overweight, and obese people are at a high risk of developing urolithiasis.

Keywords: Prevalence, Risk Factors, Stones, Sedentary Workers.

Introduction

In the world, urolithiasis is the most common urological disease in living beings. Kidney stone is the most painful and prevalent urological disorder of the urinary system [1]. During the present century, its prevalence has drastically increased in all industrialized countries. About 3–20% of the overall population of the world has the tendency to form one urinary stone during the lifetime of 70 years [2]. Urolithiasis (urinary calculi) formation occurs in the kidney, bladder, and in the urinary tract [3, 4]. Kidney stones are a common urological condition that has been prevalent since ancient times. In India, urolithiasis affects about 2 million people every year [5]. Stone analysis is of great importance to the therapy and metaphylaxis of residual and recurrent stones [6]. The composition of urinary stones in India is different from that in Western countries, where calcium oxalate is the predominant component. It affects about 3% of people of the productive age group [7]. The increasing incidence of crystal deposition diseases in organs such as the urinary tract, kidney, gallstones, etc., in people of all ages affects a considerable number of the total population. It is a major social and economic problem, considering the number of days lost from work and the cost of hospitalization [8].

Urinary stone is one of the oldest and most common afflictions of humans and remains a major public health burden. A large number of people are suffering from urinary stone problems all over the globe. Not only humans, but animals and birds also suffer from urinary stone problems. Generally, three terms, i.e.,

incidence, prevalence, and lifetime prevalence, are frequently used in epidemiological studies of urolithiasis [9-11]. The incidence of stone disease is defined as the number of new stone patients in a given population over a defined period of time. The prevalence is defined as the number of stones present in a screened population at a particular point in time. Finally, the lifetime prevalence is defined as the presence of a stone at any point in a patient's history. Urolithiasis is a global problem spanning all geographic regions, with an estimated annual incidence of 1%, prevalence of 3–5%, and a lifetime risk of 15–25%. Once afflicted, urolithiasis tends to be recurrent in the majority of cases. Fifty percent of kidney stone patients have reappearance within 10 years. In a recent study, the recurrence rates are estimated at about 10% per year, totaling 50% over a 5–10-year period and 75% over 20 years [12].

The incidence of urolithiasis varies in different countries. In India, the “stone belt” occupies parts of Maharashtra, Gujarat, Rajasthan, Punjab, Haryana, Delhi, and the states of the north-east. Fewer occurrences of urinary calculi are found in southern India, which may be due to the regular dietary intake of tamarind. In India, 12% of the people are estimated to have urinary stones, out of which 50% may end up with loss of kidneys or renal damage. Also, nearly 15% of the people of northern India are affected by urinary stones [13]. Singh et al. have reported that the rate of incidence of urolithiasis, particularly staghorn calculi, in Manipur is very high [14]. In recent reports on urolithiasis, it is indicated that in India there is an increased prevalence of urolithiasis in the north-western region.

Methodology

A cross-sectional survey was conducted in June 2021 in Vijayapur district. Data were obtained through direct interviews with participants using an 18-question self-questionnaire, inquiring about demographic data (age, gender, weight, height, location, and occupation), educational level, history of renal stone disease (symptoms, modality of diagnosis, hospital admission, and previous treatment), and risk factors of stone formation such as family history, daily fluid intake, and type of fluid.

Results and Discussion

A total of 300 individuals were interviewed. The overall percentage of those diagnosed with urolithiasis was 5.4%, including 5.6% males and 5.2% females ($P = 0.05$). Of those with stones, 4% were medically treated, 1.4% were hospitalized, and 1.1% were surgically managed for stones. There was a positive linear correlation between the prevalence of stones and participants' age group ($r = 0.87$, $P = 0.01$). More than 80% of participants were highly educated, which did not impact the prevalence of stone formation ($P = 0.12$). Urolithiasis was reported by 7.4% of obese participants, 4.8% of overweight participants, and 5.2% of participants with normal body mass index ($r = 0.68$, $P = 0.02$). When stratified by jobs, stone prevalence significantly increased in retired participants (12.2%) compared to workers (6.8%) ($P < 0.001$). There was no significant difference between urolithiasis and type of drinking water ($P = 0.52$).

The findings of the present study are in agreement with previous studies that reported a higher prevalence of urolithiasis with increasing age and body mass index, as well as a marginal male predominance in stone formation [15-17]. Similar observations regarding the lack of association between educational status, type of drinking water, and urolithiasis prevalence have also been documented in earlier epidemiological studies [18].

Conclusion

The prevalence of urolithiasis in the Vijayapura district is quite common. It seems that the middle-aged population in their third decade of life, those who are overweight, and obese people are at a high risk of developing urolithiasis.

Declarations

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Informed Consent Statement: Informed written consent was obtained from all participants involved in the study after explaining the purpose of the research, and confidentiality and anonymity were assured.

Research Content: The research content of this manuscript is original and has not been published elsewhere.

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