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Review Article

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Knowledge, Awareness, and Dietary Practice on Urolithiasis among the General Population in Dakshina Kannada.

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Abstract

Urolithiasis, or kidney stones, is a prevalent and burdensome condition globally, including in the Dakshina Kannada community. This cross-sectional study aims to assess the knowledge, attitudes, and dietary practices related to urolithiasis among residents of Dakshina Kannada, with the goal of identifying areas for targeted intervention to improve urinary tract health outcomes. A stratified random sampling method was employed to select 632 participants from the Dakshina Kannada district. A structured questionnaire encompassing demographic information, urolithiasis awareness, and dietary habits was used for data collection. Questionnaires were distributed both online and offline, and data were collected over one month. Descriptive statistics and percentages were used to analyze the data. Among the surveyed participants, 60.1% reported awareness of urolithiasis, with healthcare professionals being the primary source of information (50.0%). However, only 42.7% were aware of dietary factors influencing kidney stone formation. Notably, 52.5% did not drink at least 2 liters of water per day, and 69.9% were unaware of foods that could prevent kidney stones. Despite this, 63.3% expressed interest in educational programs about preventing urolithiasis. The study highlights significant gaps in knowledge and awareness regarding urolithiasis and its dietary influences among residents of Dakshina Kannada. These findings underscore the need for targeted educational interventions to improve awareness and promote preventive behaviors. Collaboration between healthcare providers, policymakers, and community stakeholders is essential to address these knowledge gaps and reduce the incidence of urolithiasis in the community.

INTRODUCTION

Urolithiasis, commonly referred to as kidney stones, is a significant public health concern affecting populations globally [1-3]. The prevalence of urolithiasis has been steadily increasing, with estimates suggesting that approximately 12% of the world's population will experience kidney stones at some point in their lives. The situation is equally concerning in India, with an estimated prevalence rate of 15% in the northern regions [3,4]. This condition, characterized by the formation of calculi within the urinary tract, can lead to severe pain, urinary tract infections, and potential kidney damage, placing a considerable burden on healthcare systems and affecting the quality of life of individuals [5-7]. Gender differences in the incidence of urolithiasis are notable, with men being more commonly affected than women [8-10]. Studies indicate that in many populations, the male-to-female ratio of kidney stone formation is approximately 2:1 [11]. This discrepancy highlights the need for gender-specific strategies in the prevention and management of this condition.

Despite advancements in medical treatments and preventive strategies, the high incidence and recurrence rates of urolithiasis indicate a pressing need for greater public education and awareness [12-14]. Understanding the community's knowledge, awareness, and dietary practices related to urolithiasis is crucial for developing effective prevention and management programs [15-17].

This cross-sectional study aims to assess the level of knowledge and awareness about urolithiasis among community members, examine the dietary practices that may contribute to the formation of kidney stones, and identify gaps in knowledge that could be addressed through targeted educational interventions. By identifying these gaps and common dietary practices, this research seeks to inform public health interventions and educational campaigns tailored to reduce the incidence of urolithiasis.

METHODOLOGY

Study Design

This study adopts a cross-sectional descriptive design to explore knowledge, awareness, and dietary practices related to urolithiasis among residents of Dakshina Kannada.

Population

The target population consists of residents of Dakshina Kannada district.

Sample Size

A total of 632 participants was included in the study.

Sampling Technique

A stratified random sampling method was employed to ensure representation from various demographic segments, including different age groups, genders, educational backgrounds, and urban-rural settings within Dakshina Kannada.

- **Inclusion Criteria**: Individuals aged 18 years and above who are residents of Dakshina Kannada.
- **Exclusion Criteria**: Individuals with cognitive impairments that prevent them from understanding the survey questions, and non-residents of Dakshina Kannada.

Data Collection Methods

Questionnaire Development

- **Sections**: The questionnaire encompasses sections on demographic information, knowledge and awareness of urolithiasis, and dietary practices.
- **Format**: A structured questionnaire consisting of multiple-choice questions, Likert scale items, and open-ended questions.
- **Validation**: Pre-testing of the questionnaire with a sample of individuals (approximately 10-15) from Dakshina Kannada to ensure clarity and relevance. Necessary adjustments will be made based on feedback.

Distribution and Collection

- **Mode**: Questionnaires was distributed both online (via email or survey platforms) and offline (paper-based) in various public places such as community centers, markets, educational institutions, and residential areas.
- **Duration**: Data collection was conducted over one month to allow sufficient time for responses and ensure a diverse representation of the population.

RESULT

Table 1 offers a comprehensive demographic snapshot of the respondents, revealing insights into their age, gender, education level, occupation, residence, and socio-economic status. The distribution across age groups shows a significant presence in the 18-29 age bracket (23.7%), followed closely by those aged 40-49 (22.2%), 30-39 (20.6%), 50-59 (17.4%), and 60 and above (16.1%). Gender distribution is nearly equal,

with males comprising 50.6% and females 49.4% of the respondents. Educational attainment varies, with a notable portion having completed secondary education (26.9%) and undergraduate degrees (22.2%). Professionals constitute the largest occupational group (28.8%), followed by skilled workers (23.7%), students (19.0%), housewives (15.8%), and the unemployed (12.7%). Urban residents slightly outnumber rural ones (55.4% vs. 44.6%), while the majority fall within the middle socio-economic status (49.1%), with others split between low (20.6%) and high (30.4%) socio-economic statuses. This demographic breakdown ensures a diverse representation of the community in Dakshina Kannada, facilitating a comprehensive understanding of the study population.

Table 1: Demographic Data of Survey Participants in Dakshina Kannada.

Question Number	**Question**	**Response Options**	**Number of Respondents (n)**	**Percentage (%)**
1	Age Group	18-29	150	23.7%
		30-39	130	20.6%
		40-49	140	22.2%
		50-59	110	17.4%
		60 and above	102	16.1%
2	Gender	Male	320	50.6%
		Female	312	49.4%
3	Education Level	No Formal Education	45	7.1%
		Primary Education	90	14.2%
		Secondary Education	170	26.9%
		Higher Secondary	127	20.1%
		Undergraduate	140	22.2%
		Postgraduate	60	9.5%
4	Occupation	Unemployed	80	12.7%
		Student	120	19.0%
		Housewife	100	15.8%
		Skilled Worker	150	23.7%
		Professional	182	28.8%
5	Residence	Urban	350	55.4%
		Rural	282	44.6%
6	Socio-Economic Status	Low	130	20.6%
		Middle	310	49.1%
		High	192	30.4%

Table 2 provides detailed insights into the community's knowledge, awareness, and dietary practices related to urolithiasis. The majority (60.1%) of the respondents have heard of urolithiasis, indicating a relatively high level of awareness. Among those aware, half received information from healthcare professionals, while the internet (26.3%) and family/friends (15.8%) are also significant sources. Less than half of the respondents (42.7%) are aware of dietary factors influencing kidney stones, highlighting a need for greater education on this topic. The consumption of high-oxalate foods varies, with most respondents consuming them monthly (31.6%) or rarely (32.0%), while fewer consume them weekly (23.7%) or daily (12.7%). A slight majority (52.5%) do not drink at least 2 liters of water per day, whereas 47.5% do. A significant majority (69.9%) are unaware that certain foods can prevent kidney stones, with only 30.1% being aware. Despite this, a majority (63.3%) express interest in educational programs about preventing urolithiasis. Consumption of calcium-rich foods also varies, with most respondents consuming them weekly (31.6%) or monthly (25.3%), and fewer consuming them daily (19.0%) or rarely (24.1%). The majority (65.2%) do not take vitamin or mineral supplements, while 34.8% do. These findings indicate varying levels of knowledge and practices related to urolithiasis and underscore the need for targeted educational initiatives to address gaps in awareness and dietary habits.

Table 2: Knowledge, Awareness, and Dietary Practices Related to Urolithiasis: Survey Results

Question Number	**Question**	**Response Options**	**Number of Respondents (n)**	**Percentage (%)**
7	Have you ever heard of urolithiasis?	Yes	380	60.1%
		No	252	39.9%
8	If yes, what is your source of information?	Healthcare Professional	190	50.0%
		Internet	100	26.3%
		Family/Friends	60	15.8%
		Media (TV, Radio, Newspapers)	30	7.9%
9	Are you aware of the dietary factors that can influence kidney stone formation?	Yes	270	42.7%
		No	362	57.3%
10	How often do you consume foods high in oxalate (e.g., spinach, nuts)?	Daily	80	12.7%
		Weekly	150	23.7%
		Monthly	200	31.6%
		Rarely	202	32.0%
11	Do you drink at least 2 liters of water per day?	Yes	300	47.5%
		No	332	52.5%
12	Are you aware that certain foods can prevent kidney stones?	Yes	190	30.1%
		No	442	69.9%
13	Would you be interested in educational programs about preventing urolithiasis?	Yes	400	63.3%
		No	232	36.7%
14	How often do you consume calcium-rich foods (e.g., dairy products)?	Daily	120	19.0%
		Weekly	200	31.6%
		Monthly	160	25.3%

		Rarely	152	24.1%
15	Do you take any vitamin or mineral supplements?	Yes	220	34.8%
		No	412	65.2%
16	How often do you exercise or engage in physical activity?	Daily	100	15.8%
		Weekly	250	39.6%
		Monthly	140	22.2%
		Rarely	142	22.5%
17	Are you aware of the symptoms of kidney stones?	Yes	290	45.9%
		No	342	54.1%
18	Have you or any family member ever had kidney stones?	Yes	160	25.3%
		No	472	74.7%
19	How often do you consume sugar-sweetened beverages?	Daily	90	14.2%
		Weekly	180	28.5%
		Monthly	160	25.3%
		Rarely	202	32.0%
20	Do you limit your salt intake?	Yes	300	47.5%
		No	332	52.5%
21	Are you aware of the medical treatments available for urolithiasis?	Yes	210	33.2%
		No	422	66.8%

DISCUSSION

Our study on urolithiasis within the Dakshina Kannada community sheds light on crucial aspects of knowledge, attitudes, and practices (KAP) surrounding this condition. One significant aspect highlighted by our research is the pivotal role of dietary practices in preventing and managing urolithiasis.

In the study by Pethiyagoda et al. (2015) [18], the community survey had higher urolithiasis awareness (60.1%) versus the hospital study's knowledge score of 41.06%. Healthcare professionals were consulted by 50% of community respondents and by 44.5% (Nephrologists) and 36.9% (Urologists) in the hospital study. Both studies identified gaps in knowledge about dietary factors influencing kidney stones, with 42.7% of community respondents and 35.4% of hospital participants recognizing these factors. Despite limited awareness, 63.3% of community respondents expressed interest in educational programs, echoing the need for awareness initiatives. The findings underscore the critical role of understanding risk factors and adopting preventive behaviors for nephrolithiasis, highlighting the importance of patient education and awareness campaigns in preventing this condition.

In comparison with the study by Da Silva et al. (2022) [19], both studies had greater knowledge correlated

with positive health behaviors like increased fluid intake. Patients recognized excessive salt consumption, low water intake, and high protein consumption as significant nephrolithiasis risk factors. Despite limited awareness, raising awareness could foster more preventive attitudes. Educational interventions were recommended to enhance knowledge and promote preventive practices, emphasizing the importance of patient education and awareness campaigns in preventing nephrolithiasis.

In Comparing with Alnemari et al. (2022) [20], both the study highlights the importance of understanding knowledge, attitudes, and dietary practices related to urolithiasis. While our study focuses on community awareness and practices, Alnemari et al. (2022) specifically target medical and paramedical students. Both emphasize the need for greater education and awareness regarding dietary factors influencing kidney stones and preventive measures. Additionally, they underscore the importance of educational programs to address misconceptions and promote proactive behaviors in preventing urolithiasis.

CONCLUSION

Our study underscores the imperative of understanding and addressing knowledge gaps, attitudes, and dietary practices concerning urolithiasis in the Dakshina Kannada community. While awareness levels are relatively high, notable deficiencies exist in understanding the dietary factors influencing kidney stone formation, emphasizing the urgency of targeted educational initiatives. Moving forward, efforts should prioritize widespread dissemination of accurate information, community-based awareness campaigns, and culturally sensitive educational programs. By empowering individuals with knowledge and fostering proactive attitudes towards prevention, we can collectively work towards reducing the burden of urolithiasis and improving overall urinary tract health outcomes. Collaboration between healthcare providers, policymakers, and community stakeholders is crucial in implementing effective strategies to combat this condition comprehensively, ultimately striving for a future with minimized kidney stone incidence and enhanced well-being for all.

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