

RESEARCH ARTICLE

Correlation of Body Mass Index with Urinary Incontinence in Parous Women

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ABSTRACT

Introduction: Urinary incontinence (UI) is the unintentional or uncontrollable leakage of urine or the inability to control the urge to urinate in certain circumstances. Some of the causes of UI are pregnancy, urinary tract infection, smoking and alcohol consumption, chronic cough, parity, constipation, obesity, pelvic surgeries, activity level, and weakness of pelvic floor muscle. Among them, obesity correlates with the most UI. Obesity has wide-ranging effects on the body as it can cause diabetes mellitus, coronary artery disease, low back pain, infertility, osteoarthritis, depression, as well as it can affect the pelvic floor. Urinary incontinence affects physical activities, self-perception, self-confidence, and social activities, thus presenting with low quality of life.

Objective: To find correlation between body mass index (BMI) and UI in parous women.

Materials and methods: Hundred parous women from a tertiary care hospital, Belagavi, were screened for the study after meeting the inclusion criteria.

Results: The mean age of women with UI was 36.44 years. Among 100 parous women, 46 had high BMI, of which 29 women had complaints of UI.

Conclusion: The present study found that there is a significant difference of BMI in subjects with and without UI.

Keywords: Body mass index, Obesity, Parous women, Urinary incontinence.

How to cite this article: Patil HS, Mahishale A, Dave H. Correlation of Body Mass Index with Urinary Incontinence in Parous Women. J South Asian Feder Menopause Soc 2018;6(1):44-47.

Source of support: Nil

Conflict of interest: None

Date of received: 10 January 2018

Date of acceptance: 27 January 2018

Date of publication: August 2018

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INTRODUCTION

Urinary incontinence is the unintentional or uncontrollable leakage of urine or it can be defined as inability to control the urge to urinate in certain circumstances. Two common types of UI are urge UI and stress UI, in which stress UI is more common.¹ A study was done to check the prevalence for UI among 3,000 women out of which 625 women had UI and 484 (73.8%) women were diagnosed with stress UI.²

Stress incontinence commonly occurs when certain kinds of physical movements put pressure on bladder, such as jumping, sneezing, coughing, exercising, heavy weight lifting, etc. Both men and women have episodes of UI, but women are more likely to suffer with UI. The most common causes of UI are pregnancy, urinary tract infection, smoking, alcohol consumption, chronic cough, parity, constipation, higher BMI, obesity, pelvic surgery, activity level, and weakness of pelvic floor muscles.³

Stress UI is closely associated with BMI. Overweight women have increased intra-abdominal pressure, which adversely stresses the pelvic floor and leads to UI.⁴ Being overweight or obese is usually measured by BMI. There are many methods to evaluate obesity in females, such as waist-hip ratio, skin-fold measurement using calipers, and BMI; however, among these, BMI is most accurate, easy to calculate, and time-saving method. One must need height and weight to calculate BMI. It is calculated by dividing weight in kilograms by square of height in meters (kg/m^2). Body mass index is the overall estimate of body fat in a person.⁵ Body mass index is classified according to World Health Organization's classification. Obesity has often been suggested as a risk factor for UI. Each 5 kg/m^2 increase in BMI is associated with a 60 to 100% increased risk of daily incontinence.^{6,7} The strong association between increasing weight and stress UI may be related to the higher resting intra-abdominal and intravesical pressures in obese individuals.⁸ Increased intra-abdominal pressures adversely stress the pelvic floor and affect the neuromuscular function of the genitourinary tract.⁹ Obesity has wide-ranging effects on the whole body and can affect the pelvic floor in a different ways.

The continence of bladder and bowel becomes difficult due to obesity. Also, continual pressure of too much weight weakens the pelvic floor and causes the bladder,

bowel, and vagina to prolapse through the muscle. This is known as pelvic organ prolapse.¹⁰ A study done on obesity and pelvic floor disorder concluded that weight loss by both surgical and nonsurgical methods should be considered in the treatment of pelvic floor disorders in obese woman. There are limited studies conducted on Indian women to evaluate the direct correlation between BMI and UI, so the aim of the present study is to check the effect of BMI in females on UI.

MATERIALS AND METHODS

This was a cross-sectional study done at a tertiary care hospital in Belagavi.

Based on inclusion and exclusion criteria, data of 100 parous women were collected who visited the inpatient department and outpatient department of the hospital from November 2015 to January 2016. Institutional ethical committee approval was obtained prior to the commencement of the study.

Inclusion Criteria

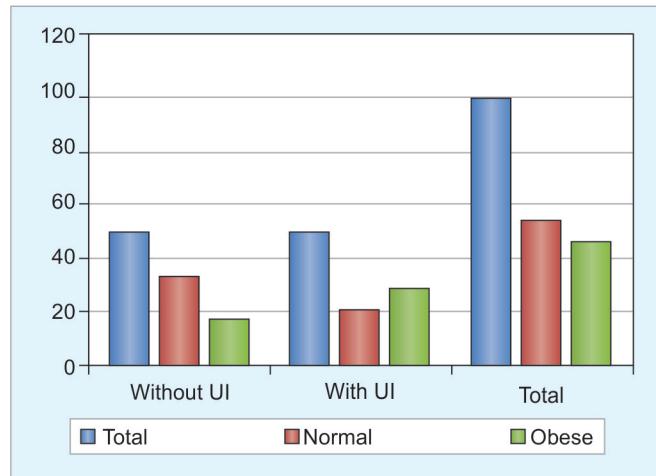
- Parous women after 1 year of delivery
- Women who had undergone either normal delivery or cesarean section
- Age between 25 and 40 years

Exclusion Criteria

- Subjects having a history of metabolic disorders

Table 1: Body mass index in parous women

	Without UI	With UI	Total
Total	50	50	100
Normal	33	21	54
Obese	17	29	46



Graph 1: Total number of participants and their BMI

- Urological condition (e.g., renal calculi)
- Neurological bladder
- Spinal cord injuries
- Organ prolapses and operated for hysterectomy

PROCEDURE

The objectives of the study were explained to the women, and a written informed consent was obtained from the study participants. Three questionnaires were administered to find the impact of UI, physical activity level, and health status of recruited subjects. Urinary incontinence was diagnosed using Incontinence Impact Questionnaire (IIQ). Physical activity was assessed by Physical Activity Questionnaire (PAQ), and general health was assessed by King's Health Questionnaire (KHQ).

RESULTS

Total 100 subjects were recruited for the study, among which 50 subjects had UI. The mean age of women with UI was 36.44 years. Among 100 parous women, 46 had high BMI in which 29 women had compliant of UI (Table 1 and Graph 1). Values of the questionnaires for UI are given in Table 2 and Graph 2.

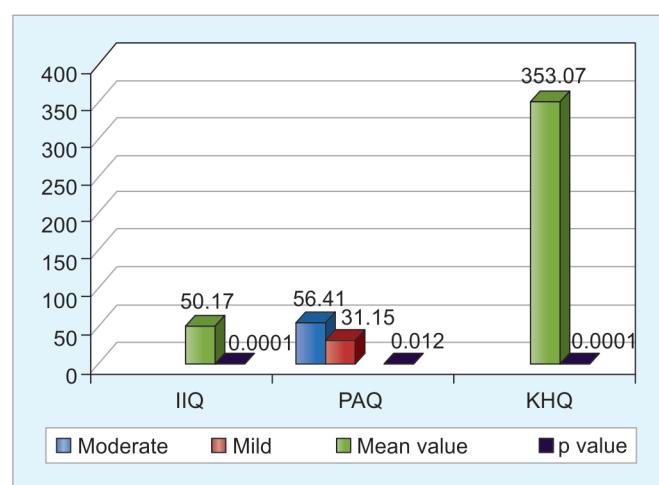
Incontinence Impact Questionnaire

The mean value of IIQ was 50.17 and p-value was 0.0001, which shows that parous women had highly significant UI.

Table 2: Mean values of the questionnaires for UI

Questionnaire	Mean value	p-value
Incontinence impact questionnaire	50.17	0.0001*
Physical activity questionnaire	Moderate: 56.41% Mild: 31.15%	0.012
King's health questionnaire	353.07	0.0001*

*Highly significant



Graph 2: Values of the questionnaires

Physical Activity Questionnaire

This questionnaire contains mild, moderate, and heavy physical activities. The mean value of mild activity was 31.15% and mean of moderate activity was 56.41%. The p-value of this questionnaire was 0.012, which indicates that the level of physical activity also affects women's health.

King's Health Questionnaire

In this questionnaire, there were various components. The mean value of this questionnaire was 353.07, and p-value was 0.0001, which indicates high level of significance.

DISCUSSION

The present study was aimed to check correlation of BMI in females with UI and females without UI.

In the present study, KHQ, IIQ, and PAQ were used as outcome measure. These questionnaires were used because they were easy to administer to patients, highly reliable, and valid. The KHQ has two single-item and six multiple-item domains. A study was done using KHQ in women with UI, which suggested that KHQ is a valid instrument for measuring the quality of life of the patients with UI.¹¹ A study done using IIQ was reported to be reliable for studying UI.¹² Another study showed that KHQ was used as a outcome measure and it concluded that UI affects quality of life.¹³

Obesity is associated with a high prevalence of pelvic floor disorders. Patients with obesity present with a range of urinary, bowel, and sexual dysfunction problems as well as uterovaginal prolapse. Urinary incontinence, fecal incontinence, and sexual dysfunction are more common in patients with obesity. Weight loss by surgical and nonsurgical methods plays a major role in the improvement in symptoms of UI and quality of life of the patients. One study concluded that weight reduction in obese patients leads to relief in the symptoms of UI and also improvement in quality of life.¹⁴

Urinary incontinence can be assessed by subjective and objective methods. In subjective methods, various questionnaires can be used, while in objective methods urodynamic tests are used. It includes cystometry, uroflowmetry, urethral pressure studies, pressure-flow micturition studies, video-urodynamic studies, electrophysiology studies. These tests provide accurate results. Main advantages of these tests are that they can be performed on men, women, and children as well; tests provide appropriate results, cause can be identified, and they do not require education of the patient. But, main disadvantages are that they are time consuming, costly, and require skilled person. Whereas in subjective methods, main advantages are they are time saving, affordable, easy to explain; and main disadvantages are person must be educated enough to understand, difficult to apply on

children, chances of bias are more, subjective variation can be seen, and does not give accurate results.

A systemic review was done to evaluate the methods of assessing UI. In this systemic review, UI was evaluated by cystometry, uroflowmetry, urethral pressure studies, pressure-flow micturition studies, video-urodynamic studies, and electrophysiology.¹⁵

A study was done on symptom assessment tool for overactive bladder syndrome—overactive bladder symptom score, in this study UI was evaluated by KHQ.¹⁶ So, both subjective and objective methods are reliable and valid, but in this study subjective method was used because of its advantages.

The limitations of this study are that the study was done in a single hospital setup, the duration of the study was less, and assessment was subjective, since no other objective tests were used for diagnosis. The strength of the study is that it shows that according to BMI, weight loss program can be planned.

CONCLUSION

The present study found that there is a correlation between BMI and UI in parous women.

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