EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 8
Issue: 4
360-363
Year: 2021

ANALYSIS OF THE RELATIONSHIP BETWEEN LUTS AND THE DIETARY HABITS OF A POPULATION IN SRI LANKA

Anurudda Udaya Bandara Pethiyagoda[1*], Kalyani Pethiyagoda[2], Sithara Nilmini Warnasooriya[1], Dulanjalee Lakmini Keeragala[1], Inaam Niyas[1], Erandika Vidanagamage[1]

[1]Department of Surgery, Faculty of Medicine, University of Peradeniya, Sri Lanka.
[2]Department of Community Medicine, Faculty of Medicine, University of Peradeniya, Sri Lanka.

***Corresponding Author: Anurudda Udaya Bandara Pethiyagoda**
Department of Surgery, Faculty of Medicine, University of Peradeniya, Sri Lanka.

Article Received on 19/02/2021 **Article Revised on 11/03/2021** **Article Accepted on 01/03/2021**

ABSTRACT

Introduction: Dietary habits and lifestyle are very important in managing the quality of life. According to studies, prevalence and incidence of lower urinary tract (LUTS) are markedly affected by the dietary habbit. This study was carried out to assess the effect of intake of commonly used food items on LUTS included in evaluation of IPSS. **Methodology:** This descriptive cross-sectional study was conducted among 297 patients who presented to the urology clinic of Teaching Hospital Peradeniya, Sri Lanka. Symptomatology and dietary patterns were evaluated by a questionnaire including "International Prostate Symptom Score" (IPSS)**. Results:** The mean age of 297 subjects was of 65 years with an age range of 17-87 years. Of the sampled population 83.50% were males. The most significant symptom among the study population was nocturia (86.1%) and the least common was straining (48.5%). The excessive use of Gotukola (p=0.041), Okra (p=0.043) and beans (p=0.043) shows a significant relationship with the reduction of LUTS. **Conclusions:** Although there is evidence that changes in dietary habits can reduce urinary risk factors and the risk of LUTS, further studies for large samples are necessary to evaluate long-term effects of dietary interventions on LUTS.

KEYWORDS: Dietary habits, IPSS, LUTS.

INTRODUCTION

According to the pathophysiology, LUTS can result from many conditions. One of the most common causes of LUTS is BPH.[1] BPH is defined as pathological enlargement of the prostate, usually in the central zone, which is the zone of the prostate surrounding the urethra. This enlargement exerts a pressure on urethra, increasing outlet resistance leading to LUTS. Nevertheless, there are some other causes of LUTS in men including prostatic inflammation, bladder dysfunction, urinary tract infections and prostate cancer/bladder cancer.[1] Apart from that, the importance of inflammation as a contributor to LUTS is particularly related with lifestyle changes and specially with dietary patterns.[1] According to many studies, the incidence of urinary stones has been increased worldwide due to insufficient fluid intake and diets rich in animal protein are considered to be important determinants of stone formation.[2,3] In the same way, this affects for LUTS as well. Recently, the interest in modifiable risk factors for LUTS including obesity, diet, and physical activity is increased.[5]

The main objective is to describe the study population by the occurrence of lower urinary tract symptoms included in evaluation of IPSS such as incomplete evacuation, frequency, urgency, intermittency, weak stream, straining, nocturia and any other symptom related to urinary tract like dysuria. Other aims were to assess LUTS of the study population by cumulative presence of symptoms and to evaluate the association as well as the frequency of intake of commonly used food items.

MATERIALS AND METHODS

Methodology

The study was performed on patients who presented to the urology clinic of Teaching Hospital Peradeniya, Sri Lanka with Lower Urinary Tract Symptoms (LUTS). A total of 297 patients were enrolled in the study over a period of 3 years (2018-2021). The participants were asked to grade the severity of their lower urinary tract symptoms using the internationally validated questionnaire – "International Prostate Symptom Score" (IPSS). The IPSS questionnaire consists of 7 questions related to lower urinary tract symptoms with each symptom graded from 0 to 5. The final IPSS score is the sum total of the values from each of the 7 questions.

Depending on the score, participants were graded according to the severity of their LUTS as either.

Grades used in the IPSS score are[4]

- Mild: 1 to 7
- Moderate: 8 to 19
- Severity: 20 to 35

During the study, the participants were inquired about a range of food items which include fruits, vegetables, beverages and others. The frequency of consumption of each food item was scored on a scale of 0 to 8. Excessive intake was determined according to the usage between 5-6 times a week, once a day and more than once a day.

Table 1: Scale of consumption frequency.

Frequency of consumption	Score
Less than once a week	0
Once a month	1
2-3 times a month	2
Once a week	3
Twice a week	4
3-4 times a week	5
5-6 times a week	6
Once a day	7
More than once a day	8

Statistical analysis

Data was analyzed using Statistical Package for the Social Sciences (SPSS) version 20. Calculated frequencies were used for further analysis. Statistical significance at $p< 0.05$ was accepted for all analysis.

RESULTS AND DISCUSSION

The mean age of the study population was 65 years while the minimum age was 17 years and maximum was 87 years in a range of 70 years. There were 248 males (83.50% of participants) and 49 females (16.50% of the participants), in keeping with the expected preponderance of lower urinary tract symptoms in the male population.

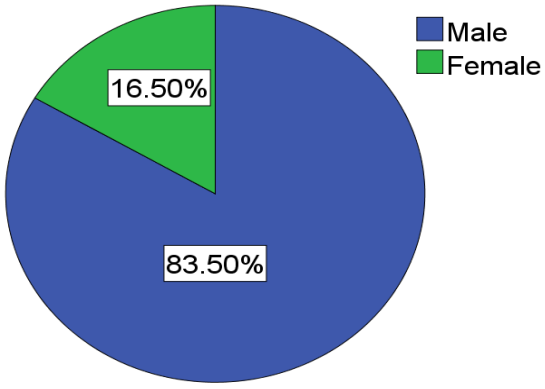

Figure 1: Consistence of the study population.

Descriptive Epidemiology

The relative frequencies of the different LUTS in the study population was as follows.

Table 2: Relative frequencies of the different LUTS in the study population.

Symptom	Percentage of participants complained of it (%)
Incomplete Emptying	73.1
Frequency	83.8
Intermittency	75.1
Urgency	81.1
Poor stream	76.8
Straining	48.5
Nocturia	86.1
Any LUTS (E.g.: dysuria)	99.3

Accordingly, the most common symptom among the study population was nocturia, and the least common was straining. The IPSS score of the study population was normally distributed with the "Shapiro-Wilk test of normality" value of 0.990 with significance of 0.45. The mean score was 17.95 (SD ± 0.423). The Minimum score was 0 and the maximum score was 35.

There was a negative skew of -0.107.

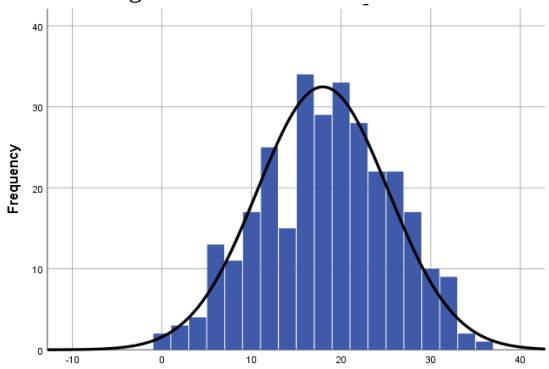

Figure 2: Histogram; IPSS Score showing normal distribution.

Table 3: The relative frequencies of IPSS grades.

IPSS Score	Severity (Grade)	Percentage (%)
0	No LUTS	0.7
1-7	Mild LUTS	8.4
8-19	Moderate LUTS	49.8
20-35	Severe LUTS	41.1

Therefore, the majority of participants demonstrated "Moderate Lower Urinary Tract Symptoms"

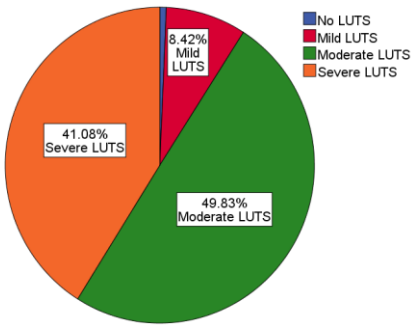

Table 4: Vegetable consumption frequencies.

Food item	Excessive Use (more than 5-6 times a week) %
Cabbage	2
Broccoli	0.7
Potatoes	6.1
Carrot	4.7
Beans	6.1
Tomatoes	26.3
Polos	1
Cucumber	1.7
Radish	1
Okra	1.7
Bread fruit	0.3
Spinach, Gotukola, Mukunuwenna, Polpala	0.3

Table 1: Fruits.

Food item	Excessive Use (more than 5-6 times a week)
Banana	29.3
Papaw	6
Mango	2.7
Citrus fruits	7.1
Pineapple	1
Sour sap	0
Durian	0

The percentage of excessive consumption of each fruits such as banana, papaw, mango, citrus fruits, pine apple are 29.3 %, 6 %, 2.7 %, 7.1 % and 1 % respectively. Meanwhile none of the study population has consumed sour sap and durian excessively.

Table 2: Animal products

Food item	Excessive Use (more than 5-6 times a week) %
Tuna	1
Crabs	0
Prawns	0.3
Salmon	0.3
Squid	0.3
Dried fish	0.3
Sprats	22.6
Red meat	0.3
Chicken	3.4
Meat products	0

When considering consumption of animal products, 22.6 % of study population has consumed sprats excessively and 3.4 % & 1 % has excessively consumed chicken and tuna respectively. Meanwhile the percentage of excessive consumption of prawns, salmon, squid, dried fish and red meat is 0.3 %.None of the study population has consumed crabs or other meat products excessively.

Table 3: Cereals

Cereals	Frequency %
Gram	1
Cowpea	1
Green gram	1

The percentage of excessive consumption of cereals such as gram, cowpea, green gram is 1 % each.

Table 4: Dairy products

Dairy products	Frequency %
Milk	71
Yoghurt	2.3
Ice cream	0.3
Curd	0.3
Egg	8.1

When considering dairy products consumption in the study population, the percentages of excessive consumption of milk, egg and yoghurt are 71 %, 8.1%, 2.3 % respectively while excessive consumption of ice cream and curd is 0.3 % each.

Table 5: Beverages

Beverages	Frequency %
Tea	94.6
Coffee	8
Fruit juice	0.3
Carbonated drinks	0.3
Alcohol	1
King Coconut Water	0.3

When considering beverage consumption, 94.6 % of study population has consumed tea excessively. Coffee was consumed excessively by 8 % of the study population.1 % of the study population has consumed alcohol excessively, while fruit juice, carbonated drinks and king coconut water was consumed excessively by 0.3 % each.

According to the results of independent samples t-test, only the excessive use of Gotukola ($p=0.041$, Okra ($p=0.043$) and beans (0.043) shows a significant relationship with the reduction of LUTS.

CONCLUSIONS

Based on our results, there is a significant correlation between the mean value of total IPSS and the excessive consumption frequencies of Gotukola, okra and beans. It is needed to carry out further investigations with a large sample over broader geographical area.

ACKNOWLEDGEMENT

All subjects who participated in this study and staff members of surgical clinic, Teaching Hospital, Peradeniya, Sri Lanka who supported in data collection.

REFERENCES

1. Lin, P. H., & Freedland, S. J. (2015). Lifestyle and lower urinary tract symptoms: what is the correlation in men? Current opinion in urology, 25(1): 1–5. https://doi.org/10.1097/MOU.0000000000000121
2. Siener R. Impact of dietary habits on stone incidence. Urological Research, 2006; 34(2): 131–3.
3. Robertson, W., M. Peacock, and A. Hodgkinson, Dietary changes and the incidence of urinary calculi in the UK between 1958 and 1976. Journal of chronic diseases, 1979; 32(6): p. 469-476.
4. [Internet]. Browardurologycenter.com, 2020. [Cited 26 November 2020]. Available from: http://www.browardurologycenter.com/pdf//ipss.pdf
5. Martin S, Lange K, Haren MT, et al. Risk factors for progression or improvement of lower urinary tract symptoms in a prospective cohort of men. J Urol, 2014; 191(1): 130–137. [PubMed: 23770136]