



## Research Article

# Role of Obesity in Menopause

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### Abstract

**Background:** Women during mid-life experience physical and psychological symptoms influenced by aging, endocrine changes, demographics characteristics, psychosocial factors, environmental conditions, ethnic differences, family history, nutritional, and differences by countries. The objective of this study was to assess the effect of obesity on the menopausal symptoms and the menopausal symptom among obese and non obese postmenopausal women in India.

**Methodology:** 11 item questionnaire including sociodemographic characteristics, endocrinal disorders, menopausal history assessment, personal health information, antropometry and clinical assessment was used to assess the menopausal symptom among obese and non obese postmenopausal women of Gwalior visiting Gajra Raja Medical College, Gwalior India. This retrospective observational study was conducted in month of December 2017.

**Results:** The results have shown that obese women (52 participants) suffer from more menopausal symptoms (psychological, somatic symptoms, urogenital symptom) than among non obese women. The proportion of overweight/obese participants was higher in married (62%) than widow (35%).

**Conclusion:** There is a need of developing interactive, user friendly, technology based education module for addressing the chronic ailments of postmenopausal women.

### Introduction

Women during mid-life experience physical and psychological symptoms influenced by aging, endocrine changes, demographics characteristics, psychosocial factors, environmental conditions, ethnic differences, family history, nutritional, and differences by countries.<sup>1,2</sup>

The symptoms of menopause have a negative impact on quality of life, especially in women transitioning to menopause and earlier transitions.<sup>3,4</sup> A recent study found that menopausal symptoms that most significantly

affect the quality of life are sleep disturbances, fatigue, and anxiety.<sup>3</sup>

This evidence supports that appropriate management of sleep disorders, and anxiety may be beneficial to women undergoing the transition to postmenopause.<sup>3</sup>

The results on background factors have been inconsistent, and not clear on the effects of body weight on severity of symptoms.<sup>1,5,6,7,8</sup>

Menopausal symptoms may begin earlier and for a longer duration in obese women than non obese

women. However, it is likely to be explained by a multifactorial process.

Obese women have an increased concentration of follicle-stimulating hormones 4 years earlier that are associated with decreased estrogen levels as compared to women with normal weight,<sup>9</sup> but it is important to look at other factors effect on menopausal symptoms including race.<sup>1,5,7</sup>

The objective of this study was to assess the effect of obesity on the menopausal symptoms and the menopausal symptom among obese and non obese postmenopausal women in India.

## Methods

Retrospective observational study was conducted in month of December 2017. Sample of 100 participants were enrolled.

Females who have achieved menopause and agreeing to give informed consent were eligible to participate in this study. Females having mental and physical challenges limiting them to participate were excluded from the study.

## Data collection

Eligible females were enrolled from the outpatient department of Gajra Raja Medical College, Gwalior (M.P.) of previously validated questionnaires were used to gather information.

(a) Sociodemographic characteristics (age, educational status, marital status, type of family, the number of family members, and occupation status).

(b) A 11 item questionnaire (hot flushes, heart discomfort, sleep problems, depressive mood, irritability, anxiety, physical and mental exhaustion, sexual problems, bladder problems, dryness of vagina, joint, and muscular discomfort) consists of three dimensions: Psychological symptoms, somato-vegetative symptoms, and urogenital symptoms taken.

(c) Endocrinal disorder: Information was gathered on the presence of endocrine disorders and their treatment, further information was sought about the use of contraceptives in past and intake of steroid hormones.

(d) Menopausal history assessment: Information about the age of commencement of menopausal symptoms was gathered.

(e) Personal health information: Information about personal ailments and measures applied for their management was collected.

(f) Anthropometry and clinical assessment: Height, weight, hip, and waist circumference were measured in a standardized manner. Body mass index (BMI) was calculated by dividing the weight in kilogram by height in meter square. Two readings of blood pressure were taken in the left arm of the participants, and the average of the both the reading was considered for analysis.

## Results

A total of 100 participants have complete the study. The average age of the participants was 59 years. The proportion of rural population (n=62) was higher than urban settings. The majority of them were living in joint family (n=80) with the average family size of 4.

35% of women were widow and 60% participants never attended schools and 18% of women were working.

**Table 1:** Sociodemographic characteristics

	No. of participants
Age (years)	
40-44	5
45-49	15
50-54	15
55-59	14
60-64	20
65-69	11
70-74	11
≥ 75	9
Location	
Urban	38
Rural	62
Type of family	
Joint	80
Nuclear	20
Marital status	
Married	62
Widow	35
Single	2
Education	
No Schooling	60
≤ Middle school	25
≥ High school	15
Occupation	
Working	18
Home maker	82
Occupation partner	
Skilled worker	37
Unskilled worker	60
Unemployed/retired	3

Thirty one participants had diabetes, 5 participants had hypothyroidism and total 4 had both diabetes and hypothyroidism.

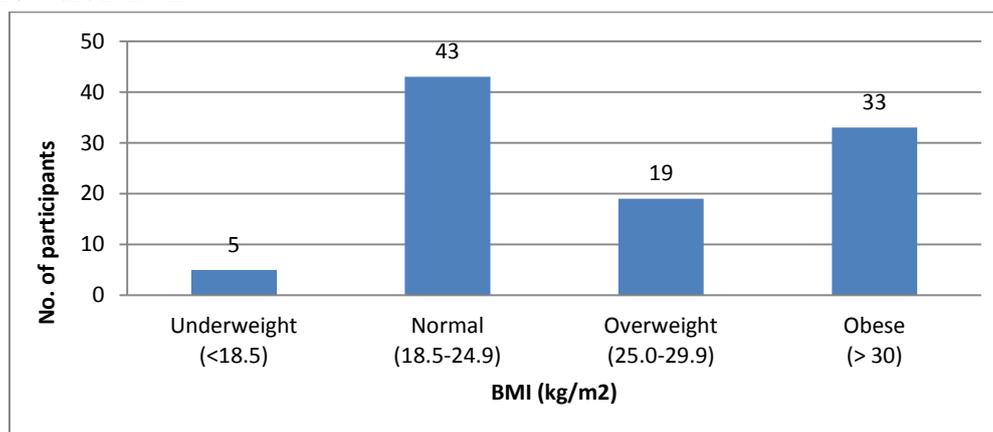
Among participants reporting 1 or more endocrinal disorder, 100% of them reported receiving of treatment. Twenty nine participants reporting consumption of Metformin alone or in combination with other drugs, 2 participants have reported the use of OCP in the past, 3 participants reported hormonal disorder in past and 2 of them visited for the same.

One participant had received steroidal therapy. Diagnosis of premature menopause reported by 2 participants. Average age reported for beginning of postmenopausal age was 46 years.

**Table 2:** Reported endocrinal disorders treatment

		No. of participants
Suffering from endocrinal disorder	Diabetes	31
	Hypothyroidism	5
	Diabetes + Hypothyroidism	4
	Total	40
Receiving treatment		40
Medicine	Metformin	22
	Insulin	05
	Eltroxin	05
	Insulin + Metformin	02
	Insulin + Thyroxin	01
	Metformin + Eltroxin	03
	Metformin + Glibenclamide	02
Total		
Used OCP in past		02
Steroid therapy		01
Hormonal disorder		03
Clinician visit		02
Diagnosed with premature menopause		02
No HRT		100
Age group at time of diagnosis – 36-40 years		
Average age of participants when they considered themselves postmenopausal – 46 years.		

Ninety two participants did not know their weight, 96 participants did not know height and 100% of them did not know their BMI.



**Figure 1:** Body mass index of the postmenopausal women visiting in outpatient department

Forty seven participants reported that they were diagnosed with hypertension and 5 of them reporting measurement of BP at their home. Among 47 participants diagnosed for hypertension, 23 participants were on Tab. Amlodipine. The most common reported ailment was dizziness<sup>(17)</sup> followed by blurring vision

Seventyseven participants were not having any special diet, 16 of them have reported intake of low salt diet and 4 of them eating diabetic diet.

High blood cholesterol level was reported in 7 of participants. 15 of participants reported daily walk as mean of exercise.

**Table 3:** Study participants’ knowledge of their BMI, hypertension, treatment, diet and physical activity

		No. of participants
Do you know your weight (Yes)		08
Do you know your height (Yes)		04
Do you know your BMI (No)		100
Did your doctor told you about your BP level	Yes	47
	No	47
	Don't know	6
Diagnosed with hypertension		47
Treatment	Tab. Amlodipine	23
	Tab. Atenolol	2
	Tab. Enalapril	11
	Tab. Losartan	2
	Tab. Nifedipine	2
	More than one	5
	Don't know	3
	Presence of common ailment	
Dizziness		17
Blurring vision		12
Shortness of breath		10
Chest pain		8
Headache		6
Seizure		1
Special type of diet	Diabetic diet	4
	Low carbohydrate diet	2
	Low salt diet	16
	Low cholesterol diet	1
	No special diet	79
High cholesterol level		07
Physical activity (walking)		15

Total 52 participants were obese and overweight.

**Psychological symptoms:** Depressive symptoms are present in 15 participants out of which 9 were obese and 6 were non-obese women. Irritability present in total 6 participants out of which 5 were obese and 1 was non-obese. Anxiety symptoms were present in 10 participants out of which 6 were obese and 4 were non-obese. Physical and mental exhaustion present in 40 participants out of which 24 were obese and 16 were non-obese.

**Somatic symptoms:** Hot flashes present in total 25 participants out of which 15 were obese and 10 were non obese. Women suffered from cardiac

complaints were half of total participants (49) out of which 31 were obese. Women suffered from disturbed sleep were also half of total participants (48) out of which 31 were obese and 17 were non obese. Total 77 women had joint and muscular discomfort out of which 46 were obese and 31 were non obese.

**Urogenital symptoms:** Two participants had sexual problem and both of them obese. Thirty eight participants had bladder symptoms out of which 24 were obese and 14 were non obese. Dryness of vagina was present among 3 participants out of which 2 were obese.

**Table 4: Menopause symptoms**

**(a) Psychological symptoms**

		None	Mild	Moderate	Severe	Very severe
Depressive	Obese	35	7	1	1	
	Non obese	54	5	1	0	
	Total	89	12	2	1	
Irritability	Obese	37	2	1	1	
	Non obese	57	2	0	0	
	Total	94	4	1	1	
Anxiety	Obese	40	3	1	2	
	Non obese	50	3	1	0	
	Total	90	6	2	2	
Physical and mental exhaustion	Obese	25	9	12	3	
	Non obese	35	7	8	1	
	Total	60	16	20	4	

**(b) Somatic symptoms**

		None	Mild	Moderate	Severe	Very severe
Hot flashes	Obese	33	8	5	2	
	Non obese	42	5	5	0	
	Total	75	13	10	2	
Cardiac complaints	Obese	21	18	9	3	1
	Non obese	30	10	7	1	0
	Total	51	28	16	4	1
Disturb sleep	Obese	21	11	15	5	
	Non obese	31	6	8	3	
	Total	52	17	23	8	
Joint and muscular discomfort	Obese	7	12	22	10	2
	Non obese	16	9	14	6	2
	Total	23	21	36	16	4

**(c) Urogenital symptoms**

		None	Mild	Moderate	Severe	Very severe
Sexual problem	Obese	40	1	1		
	Non obese	58	0	0		
	Total	98	1	1		
Bladder problem	Obese	21	12	8	3	1
	Non obese	41	8	5	1	0
	Total	62	20	13	4	1
Dryness of vagina	Obese	40	1		1	
	Non obese	57	1		0	
	Total	97	2		1	

Analysis was performed to see the difference among obese and non obese participants results

show that overweight or obese category was higher in urban settings in comparison to rural

settings (32 vs 20). The proportion of overweight and obese participants were higher in married (38) than widow (13).

Average 2.5 obese/overweight participants suffer from somatic symptoms in comparison to 1.5 underweight/normal participants.

Average 2.6 obese/overweight participants suffer from psychological symptoms in comparison to 1.4 underweight/normal participants.

Average 1.6 obese/overweight participants suffer from urogenital symptoms in comparison to 0.7 underweight/normal participants.

**Table 5 :** Association of variables with category of BMI among postmenopausal women

		Under/normal weight (BMI < 25 kg/m <sup>2</sup> )	Overweight/obese (BMI ≥ 25 kg/m <sup>2</sup> )
Age (Mean)		60	58
Household	Urban	6	32
	Rural	42	20
Marital status	Married	24	38
	Widow	22	13
	Single	2	1
Type of family	Joint	50	30
	Nuclear	8	12
Education	No school	32	28
	≤ Middle class	12	13
	≥ High class	4	11
Perimenopausal age		45	45
Average somatic symptoms		1.5	2.5
Average psychological symptoms		1.4	2.6
Average urogenital symptoms		0.7	1.6
Blood pressure (Mean)	Systolic	128	131
	Diastolic	83	82

## Discussion

Postmenopausal period and advancing life exposes women to multiple chronic conditions including cardiovascular diseases, hypertension, type 2 diabetes, osteoporosis, autoimmune diseases, psychological symptoms, and cancer.<sup>13</sup>

The severity of symptoms depends upon multiple factors including social, cultural, and biological factors, which may vary in the individual to individual, cultural, time, and place.<sup>14-20</sup> In old age life, support of life partner is very crucial. Results of the present study have shown that half of the participants have either lost their life partners or living single.

The previous study had shown that 49.4% of the postmenopausal women had BMI more than 24.9 kg/m<sup>2</sup>.<sup>21</sup> Findings of the present study have shown that none of the participants know their BMI and 52% of them had BMI more than 24.9 kg/m<sup>2</sup>.

We have administered MRS to assess the menopausal symptoms experienced by the participants. Of the total participants near about half of them had heart ailments and disturbed sleep. The majority of the participants have reported joint pain and muscular disturbances.

Diagnosis of premenopause was reported in 2% of the participants and none of the participants has reported treatment with hormonal replacement therapy.

More than one-third of the study participants had reported distress with chronic endocrinal disorders (diabetes, hypothyroidism) and near to half of them have reported diagnosed with hypertension. The majority of the participants were not having any special diet but 16% of them have reported consumption of low salt diet. Frequency of clinic visit for measuring of blood pressure was very low in most of the participants. The previous study has reported that physical activity helps in stabilizing blood circulation in postmenopausal women.<sup>22</sup> However, in the present study, only 15% of the participants were involved in the daily physical activity.

This study had some limitations. First it's cross-sectional design; second postmenopausal women visiting a medical college for were enrolled limiting its generalization with non visiting women and postmenopausal women of other geographical location. Further, it had very small sample size selected on a convenient basis. Laboratory examination of blood sugar level and cholesterol level was not conducted.

Urban postmenopausal women had significantly higher BMI than their rural counterparts. Of the total married participants proportion of overweight and obese participants was higher than widow participants. This could be attributable to low calorie diet among widow women.

## Conclusion

There is a need of developing interactive, user friendly, technology based education module for addressing the chronic ailments of postmenopausal women.

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