



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

ANALYTICAL STUDY OF THE NUTRITIONAL AND SOCIOECONOMIC PROFILE OF KIDNEY STONE PATIENTS

Dr. Nutan, Assistant Professor

BPS Institute of Higher Learning, Bhagat Phool Singh Mahila Vishwavidyalay

Khanpur Kalan, Sonapat, Haryana

Abstract

The present study was undertaken in order to study the assessment the nutritional status of kidney stone patients (30-50 years). Investigation was conducted on 50 patients in Manohar ultrasound Centre (Rewari). The parameters studied were age, education, family type, income of family, water sources food intake, time period for occurrence of kidney stone, duration of pain nutrition related attitude and constraints; along with this Dietary assessment (Food consumption), anthropometric assessment height, weight and BMI calculation was done to clear the picture of nutritional status of the subjects. It was revealed that 56 per cent patients were between 30-40 years age group and 44 percent patients were between 40-50 years age group. 96 percent patients were married and 4 percent people were unmarried.. 48 percent patients were related to joint family and 52 percent patients were related to nuclear family. 40 percent patients having 1000-5000 family income, 24 percent patients having 5000-10000 family income and 8 percent patients having above 15000 family income. 58 percent patients related to urban area. The food intake data show that 68 percent patients were vegetarian, 8 percent patients were non vegetarian 8 percent patients were non vegetarian and 24 percent patients were ova tarian, 30 percent had urinary tract infection and 70 percent had not urinary tract infection

Key words: *Flavoring agents, Food habits, Anthropomrtric, Nephrolithiasis*

1.Introduction

The modern era of mechanization is over loaded with various readymade snacks and ready to eat foods. Convenience ranges from soups and juices for the diseased ones to supplement and snacks for the robust ones. The need of these processed and semi processed foods to have some preservatives, taste enhances coloring and flavoring agents to increase its consumer acceptability and to make them successful products in this competition of food processing industry. These food additives are rich in Ca, Na, and K and ready to eat snacks are full of calories, saturated fat etc. This is the root cause of kidney stone formation. In this era people fall prey to disease due to the negligence of eating habits. These avoidable food behavior can give birth to the ghost diseases like cancer kidney failure, heart attack, stroke etc. Hence, the incidence of kidney stone is increasing speedily among masses.

Kidney Stones also called as *nephrolithiasis* (*nepbro* refers to the kidney, *uro* refers to urine, and *lith* means stone and the condition is known as nephrolithiasis or urolithiasis) or renal calculi. These are the extra chemicals that are not flushed out of the system through urine and get collected in the kidneys. These collected solid accumulations/chemicals form crystals and harden into stones. The basis of formation of these accumulations is the change in the normal balance of water, salts, minerals, and other substances found in urine. The main factor that change urine balance is water, this deficiency makes salts, minerals, and other substances stick together and result in kidney stone (*Renal Calculi*). (Parmer et al. 2004).

1.1. Prevalence of Kidney stone

According to the National Health and Nutrition Examination Survey, as of 2012, 10.6% of men and 7.1% of women in the United States are affected by renal stone disease, compared to just 6.3% of men and 4.1% of women that were affected in 1994. (Scales et al. 2012). Although nephrolithiasis continues to be more common in men, the incidence rate ratio of men to women with urinary tract stones has narrowed from 3.4 to 1.3. (Strope et al. 2010). Moreover this ailment is on rise among US as well as Indian Population

Bogdana *et al* (2022) looked at trends in the global burden of stone disease using data from 204 countries from 1990 to 2019 and concluded that Worldwide, total cases, DALYs, and deaths attributed to urolithiasis have increased since 1990, while age-standardized rates have decreased, with demonstrated regional and socio demographic variation. Multifaceted strategies to address kidney stone (*urolithiasis*) prevention and treatment are necessary.

2. METHODOLOGY

2.1 Sampling : By purposive sampling technique, 50 male having kidney stone diagnosed by doctor on the basis of X ray and ultrasound examination were selected for conducting the survey.

2.2 Location : Subjects were selected from Manohar ultra sound centre Rewari. The age of the subjects was between 30-50 years.

2.3 Collection of general information: general information of the subjects was collected by pretested questionnaire Before commencing the survey general information regarding kidney stone patients was collected including dietary habits and personal habits by questionnaire cum interview method. Preliminary prepared performa was carried out on 10 subjects to test the reliability and validity of these performa and modified one was used to collect the desired data related to the dietary habits like meal consumption pattern as well as source of water, pathological status and dietary habits etc.

2.4 Diet Survey:

Information on meal pattern of the subjects was collected from all subjects by 24 hour recall, Diet survey was done for 3 consecutive days Based on data the amount of raw foods consumed by each individual and calculated using the formula:

$$\text{Amount of raw food consumed by individual} = \frac{\text{Total quantity of raw food used by family}}{\text{Total quantity of cooked food}} \times \text{Individual intake of cooked portion}$$

The adequacy of foods and nutrients of diet consumed before and during the treatment was calculated and compared with requirements and recommended dietary allowances respectively.

2.5 Anthropometry

Height, weight, waist and hip circumference, WHR and BMI were recorded before and after the treatment as :

$$\text{BMI} = \frac{\text{Weight (kg)}}{(\text{Height in meters})^2}$$

The subjects were graded as per normal values and standardized tables.

2.6 Statistical Analysis: data for blood pressure was statistically analysed to calculate the mean and S.D.

3.RESULT AND DISCUSSION

3.1 Distribution of the kidney stone subjects (N=50) according to their socioeconomic status

All the subjects under study were categorized on the basis of their socioeconomic status as follows:

3.1.1 Distribution of subjects according to their age. (N=50)

Distribution of kidney stone patients are presented in the Table 1. In the present study was found to be 56 per cent were patients suffering from kidney stone between 30-40 years age group and 44 per cent patients suffering from Kidney stone between 40-50 years age group.

Simon (2009) reported that kidney stones increase in men in their 40's and continues to rise until age 70 men have a higher risk than other group. The risk of kidney stones peaks in women's 50's.

3.1.2 Distribution of subjects according to their marital status. (N=50)

The distribution of kidney stone patients are presented in the Table 1 in this study was found that 96 per cent patients were married and only 4 per cent patients were unmarried. Married patient (96%) were higher than unmarried (4%)

3.1.3 Family profile of persons having Kidney stone (N=50)

The family profile of persons having kidney stone was presented in Table 1. In the present study was found to be 48 per cent patients belonged to joint family and 52 per cent belonged to Nuclear Family.

3.1.4 Distribution of subjects according to income of family (N=50)

The distributions of patients according to income of family are presented in Table 1. In the present study most of the patients were found to be patients having 1000-5000 family income, 24 percent patients having 5000-10000, 28 percent patients having 10000-15000 and 8 per cent patients having above 15000 family income.

3.1.5 Distribution of subjects according to their community (N=50)

The distributions of patients according to their community are presented in Table 1. In this study were found to be 58 per cent patients of kidney stone were belonged to rural area and 42 per cent patients of kidney stone belonged to urban area. The patients of rural area were more than urban area.

Table 1: Socioeconomic status of Nephrolithiasis patients (N=50)

Variable	Total (N=60)	
	No. of subjects	% age
a. Age group		
1. 30-40	28	56
2. 41-50	22	44
b. Educational qualification		
1. High school		
2. Inter		
3. Graduate		
4. Post graduate		
c. Profession		
1. Teaching		
2. Clerical		
3. Business		
4. Miscellaneous		
5. House wife/Home maker		
d. Marital status		
1. Single	48	96
2. Married	2	4
e. Type of family		
1. Joint	24	48
2. Nuclear	26	52
f. Monthly Income		
1. Low income group 5000-10000	20	40
2. Middle income group 10,000- 50,000	12	24
3. High income group 51000-10,0000	18	36
g. Gender		
a. Male	28	56
b. Female	22	44
h. Community		
a. Urban	21	42
b. Rural	29	58

3.2 Distribution of Nephrolithiasis patients according to their pathological status.

The data of pathological status of patients was collected through questionnaire method is shown in Table 2.

3.2.1 Distribution of subject according to time period for occurrence of Kidney stone (N=50)

The time period for occurrence of kidney stone is distributed in table 4.7. It was observed that 16 per cent patients suffering from kidney stone since 0-4 years and 30 per cent patients suffering from kidney stone above 8 years.

3.2.2 Distribution of subjects according to duration of pain (N=50)

Distribution of patients according to duration of pain are presented in table 4.8. In the present study was found to be 20 per cent patient have pain a few second, 70 per cent patients have pain a few minutes and 10 per cent patient have pain a few hours.

Table 2: Distribution of Nephrolithiasis patients according to their pathological status.

Variable	Total (N=60)	
	No. of subjects	% age
a. Time period (in years) from which they suffer from nephrolithiasis		
1. 0-4	8	16
2. 4-8	15	30
3. 8<	27	54
b. Duration of pain Few seconds		
1. Few minutes	10	20
2. Few hours	35	70
	5	10
c. Presence of urinary tract infection		
1. Yes	15	30
2. No	35	70

3.2.3 Distribution of subjects according to urinary tract infection (N=50)

Distribution of patients according to urinary tract infection are presented in table 4.10. In the presence study were found to be 30 per cent patients suffering from kidney stone from infection and 70 per cent having other causes.

Kinder et al; (2002) carried out a study on 252 siblings of stone former provided 24 hours urine samples and predict new stone onset may require years of observation of our current cohort and observed urinary stone risk factors in the sibling of patients with calcium stone.

3.3 Distribution of subjects according to water sources (N=50)

Distribution of patients according to water sources are presented in Table 3. In this study was found to be 62 per cent patients drink tap water, 38 per cent patients drink tub well water and 0 per cent patients drink well water.

Baker et al (1993) carried out a study on kidney stone patients and reported that dehydration among these patients from inadequate fluid intake during exposure to high ambient temperature increase the concentration and acidity of urine which promote stone formation.

Table 3 : Distribution of Nephrolithiasis patients according to the source of water

Source of water	Total (N=50)	
	No. of subjects	% age
1. Tap	31	62
2. Tube well	19	38
3. Well	0	0

3.4 Mean height, weight and B.M.I (N=50)

The mean height, mean weight and mean B.M.I. of kidney stone patients was found to be 1.68 mt, mean of weight is 60.5 kg and mean of B.M.I is 21.45.

3.5 Distribution of subject according to food intake (N=50)

Distributions of patients according to food intake are presented in the Table 4. In the present study were found to be 68 per cent vegetarian, 8 per cent patients were nonvegetarian and 24 per cent patients were ovatarian. The vegetarian patients were more than non vegetarian.

Parks (1995) reported that restricting the intake of meat and salt is for more effective at preventing kidney stone formation than a diet that merely limits calcium intake.

Table 4 : Distribution of Nephrolithiasis patients according their dietary habits

Dietary Habits	Total (N=50)	
	No. of subjects	% age
a. Nature of dietary habit		
1. Vegetarian	34	68
2. Non vegetarian	4	8
3. Ovatarian	12	24
b. Consumption of tea and coffee		
1. Twice	9	18
2. Thrice	5	10
3. More	36	72

3.5.1 Distribution of subjects according to consumption of Tea/coffee (N=50)

The consumption of tea/coffee by kidney stone patients are presented in the Table 4. In the present study were found to be 18 per cent patients consumption of tea/coffee twice/day, 10 per cent patients consumption of tea/coffee thrice and 72 per cent patients consumption of tea/coffee more/day.

Thom et al (1978) reported that kidney stone are associated with high sugar intake. So eat less or no added sugar.

Table 5 : Table of dietary data of subjects (N=50)

Nutrient	RDA (2020)	Mean Actual Intake	% Mean actual Intake
Energy	2110 Kcal	2156	102.18
Protein	54 g	68.43	126.72
Fat	25g	57.82	231.28
Carbohydrate	130g	325.16	250.12

The average intake per day by kidney stone patients are presented in Table 5. The mean energy consumption of kidney stone patients was fund to be 2156/Kcal/day while their RDA was 2425 Kcal/day. The mean intake was less than RDA. The mean protein intake was found to be 68.43 gm/day while RDA was 62 gm/day. The mean protein intake was higher that RDA. The mean fat consumption was found to be 57.82 gm/day while RDA was 47 gm/day. The mean protein intake was higher than RDA. The mean carbohydrate consumption was found to be 325.16 gm/day while RDA was 438gm/day. The mean carbohydrate is less than RDA. A high protein intake was observed among the kidney stone patient, which is predisposing factory to kidney stone as high protein diet increases hyper calcsium/lower PH of urine, increases uric acid levels which increases kidney stone risk (Kok etal, 1990; Haewook etal, 2015) considered high protein diet as a risk factor for Nephrolithiasis.

Abrams (2001) reported that a high dietary intake of magnesium and potassium has also been associated with lower risk of stone development in men in a large observation study.

CONCLUSION

Results of the study revealed the need for a properly balanced diet as nutrient intake data displayed that calorie intake of respondents was significantly higher. The intake of all macronutrients was higher than RDA. The majority of respondent were married. The incidence of kidney stone may be connected with higher coffee and tea consumption as three quarter of the subjects reported to consume a lot of tea and coffee more than thrice a day.

REFERENCES

1. Baker et. Al (2005): institute of Medical and veterinary Science in Adelaide. American Journal of Kidney stone diseases, Volume 51, page 568-573.
2. Bogdana Schmidt , Kyla, Velaer , I-Chun Thomas , Calyani Ganesan , Shen Song , Alan C. Pao , Alan E. Thong , Joseph C. Liao , Glenn M. Chertow , Eila C. Skinner , Renal Morbidity Following Radical Cystectomy in Patients with Bladder Cancer European Urology Open Science, Vol 35, Jan 2022, Pages 29-36. <https://doi.org/10.1016/j.euros.2021.11.001>
3. Marshal Ringsdorf (1983) explain in the vitamin C connection Department of Urology volume 31 pg- 621-624.
4. Massay, L.K. and S.J. shiting (1995)” dietary Salt Urinary Calcium, and Kidney stone Risk, “Nutruents Reviews, 53:131-139.
5. Parmar (2004) “Kidney stone” British Medical Journal 328 (7453)” 1420. Doi: 10.1136/6mg 328.7453.1420
6. Sakhaee. (1994) et.al. Limited Risk of Kidney stone formation during long-term calcium Citrate Supplementation in Non stone Forming Subject, “Journal of Urolog. 152:324-327, 1994)
7. Scale CD Jr. Smith AC, Hanley JM, Saigal CS (2012) .Urologic Diseases in America Project. Prevalence of kidney stones in th3e United States. EurUrol; 62: 160-5.
8. Strope SA, Wolf JS Jr, Hollenbeck BK(2010). Changes in gender distribution of urinary stone disease. Urology;75:543-6, 546.e1.
9. RDA Short Report PDF , National Institute of Nutrition https://www.nin.res.in/RDA_short_Report_2020.html

