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Correlation Of Bmi And Over Active Bladder Symptoms In Pre-Menopausal Women

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Abstract:

Background: Overactive Bladder (OAB) is defined by International Continence Society (ICS) as urinary urgency, with or without urgency incontinence and frequency associated with increase of frequency and nocturia.

Aim: To find correlation of Body Mass Index (BMI) and over active bladder symptoms in pre-menopausal women.

Incusion Criteria: (1) age 20 to 45 years female (2) regular menstrual cycle (3) without any complain that would suggest premature menopause.

Exclusion Criteria: (1) diabetes mellitus (2) chronic lung disease (3) history of recurrent UTI (4) neurological condition (5) surgery for urinary incontinence (6) major pelvic surgery.

Outcome Measures: (1) BMI (2) over active bladder (OAB) questionnaire.

Method: 46 pre-menopausal women between 20 to 45 years of age were included in study according to inclusion criteria. Verbally consent and demographic details were taken. Height and weight of all participants were measured for calculating the BMI. All participants completed over active bladder questionnaire and returned it at same time with no question left unanswered.

Result: Mean BMI of participants was 24.805±4.011. Mean score of OABS was 2.587±1.571.There was statistically significant weak positive co-relation between BMI and OABS in pre- menopausal women (p=0.01, r=0.378).

Conclusion: There was weak positive correlation between BMI of OAB symptoms in pre-menopausal women.

Keyword: BMI, over active bladder symptom, pre-menopausal women

I. INTRODUCTION

Overactive Bladder (OAB) is defined by the international continence society (ICS) as urinary urgency, with or without urgency incontinence and frequency associated with increases of frequency and nocturia. [1] Overactive bladder syndrome is a condition that causes great discomfort. It is more prevalent in post-menopausal women, in which its impact on quality of life is well known. [2] Body mass index (BMI) is a frequently used standard to estimate obesity. A person's BMI is estimated by dividing body weight in kilogram by the square of body height in meters. Generally, the BMI is related to body composition. It is highly correlated with relative body fat and probably provides a better estimate of obesity than does relative weight. In 1997, the world health organization who proposed a classification system for underweight, overweight and obesity based solely on BMI value. [3]

Premenopause is the first stage of the menopause process. Some experts define it as the time in a women's life in which she is fully fertile. It starts with a women's first period and finishes with the first symptoms of menopause, such as hot flashes and mood swing. [4]

Women also reported coping strategies to avoid the desire to void, such as reducing the amount of liquids ingested, urinating before leaving the house and sleeping, finding and staying close to public restrooms when away from home. [5]

It has been suggested that OAB incidence is not related to age [5,6] Many women who are young and active have their lives limited due to discomfort caused by OAB. Their complains included embarrassment, emotional distress,

chronic fatigue caused by nocturia, increase of risk of urinary tract infection due to chronic vaginal flora changes, decrease of both mobility and social interactions and depression.[2,5,7]. Prevalence of OAB in premenopausal women is not well established, since urinary stress incontinence appears to be more frequent in that subset of patients. [8]

Many studies have been reported association between OAB and BMI in post-menopausal women, so aim of the study is to find out the correlation of BMI and OAB symptoms in pre-menopausal women. But very little literature exists on pre- menopausal women. Hence, the need of study is to find out the correlation between the over active bladder symptoms and body mass index in pre-menopausal women.

II. MATERIAL AND METHOD

MATERIAL

- Pen
- Data sheet
- Weighing scale
- Height measurement
- Calculator

METHOD

This was a cross-sectional study done in SBB college of physiotherapy, VS hospital Ahmedabad. 46 pre-menopausal women between 20 to 45 years of the age was included in the study. Female willing to participate with Regular menstrual cycle without any complain that would suggest premature menopause were included in the study. Premenopausal women having diabetes mellitus, chronic lung disease, history of recurrent UTI, any neurological condition, surgery for urinary incontinence, major pelvic surgery were excluded for the study. OUTCOME MEASURE- (1)Body mass index (BMI), (2) International Classification of Incontinence Questionnaire-Over active bladder symptom (ICIQ-OAB).Subject were informed about nature of the study and were given information relevant to the intended purpose. Verbally consent and demographic details were taken at the time of the study. Demographic details about name, age, gender, height, weight, education, profession were taken. Height and weight of all the participant was measured for calculating the BMI.Printed version of questionnaire was used in the language they easily understood. All the participant completed the over active bladder questionnaire and return the questionnaire at same time with, no questions were left unanswered. It took approximately 10-15 min to complete the questionnaire.

STSTISTICAL ANALYSIS

Stastical analysis was done by using SPSS version 16 and Microsoft excel. Level of significance was kept at 5%. Data was non parametric so Spearmen's correlation was used to find correlation between BMI and OAB symptoms.

OUTCOME MEASURE

International Classification of Incontinence Questionnaire-Over active bladder symptom (ICIQ-OAB)The women who were included in the study completed the International Consultation on Incontinence Questionnaire-Overactive Bladder(ICIQ-OAB) standardized by the International Society for Incontinence (ICS) deigned to obtain data about overactive bladder. This questionnaire was considered highly responsive in the quantification of urgency, frequency, and incontinence in OAB patient. ICIQ-OAB consist of 6 questions, number 1 and 2 being date of birth and gender. Questions 3, 4, 5 and 6 are divided in A and B. question 3A determine frequency and 3B is a Visual Analogous Scale (VAS) about symptom bother (from 1 to 10).Question 4A determine nocturia and 4B the VAS quantification. Question 5A determine urgency and question 6A determine urgency incontinence all follow by the question B, symptom bother. All the B questions are not included in the score, but help us understand how much that specific symptom bothers the patient. Higher score of questionnaire was 16 and lowest score was 0, so lower score indicate better function of bladder and higher score indicate worsen the condition. [9, 10]

Body Mass Index (BMI)

Body mass index calculated by dividing body weight in kilogram by the square of body height in meters. WHO classification of overweight and obesity by BMI. [3]

III. RESULT

A total 46 women were with age between 20-45 year included in the study .The mean age was 32.36$\pm$5.535 years. The mean BMI of participants was 24.805$\pm$ 4.011 and the mean score of OABS was 2.587 $\pm$ 1.571.

	MEAN	SD	p-VALUE = 0.01
BMI(N=46)	24.805	4.011	
OAB(N=46)	2.587	1.571	r-VALUE =0.378

Table 1: Mean and SD of BMI and OABS and correlation between BMI and OAB in pre-menopausal women

Table no 1 indicates the mean and SD of BMI and OAB of pre-menopausal women and Spearmen correlation was used for the correlation of BMI and OABS in pre- menopausal women (p =0.01, r=0.378). There is weak positive co-relation between BMI and OAB was found in pre-menopausal women

BMI	FREQUENCY (3A)	NOCTURIA (4A)	UREGENCY (5A)	URENARY INCONTINENCE (6A)	SCORE
<18.5	0.33	2	0	0	2.33
18.5-24.9	0.5	1	0.33	0.35	2.15
25-29.9	0.47	1.47	0.3	0.52	2.81
>30	1	2.5	0	1.5	5

Table 2: Mean of Body Mass Index vs symptoms of OAB

Table no 2. Indicates the analysis done between body mass index and over active symptoms, regarding the urinary frequency (question no-3), nocturia (question no-4), urgency

(question no-5), urinary incontinence (question no-6) and mean of each symptoms according to each group of BMI was seen and total score of each symptoms for each group of BMI.

The mean score of the over active bladder symptom was 2.33 for women with BMI <18.5, score was 2.15 for women between 18.5 to 24.9 BMI, 2.81 for BMI 25-29.9 and for the obese group BMI >30 was 5.

Regarding frequency (question -3a), mean score was 0.3 for the women with BMI<18.5, 0.5for BMI between 18.5-24.5, 0.4 for the women with BMI 25-29.9 and 1 for BMI>30.

There was statically significant difference seen between the groups for frequency of urination. (p=0.044)

In analysis of nocturia (question 4a) mean score for BMI <18.5 was found to be 2.BMI 18.5-24.5 was 1, BMI 25-29.5 was 1.47 & BMI >30 was found to be 2.5 women with BMI >30 had comparatively more symptoms of nocturia than other BMI group. (P=0.294)

In analysis of urgency (question -5a), mean score was 0 for the women with BMI <18.5, 0.3 for BMI between 18.5-24.5, 0.33 for the women with 25-29.9. and 0 for BMI >30. uregency was not the complaint for most women.

Assessing the urinary incontinence (question -6a), mean score was 0 for BMI <18.5, 0.35 for BMI between 18.5-24.9, 0.52 for the women with the BMI 25-29.9 and for the obese group BMI >30 was 1.5.The score suggested that pre-menopause women with BMI >30 had more symptoms of urinary incontinence compared to other group of BMI.

BMI	OAB SYMPTOMS	P-VALUE	r-VALUE
BMI	FRQUENCY	0.044	0.298
BMI	NOCTURIA	0.294	0.158
BMI	URGENCY	0.286	0.161
BMI	URINARY INCONTINENCE	0.086	0.256
BMI	TOTAL SCORE OF OAB	0.01	0.378

Table 3: correlation of BMI and each symptoms of OAB & total score of OAB in pre-menopausal women

Table no- 3 show the correlation of each symptoms of OAB and BMI of pre-menopausal women so, frequency was found statistically significant in pre-menopausal women. And moderate positive correlation was seen between total score of OAB and BMI in pre-menopausal women. (p=0.01)

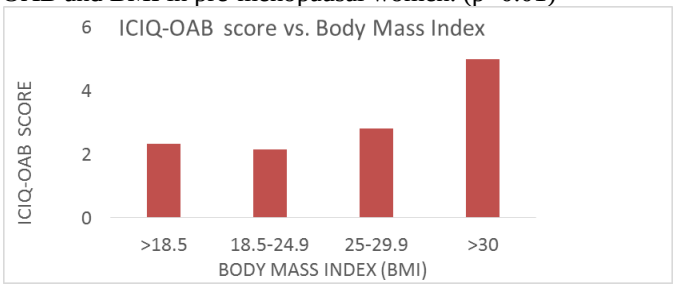

Figure 1: All the group of BMI and total score of OAB in pre-menopausal women

This figure no- 1 indicates that increased BMI the symptom of OAB was increased so, higher the score of OAB was 5 seen in pre-menopausal women with BMI >30.

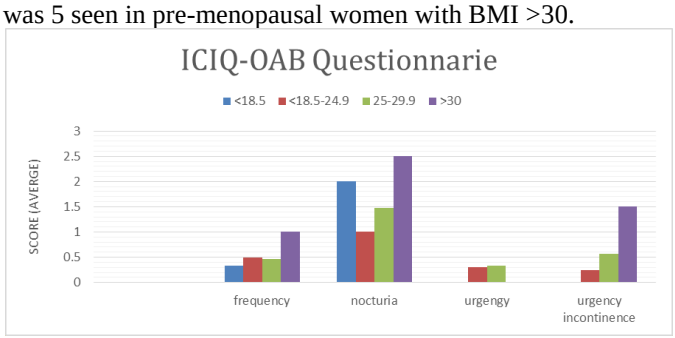

Figure 2: Score of each symptoms of OAB V/S each group of BMI in pre-menopausal women

Figure no 2 indicates the mean of the OABS score vs. mean of the OAB symptoms .OABS included frequency, urgency, nocturia, urinary incontinence.

IV. DISCUSSION

Overactive bladder is a condition that can be observed in women of all ages, although it is known to increase with age.[11] It is known to cause great discomfort, affecting the lives of many women.[1] Strong association between obesity and both urinary and fecal incontinence have been reported. [12, 13]

Mommsen. S.et al (1994) performed a study to find out the correlation between urinary incontinence and obesity. They concluded that urinary incontinence seems to be associated with increased BMI, which is similar to result of the present study. [14]

Noblelt KL. et al (1997) conducted a study with 136 patients presenting for urodynamic evaluation. The results demonstrate strong correlation between BMI and intra-abdominal pressure. The relationship between intra-abdominal pressure and BMI also demonstrated a high correlation suggesting that obesity might contribute to urinary incontinence due to increase of intra-abdominal pressure. [15]

In the present study, it was found that women with BMI > 30 presented a significantly higher OAB score than women with a lower BMI. Positive correlation was found between BMI and OABS, hence greater the BMI there was increased Over Active Bladder Symptoms with weak positive correlation seen between BMI and OABS.

The physiopathology mechanisms are probably multifactorial, and possibly related to mechanical or neuroendocrine factors.[16]The increase in intravesical pressure originated by obesity exerts increased force on the pelvic floor.[17]

Another study also supports the mechanical hypothesis, reinforcing the correlation between BMI and intra-abdominal pressure, suggesting that obesity may create an increased intra-abdominal pressure and thus expose the pelvic support structures and organs to a chronic state of stress and pelvic floor muscle fatigue secondary to that increased pressure. [15]

Homma.et al (2005) gave a self-administered questionnaire to men and women aged over 40 year, the questions were prepared by members of the Japan Neurogenic

Bladder Society Committee, and in both sexes the prevalence increased with age [18].

Lawrence JM et al (2007), conducted a study was conducted with 3,962 women in California, by a survey: the epidemiology of prolapse and Incontinences Questionnaire. It was concluded that the obese women were more likely to have pelvic floor dysfunctions compared to non-obese women as seen in the present study. [19]

Botelho et al (2010), they found the relationship between the symptom score and quality of life so they analyzed the symptoms of OAB during and after pregnancy in 60 women aged 14-40 years. They concluded that the score of the over active bladder questionnaire –short form was higher during pregnancy and decreased after delivery. [20]

Lee, (2011) conducted a study of prevalence of OAB in Korea, with a questionnaire with ICS setting, for men and women over 18 year in both gender. The study conducted that prevalence increased with age. [11]

Thais Palma et al (2013) conducted prospective study of prevalence of overactive bladder symptoms and child –bearing in women of reproductive age on 1050 women aged 20-45 year. Multiparous women also presented more frequency than nulliparous women ($p<0.0001$). [21]

Palma et al (2013) found the correlation between age and over active bladder symptoms in young women in Brazil. They interview 1050 women aged 20-45 in the area of Campinas, Brazil. Older women presented a significantly higher score than younger women. ($P <0.0001$).They concluded that the older women present more OAB symptoms and therefore a higher score than younger women. [8].

V. CONCLUSION

The study concludes that there is positive correlation between BMI and OAB score in premenopausal women. As the BMI increasing symptoms of OAB increases. Nocturia and frequency were common symptoms in all group of BMI.Frequency of urination was statistically significant in all group of BMI.

VI. LIMITATION

The study had small sample size. Detailed evaluation about parity of women would has been done. It did not mention about multigravida or primigravida. The intra-abdominal pressure, abdominal muscle strength and pelvic floor muscle strength would have added to results of the study.

VII. FUTURE STUDY

Age, QOL and pelvic floor strength, abdominal muscles strength along with OAB in premenopausal women can be correlated.

VIII. CLINICAL IMPLICATION

All pre-menopausal women can undergo a programmed physical fitness awareness and exercise plan to avoid associated problems of overweight and obesity. They can also undergo strengthening of abdominals and pelvic floor muscles in order to reduce overactive bladder symptoms or any other urinary problems which may affect their QOL. Premenopausal women can live a healthier life by getting awareness about BMI, overactive bladder symptoms and hence prevent these type of symptoms in their premenopausal phase.

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ABBREVIATIONS

OAB: Overactive Bladder
BMI : Body Mass Index
UTI : Urinary Tract Infection
ICS : International Continence Society

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IJIRAS

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