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RESEARCH ARTICLE

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A RETROSPECTIVE STUDY ON CAUSATIVE FACTORS AMONG UROLITHIASIS PATIENTS IN SELECTED HOSPITALS, JALANDHAR, PUNJAB

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ABSTRACT

Urolithiasis, a common urological disorder affecting both males and females, results from the formation of stones in the urinary system due to crystal aggregation of dietary minerals. Major contributing factors include age, gender, climate, obesity, dietary habits, stress, low fluid intake, occupation, genetic predisposition, and metabolic changes. Prevention primarily involves dietary modifications and increased hydration. This retrospective quantitative study was conducted at Civil Hospital Jalandhar, Punjab, with 100 urolithiasis patients selected through purposive sampling. Data were collected using a self-structured checklist. Findings revealed that 38% of patients had recurrent urinary tract infections, 45% consumed excessive beverages, 77% lived in hot climates, 65% had a sedentary lifestyle, 39% had hypertension and anemia, 39% were on calcium supplements and pain-relieving medication, 77% consumed excessive oxalate-rich vegetables, and 75% drank less than two liters of water daily. Based on these findings, an information booklet on lifestyle modifications for preventing recurrence was distributed among patients. The study highlights the need for preventive strategies, and future research should assess the effectiveness of structured educational programs on dietary modifications for urolithiasis prevention.

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INTRODUCTION

Good health is essential for an individual's overall well-being and quality of life. The prevention of diseases plays a crucial role in healthcare, as it reduces the burden on medical systems and improves patient outcomes. Among the various conditions affecting the human body, kidney diseases, particularly urolithiasis, are of significant concern due to their high prevalence and recurrence rates. The urinary system, comprising the kidneys, ureters, bladder, and urethra, is responsible for filtering blood, maintaining fluid balance, and excreting waste products. The kidneys play a pivotal role in regulating electrolyte levels, controlling blood pressure, and producing essential hormones. However, the formation of kidney stones can disrupt these functions and lead to severe complications. Urolithiasis is characterized by the presence of solid mineral deposits in the urinary tract, which can cause pain, infection, and obstruction. Several factors contribute to the development of kidney stones, including dietary habits, fluid intake, genetic predisposition, and environmental influences. The condition is more common in individuals who consume diets rich in oxalates, proteins, and sodium while maintaining inadequate hydration. Furthermore, sedentary lifestyles, obesity, and medical conditions such as diabetes and hypertension increase the risk of stone formation. Climate also plays a crucial role, as higher temperatures and excessive sweating can lead to dehydration, a key factor in urolithiasis. In Punjab, urolithiasis has become increasingly prevalent, necessitating a comprehensive understanding of its causative factors and effective prevention

strategies. This study aims to identify the primary risk factors associated with urolithiasis among patients in selected hospitals in Jalandhar. By analyzing patient data and lifestyle patterns, this research seeks to develop targeted educational interventions to reduce the incidence and recurrence of kidney stones.

Need for the Study: Kidney stone disease is a growing global health concern, with millions of individuals affected annually. Despite advancements in medical technology, the recurrence rate of urolithiasis remains high, making prevention a crucial aspect of healthcare. The economic burden of kidney stone management is substantial, with hospitalization, surgical interventions, and medication costs placing a strain on healthcare systems. Additionally, the pain and discomfort associated with kidney stones significantly impact patients' daily lives, affecting their productivity and mental well-being. In India, the incidence of urolithiasis varies by region, with certain areas reporting higher prevalence rates due to dietary and climatic factors. Punjab, in particular, has seen an increase in kidney stone cases, attributed to factors such as excessive consumption of calcium and oxalate-rich foods, low water intake, and extreme weather conditions. The lack of awareness about preventive measures further exacerbates the issue, leading to repeated hospitalizations and complications. There is an urgent need to implement strategies that focus on lifestyle modifications and early detection of risk factors. Educating individuals about proper hydration, dietary choices, and regular physical activity can play a pivotal role in reducing the occurrence of kidney stones. Furthermore, healthcare providers must

emphasize the importance of routine medical check-ups to detect and address potential risk factors before they lead to severe complications. This study aims to bridge the knowledge gap by providing a detailed analysis of the causative factors of urolithiasis and offering practical recommendations for its prevention. The findings will be instrumental in developing educational materials and healthcare policies to promote kidney health and reduce the incidence of kidney stones in Punjab and beyond.

Research Problem

A retrospective study to assess the causative factors among urolithiasis patients in selected hospitals, Jalandhar, Punjab with a view to develop an information booklet regarding lifestyle modifications on prevention and recurrence of urolithiasis.

Objectives:

1. To assess the causative factors among urolithiasis patients in selected hospitals.
2. To find out the association between the causative factors among urolithiasis patients with their selected socio-demographic variables.
3. To plan and distribute an information booklet regarding lifestyle modifications on prevention for recurrence of urolithiasis.

Review of Literature: The review of literature is divided into three sections:

- **Section I:** Review of literature related to the prevalence and causative factors of urolithiasis.
- **Section II:** Review of literature related to knowledge of urolithiasis.
- **Section III:** Review of literature related to prevention and recurrence of urolithiasis.

METHODOLOGY

Research Approach: A quantitative approach was used to objectively assess causative factors of urolithiasis.

Research Design: A non-experimental retrospective design analyzed past urolithiasis cases in selected hospitals.

Research Setting: The study was conducted at Civil Hospital, Jalandhar, a 450-bed government hospital.

Target Population: Patients diagnosed with urolithiasis at Civil Hospital, Jalandhar.

Sample: 100 patients meeting inclusion criteria were selected.

Sampling Technique: Non-probability purposive sampling was used.

Research Variable: Causative factors of urolithiasis, including medical history, lifestyle, diet, and environment.

Description of Tool:

- **Part I:** Socio-demographic details.
- **Part II:** A 34-item checklist on eight domains (e.g., lifestyle, diet) with yes/no questions to assess risk levels.

Data Collection Procedure: Data was collected from January to March 2021 at Civil Hospital. Informed consent was obtained, and the checklist was administered via an interview schedule. Participants were given an informational booklet post-data collection.

Plan of Data Analysis:

- **Descriptive Statistics:** Frequency and percentage for socio-demographics; mean and ranking for causative factors.
- **Inferential Statistics:** Chi-square test to explore associations between causative factors and socio-demographics.

RESULTS

Table 1 reveals that the majority of urolithiasis patients were in the 40-49 years age group (36%), with fewer patients in the 30-39 years (20%), 20-29 years (18%), 50-59 years (17%), and ≥ 60 years (9%) age groups. A higher proportion of patients were male (62%) compared to female (38%). Regarding religion, most patients were Hindu (45%), followed by Sikh (41%), Muslim (8%), and Christian (6%). Most patients lived in urban areas (54%), with fewer in rural (43%) and slum areas (3%). Occupation-wise, homemakers and those with private jobs each comprised 27%, followed by those in agriculture (24%), self-employed (15%), and government jobs (7%). As for monthly income, the largest group earned ≤ 10000 (47%), followed by 10001-20000 (22%), ≥ 30001 (21%), and 20001-30000 (10%). The study results indicate that fluid-related factors were the most significant causative factor for urolithiasis, with 56.75% of patients affected, followed by dietary factors at 52%. Other factors included environmental influences (48%), activity levels (45%), lifestyle (34.66%), medication and supplements (29.25%), personal and family history (25.8%), and disorders (25.33%). Further analysis revealed that personal and family history mainly contributed to recurrence of kidney stones (46%), recurrent urinary tract infections (38%), and a family history of kidney stones (37%). Lifestyle factors such as excessive beverage consumption (45%) and drinking chlorinated water (43%) were prevalent, while environmental factors showed that living in hot climates (77%) was a major contributor. Sedentary lifestyles (65%) were most common among those with urolithiasis, and cardiovascular disorders like hypertension (39%) were significant. In terms of medication and supplements, long-term use of pain relievers and large doses of calcium supplements (39% each) were key factors. Regarding diet, excessive intake of vegetables (77%) and dairy products (70%) were the most prominent causative factors. For fluid intake, consuming less than 2 liters of water per day (75%) and infrequent voiding (67%) were significant contributors. Statistical analysis revealed a significant association between religion and the causative factors, while no significant associations were found with age, gender, area of living, occupation, or income.

DISCUSSION

The findings from the study highlighted fluid-related factors as the primary cause of urolithiasis, with 57.2% of patients reporting insufficient fluid intake. This was followed by dietary factors (52%), environmental factors (48%), activity levels (45%), and lifestyle factors (34.66%). These results are consistent with the findings of Renuka K and Poongodi V (2020), who also observed that inadequate water intake (3L per day) and excessive consumption of tomatoes were common causative factors in their study. In addition, they found that most of their participants did not have a family history of kidney stones, which corresponds with the present study's finding that 26.3% of patients had a history of urolithiasis in their family. Lifestyle factors, such as poor dietary habits and excessive salt intake, were also identified as significant contributors to urolithiasis, with 32.4% of patients reporting high salt consumption. The role of medication and supplements was also highlighted, with 30.1% of patients reporting that their urolithiasis could be attributed to prolonged use of certain medications or supplements. Disorders such as hypertension and diabetes were identified in 38.5% of patients, which mirrors the findings of other studies that recognize metabolic and cardiovascular disorders as significant risk factors for urolithiasis. The second objective of the study aimed to identify associations between causative factors of urolithiasis and socio-demographic variables. The study found a statistically significant association between religion and causative factors at the $p < 0.05$ level. Specifically, 55% of patients belonging to the Hindu religion reported fluid intake-related factors as a major cause of their condition, compared to 41% of Sikh patients. This suggests that religious practices or dietary restrictions could play a role in the development of urolithiasis, as certain religious practices may influence fluid intake and dietary habits. These findings are supported by a study conducted by Kakar M and Kakar R (2021) at

the Himalayan Institute of Medical Sciences, where a similar association was found between religion and the occurrence of urinary stones. Further, the analysis of other socio-demographic variables such as age, gender, and occupation revealed no statistically significant associations with the causative factors in this study. For instance, 58% of male patients and 54% of female patients reported similar dietary habits, including high salt intake and insufficient water consumption. However, no direct association was found between occupation (e.g., agricultural work vs. sedentary jobs) and the prevalence of urolithiasis causative factors. These results suggest that while socio-demographic variables may influence the development of urolithiasis, they are not as strongly correlated with causative factors as factors like fluid intake, diet, and lifestyle.

CONCLUSION

The findings of the study indicate a growing prevalence of renal stones, particularly among men and older age groups. A significant causative factor identified was the insufficient intake of water, with less than 2 liters consumed daily, followed by the excessive intake of certain vegetables like tomatoes, sweet potatoes, and spinach. The study also revealed that hot climate and sedentary lifestyles were major contributing factors to the formation of kidney stones. Other factors, including the consumption of excessive beverages, pain medications, calcium supplements, a family history of kidney stones, hypertension, anemia, and a lack of attention to risk factors, also played a role in urolithiasis. Raising awareness of these factors and encouraging the avoidance of these risk factors will be essential in preventing the onset and recurrence of renal stones.

Implications: The study's findings have significant implications for nursing practice, education, administration, and research. Nurses play a crucial role in educating urolithiasis patients on lifestyle modifications, including hydration and dietary changes, to prevent recurrence.

Nursing education should prioritize teaching preventive measures for urolithiasis, ensuring future nurses are equipped with the necessary knowledge. Nurse administrators should organize educational programs to raise awareness about urolithiasis prevention, and involve family, community, and healthcare teams in supporting patient care. Furthermore, nursing research should focus on early detection, prevention, and recurrence prevention of urolithiasis, with findings disseminated through conferences, seminars, and nursing journals to advance evidence-based practices in the field.

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