



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.^{1,2}

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

affect the quality of life are sleep disturbances, fatigue, and anxiety.³

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

The results on background factors have been inconsistent, and not clear on the effects of body weight on severity of symptoms.^{1,5,6,7,8}

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,⁹ but it is important to look at other factors effect on menopausal symptoms including race.^{1,5,7}

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.

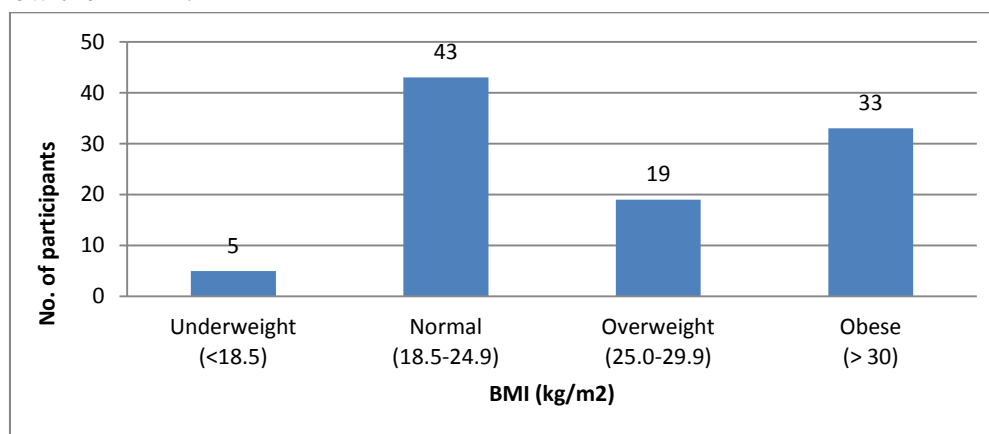


Figure 1: Body mass index of the postmenopausal women visiting in outpatient department

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⁽¹⁷⁾ 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 ²) | Overweight/obese (BMI ≥ 25 kg/m ²) |
|--------------------------------|----------------|--|---|
| 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.¹³

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.¹⁴⁻²⁰ 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/m².²¹ 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/m².

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.²² 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.

References

1. Li C, Samsioe G, Borgfeldt C, Lidfeldt J, Agardh CD, Nerbrand C. Menopause-related symptoms: What are the background factors? A prospective population-based cohort study of Swedish women (The Women's Health in Lund Area study) *Am J Obstet Gynecol.* 2003;189:1646–53.
2. Fernández-Alonso AM, Cuadros JL, Chedraui P, Mendoza M, Cuadros AM, Pérez-López FR. Obesity is related to increased menopausal symptoms among Spanish women. *Menopause Int.* 2010;16:105–10.
3. Greenblum CA, Rowe MA, Neff DF, Greenblum JS. Midlife women: Symptoms associated with menopausal transition and early postmenopause and quality of life. *Menopause.* 2013;20:22–7.
4. Hess R, Thurston RC, Hays RD, Chang CC, Dillon SN, Ness RB, et al. The impact of menopause on health-related quality of life: Results from the STRIDE longitudinal study. *Qual Life Res.* 2012;21:535–44.
5. Avis NE, Stellato R, Crawford S, Bromberger J, Ganz P, Cain V, et al. Is there a menopausal syndrome? Menopausal status and symptoms across racial/ethnic groups. *SocSci Med.* 2001;52:345–56.
6. Kuh DL, Wadsworth M, Hardy R. Women's health in midlife: The influence of the menopause, social factors and health in earlier life. *Br J Obstet Gynaecol.* 1997;104:923–33.
7. Gold EB, Sternfeld B, Kelsey JL, Brown C, Mouton C, Reame N, et al. Relation of demographic and lifestyle factors to symptoms in a multi-racial/ethnic population of women 40-55 years of age. *Am J Epidemiol.* 2000;152:463–73.
8. Guthrie JR, Smith AM, Dennerstein L, Morse C. Physical activity and the menopause experience: A cross-sectional study. *Maturitas.* 1994;20:71–80.
9. Klinga K, von Holst T, Runnebaum B. Influence of severe obesity on peripheral hormone concentrations in pre- and postmenopausal women. *Eur J Obstet Gynecol Reprod Biol.* 1983;15:103–12.
10. Singh M. Early age of natural menopause in India, a biological marker for early preventive health programs. *Climacteric.* 2012;15:581–6.
11. Kumar N, Gupta N, Kishore J. Kuppuswamy's socioeconomic scale: Updating income ranges for the year 2012. *Indian J Public Health.* 2012; 56:103–4.
12. Berlin Centre of Epidemiology and Health Research. MRS-the Menopausal Rating Scale. [Last retrieved on 2015 Apr 26].
13. Stojanovska L, Apostolopoulos V, Polman R, Borkoles E. To exercise, or, not to exercise, during menopause and beyond. *Maturitas.* 2014;77:318–23.
14. Hoëbes KH, Matengu K. Knowledge and understanding of menopause and menopausal symptoms: A Namibian perspective. *Int J Health Sci.* 2014;2:163–83.
15. Nappi RE, Nijland EA. Women's perception of sexuality around the menopause: Outcomes of a European telephone survey. *Eur J Obstet Gynecol Reprod Biol.* 2008;137:10–6.
16. Adewuyi TD, Akinade FE. Perception and attitudes of Nigerian women towards menopause. *Procedia Soc Behav Sci.* 2010;5:1777–82.
17. Jahanfar SH, Abdul Rahim A, Reza KS, Azura IN, Nora SA, SitiAsma AR. Age of menopause and menopausal symptoms

- among Malaysian women who referred to health clinic in Malaysia. Shiraz E-Med J. 2006;7:1–14.
18. Women's Health Queensland Wide. About Menopause. 2011. [Last retrieved on 2015 Apr 26]. Available from: http://www.womhealth.org.au/documents/About_menopause.pdf.
 19. Thomas SE. Menopause knowledge and attitudes of English-speaking Caribbean women: Implications for health education. Calif J Health Promot. 2005;3:167–76.
 20. Dillaway HE. Vol. 19. Wayne State University: Sage Publications, Inc; 2005. Menopause is the “Good Old”: Women's thoughts about reproductive aging. Gender and society; pp. 398–417.
 21. Pimenta F, Leal I, Maroco J, Ramos C. Menopause Symptoms' Severity Inventory (MSSI-38): Assessing the frequency and intensity of symptoms. Climacteric 2012;15:143–52.
 22. Jalili L, Zadeh HY, Sharifi N, Abedi P, Najari S, Mobini EA. The relationship between physical activity and the severity of menopause symptoms in menopausal women in Ahvaz, Iran. Iran J Obstet Gynecol Infertil. 2014;17:Pe15–23.