International Journal of Research in Medical Sciences
Patel AC et al. Int J Res Med Sci. 2014 Feb;2(1):80-83
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: 10.5455/2320-6012.ijrms20140216

Research Article

Epidemiological characteristics of renal stone patients age (21-60) and barriers in their dietary modification in Saurashtra Region

Arpan Chandubhai Patel*, Nishank Harris Mehta

Pandit Deendayal Upadhyay Medical College, Rajkot, Gujarat, India

Received: 17 September 2013
Accepted: 16 October 2013

***Correspondence:**
Dr. Arpan Chandubhai Patel,
E-mail: arpan2patel@yahoo.co.in

ABSTRACT

Background: Dietary factors remain an entity attributed to a kidney stone and thus renal stone becomes more of a 'lifestyle' disease relying more on prevention for its amelioration than advanced and specific treatment modalities. Although there are various studies conducted in past to show importance of dietary modification in patient with kidney stone , no single study was conducted to identify perceived barriers in dietary modification by patient.
Methods: Through this population based cross-sectional study, a total of 50 patients with a radiologically diagnosed 'case' of renal stone were enrolled in the study and interviewed through proforma approved by institutional ethical committee to study patients characteristics and perceived barriers in dietary modification. Data were analyzed with help of Epi Info™ 7 (CDC Atlanta).
Results: Kidney stone prevalence is higher in men (66%) in compare to females and common with age group 31-40 years. Hindu caste (82%), low socioeconomic status (76%), and education less than 8th (42%) and not aware of need (62%) were common characteristics among them. Not clearly informed about benefits of Diet modification (54%) and Don't Remember (42%) constituted common barriers.
Conclusions: Along with educating them regarding kidney stone disease it is important to identify all barriers at individualize level because motivating patients with kidney stones to maintain behavior for recommended diet, first requires an understanding of the factors influencing this behavior and approach should be tailored for individual patient.

Keywords: Renal stone, Saurashtra region, Dietary modification

INTRODUCTION

Renal stones are typified by great variation along geographical and sociocultural lines. Their high incidence in the Saurashtra regions of India has led to the region being called by the eponymous term 'stone belt'.[1] Though Saurashtra has dedicated and specialized kidney hospitals, a lack of survey in this region has lead to little availability of epidemiological data and various parameters and thus, a startling gap remains between the services offered and the benefits incurred. Considering that this problem which ails most parts of the Saurashtra region is both correctable and preventable and has a high social impact due to its recurrent nature, an investigative study about barriers in dietary modification will do much to sort it out.[2,4] Dietary factors remain an entity attributed to a kidney stone and thus renal stone becomes more of a 'lifestyle' disease relying more on prevention for its amelioration than advanced and specific treatment modalities.[3,5] Although there are various studies conducted in past to show importance of dietary modification in patient with kidney stone , no single study was conducted to identify perceived barriers in dietary modification by patient. Merely guidelines cannot

help alone and hence present study aims at to find out perceived barriers in dietary modification and tailored intervention for individualize patient which if dealt with can reduce the disease load in this region.

Aims & Objectives

1) To describe patients characteristics.
2) To identify correctable barriers in dietary modification by patients.
3) To find out association between patient's characteristics and barriers.
4) To find out tailored advices for individual patient.

METHODS

Study Area

This study was conducted in a 'Pandit Deendayal Upadhyay Medical College' and its associated civil hospital. It is the main hospital in Saurashtra region with a high patient inflow from all over the region and would admirably serve as a mirror to the situation in this region.

Study type

Through this hospital based Cross-sectional study**,** a total of 50 patients with a radiologically diagnosed 'case' of renal stone via SONOGRAPHY were interviewed.

Study population and study design

During March 2013, young aged patients between 21 – 60 years with radiologically diagnosed 'case' of renal stone either outdoor or indoor were recruited in the study from civil hospital of P.D.U. medical college in Rajkot. In total, 50 patients were enrolled in study.

Inclusion criteria for the patients

1) Age (21 – 60 yrs.)
2) Only radiologically diagnosed case.
3) Patients with kidney stone more than 5 years.
4) Who was willing to participate in study

Data collections

Participants were interviewed using pretested proforma. The study included a valid questionnaire. Proforma pretested on a 10 patients who were later excluded from the study.

Data Analysis

Data were directly taken into form prepared with help of Epi Info™ 7 (CDC Atlanta) and analyzed by the aforementioned software for statistical significance of all variables and their relations with each other. Variables showing statistically significant association with the outcome variables ($P < 0.05$) were considered as statistically significant.

RESULTS

The present study was done on 50 patients with radiologically diagnosed case of renal stone. The result obtained and analyzed from the data collected as follows.

Kidney stone prevalence is higher in men (66%) in compare to females and common with age group 31-40 years.

Hindu caste (82%), low socioeconomic status (76%), and education less than 8th (42%) and not aware of need (62%) were common characteristics among them.

Not clearly informed about benefits of Diet modification (54%) and Don't Remember (42%) constituted common barriers.

Table 1: Demographic characteristics.

Frequency variable: Age		
Age	Frequency	Percent
21-30	4	8.00%
31-40	23	46.00%
41-50	17	34.00%
51-60	6	12.00%
TOTAL	50	100.00%
Frequency variable: Education		
Education	Frequency	Percent
A-upto 8 class	21	43.75%
B-upto 10 class	15	31.25%
C-upto 12 class	6	8.33%
D-upto college	8	16.67%
TOTAL	50	100.00%
Frequency variable: Caste		
Caste	Frequency	Percent
H-Hindu	41	82.00%
M-Muslim	9	18.00%
TOTAL	50	100.00%
Frequency variable: Socioeconomic status		
Socioeconomic status	Frequency	Percent
H-High	12	24.00%
L-Low	38	76.00%
TOTAL	50	100.00%

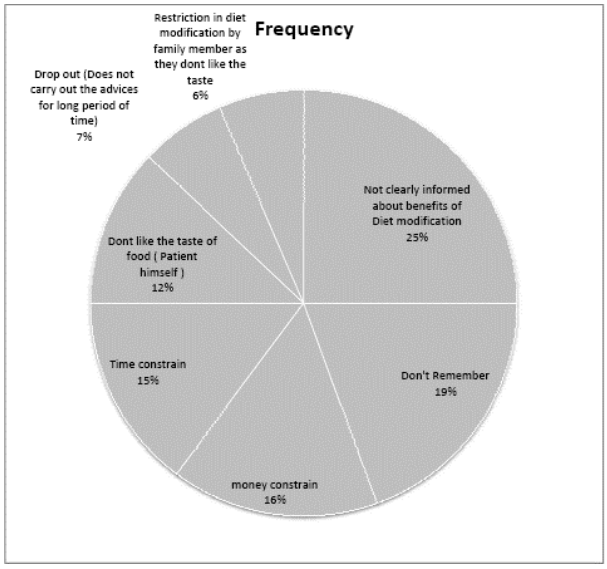

Figure 1: Barriers in dietary modification.

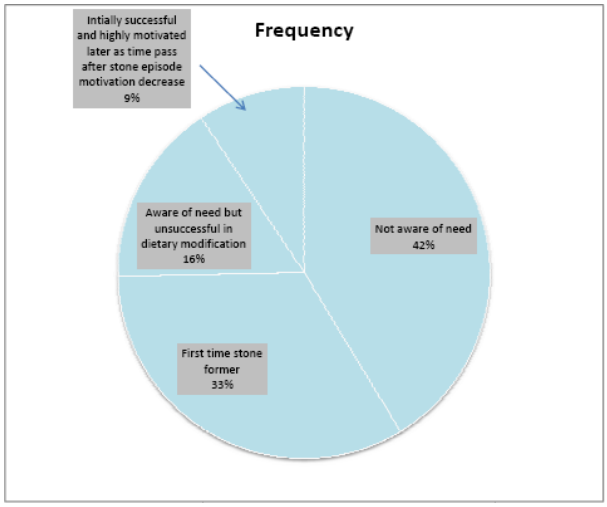

Figure 2: Patients characteristics.

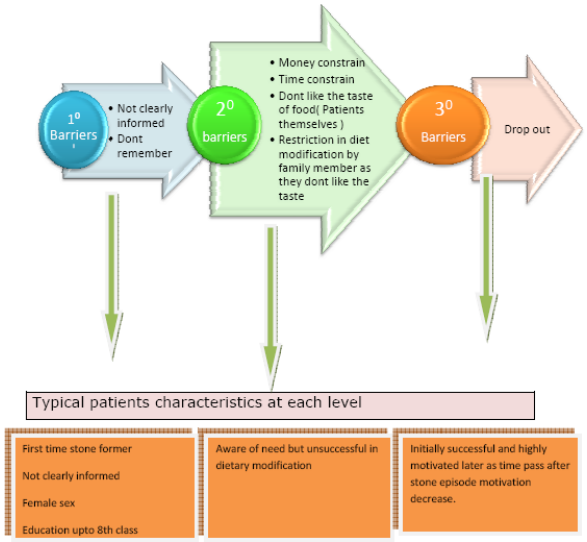

Figure 3: Barriers and characteristics.

DISCUSSION

Being a disease that takes a heavy toll on both health and wallets and having a high 5-year recurrence rate of 30-50%, it is imperative to make conscious efforts to prevent stone formation, with dietary interventions being the key avenue.[6-8]

This study allowed us to explore multiple components responsible for encouragement and discouragement regarding dietary modification among kidney stone formers. Patients considered personal perceived susceptibility and the potential benefits of a particular intervention before contemplating a behavior change. Thus, efforts to convince patients to modify diet should recognize the individual situation and characteristics.

While Dietary modification is a central component of dietary management of stones, patients often cannot maintain prescribed Dietary recommendations. Perceived barriers to dietary modification can be aligned into 3 stages. Primary barriers which includes 'don't remember' and 'not clearly informed'. Health care providers may fail to recommend appropriate dietary modification and/or patients may have difficulty with adhering to suggested interventions. These both are easier to overcome through education or providing written documents. Secondary barriers, including 'Time constraints', 'money constraints' dislike of taste by patient themselves or restriction by the family members because they don't like the taste. First two which includes time and money constraints, can be overcome by telling them usefulness of dietary modification and making them aware of severe consequences (cost of repetitive hospital admissions and operative procedures to remove stone, increase risk for recurrence due to damaged caused by previous formed stone and progress to end stage renal disease which may require renal transplant or chronic dialysis)[9,10] which follow recurrent stone disease. 'Dislike of taste by patient themselves' or restriction in dietary changes by family members are slight difficult to overcome. The dietary changes mainly include restriction of salt which is sole reason for patient's failure to follow recommended modification.[11,12] The others are oxalate-rich foods like tomatoes, ground nuts, cucumber, green peppers, beetroot, spinach, soya bean, wheat bran, chocolate, rhubarb, popcorn, sweet potato and animal proteins should be avoided.[13-15] These barriers which look difficult to overcome may be counteracted by telling them benefits which are not related to stone disease but are important. For example they should be informed how salt restriction along with helping in decreasing recurrent kidney stone disease also helps in decreasing risk for hypertension and coronary heart disease.[16,17] The same is true for animal protein restriction in diet which promotes many diseases including cancers, osteoporosis, heart disease, cardiovascular disease and obesity.[18] The tertiary barrier includes 'drop out' which include patients which do not carry out the advices for longer period of time. They are initially successful and highly motivated later as time pass after stone episode

motivation decrease. This barrier is most difficult to recognize and handle. These patients should be educated about the pathophysiology of the disease and explained that stone formation is just an eventual outcome of a more serious underlying metabolic disturbance of the body. They should know that removing the stone is not an answer to this problem. This is how they should be kept motivated to adapt for recommended dietary interventions.

To my knowledge, this study is the unique of its kind to describe the perceived barriers in diet modification. However the study has few limitations. The sample size was not large enough and only hospital patient were recruited in study which may not represent general population.

Recommendations

1) One new post in hospital as dietary advisor or dietician should be made mandatory so that the patients should be addressed properly regarding preventive measures in an effective way.
2) Community needs to be made aware and educated regarding stone disease especially when area is endemic for stone disease.

CONCLUSION

From this current study it is reasonable to conclude that lacking knowledge regarding kidney stone disease have large impact on perceived barriers by patient in diet modification. Along with educating them regarding kidney stone disease it is important to identify all barriers at individualize level because motivating patients with kidney stones to maintain behavior for recommended diet, first requires an understanding of the factors influencing this behavior and approach should be tailored for individual patient. Importantly, the results from present study can be applied in the clinical setting with the goal of reducing the likelihood of recurrent stone formation.

REFERENCES

1. Ganpule AP, Shashikant Mishra, and Mahesh R. Desai. Percutaneous nephrolithotomy for pediatric urolithiasis: Indian J Urol. 2010 Oct-Dec; 26(4): 549–554.
2. Lotan Y: Economics and cost of care of stone disease: Adv Chronic Kidney Dis 2009 Jan; 16(1):5-10.
3. Goldfarb DS: Prospects for dietary therapy of recurrent Nephrolithiasis: Adv Chronic Kidney Dis. 2009 Jan; 16(1):21-9.
4. Lotan Y, Buendia Jiménez I, Lenoir-Wijnkoop I et al: Primary prevention of nephrolithiasis is cost-effective for a national healthcare system: BJU Int. 2012 Dec;110(11 Pt C).
5. Taylor EN, Stampfer MJ, Curhan GC: Dietary factors and the risk of incident kidney stones in men: new insights after 14 years of follow-up; J Am Soc Nephrol. 2004 Dec;15(12):3225-32.
6. Johnson CM, Wilson DM, O'Fallon WM et al. Renal stone epidemiology: A 25 year study in Rochester, Minnesota. Kidney Int.1979; 16: 624–31.
7. Saxena A, Sharma RK: Nutritional aspect of Nephrolithiasis: Indian J Urol. 2010 Oct;26(4):523-30.
8. Taylor EN, Stampfer MJ: Dietary factors and the risk of incident kidney stones in men: new insights after 14 years of follow-up. J Am Soc Nephrol. 2004 Dec;15(12):3225-32.
9. Kartha G, Calle JC, Marchini GS et al Impact of stone disease: chronic kidney disease and quality of life; Urol Clin North Am. 2013 Feb;40(1):135-47.
10. Chou YH, Li CC, Hsu H et al: Renal function in patients with urinary stones of varying compositions; Kaohsiung J Med Sci. 2011 Jul;27(7): 264-7.
11. Coe FL, Evan A, Worcester E.: Pathophysiology-based treatment of idiopathic calcium kidney stones; Clin J Am Soc Nephrol. 2011 Aug;6(8):2083-92.
12. Taylor EN, Fung TT, Curhan GC.: DASH-style diet associates with reduced risk for kidney stones; J Am Soc Nephrol. 2009 Oct; 20(10):2253-9.
13. The National Kidney Foundation: A to Z Health Guide Kidney.org (2013) The National Kidney Foundation: A to Z Health Guide. [online] Available at: http://www.kidney.org/atoz/content/diet.cfm [Accessed: 17 Mar 2013].
14. Diet for Kidney Stone Prevention - National Kidney and Urologic Diseases Information Clearinghouse Kidney.niddk.nih.gov (2010) Diet for Kidney Stone Prevention - National Kidney and Urologic Diseases Information Clearinghouse. [online] Available at: http://kidney.niddk.nih.gov/kudiseases/pubs/kidneystonediet/index.aspx [Accessed: 17 Mar 2013].
15. Barnela SR, Soni SS, Saboo SS et al: Medical management of renal stone; Indian J Endocrinol Metab. 2012 Mar;16(2):236-9.
16. Barton P, Andronis L, Briggs A: Effectiveness and cost effectiveness of cardiovascular disease prevention in whole populations: modelling study; BMJ. 2011 Jul 28;343.
17. Martikainen JA, Soini EJ, Laaksonen DE: Health economic consequences of reducing salt intake and replacing saturated fat with polyunsaturated fat in the adult Finnish population: estimates based on the FINRISK and FINDIET studies. Eur J Clin Nutr. 2011 Oct;65(10):1148-55.
18. Campbell, T. C., & Campbell, T. M. (2005). The China study: the most comprehensive study of nutrition ever conducted and the startling implications for diet, weight loss and long-term health. Dallas, Tex, BenBella Books.

DOI: 10.5455/2320-6012.ijrms20140216
Cite this article as: Patel AC, Mehta NH. Epidemiological characteristics of renal stone patients age (21-60) and barriers in their dietary modification in Saurashtra Region. Int J Res Med Sci 2014;2:80-3.