

Original Research Article

<https://doi.org/10.20546/ijcmas.2021.1003.263>

Correlation between Body Mass Index and Signs and Symptoms of Menopause in Women

Singh Jyoti*, Verma Anisha and Neeru Bala

Department of Food Nutrition and Public Health, Ethelind College of Home Sciences, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, U.P- 211007, India

**Corresponding author*

ABSTRACT

This study was aimed to find out the relationship between Body Mass Index (BMI) and sign and symptoms of the menopausal women. The different rural areas Mahewa, Dandi and Indalpur of Prayagraj, U.P. India were purposively selected for the study. 155 women subjects of age group 40- 55 years were randomly selected and personally interviewed with the help of pre-set schedule. The interview schedule consisted of General profile, Anthropometric measurement (height, weight and BMI) and signs and symptoms of menopause. On basis of findings it is concluded that out of 155 respondents, 45.16 percent women were belonging to perimenopausal stage, 35.48 percent were belonging to postmenopausal stage and 19.35 percent women were belong to premenopausal stage. Among all selected respondents, 5.16 percent women were found to be under weight, 20.64 percent were found to be normal weight, 38.70 percent women were found to be pre-obesity and 21.93 percent women were found to be class I obesity, 13.54 percent women were found to be class II obesity. Out of 155 respondents, 23.9 percent respondents having mild symptoms, 8.38 percent having moderate, 2.2 percent having severe and 0.1 percent having very severe symptoms and 65.2 percent respondents having no symptoms. A negative correlation found between the underweight, normal weight and symptoms like heart discomfort, sexual behaviour, bladder problem, dryness of vagina and joint pain. While positive correlation was observed between pre- obesity, class I obesity, class II obesity and symptoms hot flushes, anxiety, irritability, depression, sleep problems and physical and mental problem. Result shows that as well as BMI of the women decreases, they have less chance to face symptoms like heart discomfort, sexual problem, bladder problem, dryness of vagina and joint pain while increasing BMI they have more chance to face symptoms.

Keywords

BMI, Menopause,
MRS Scale,
Symptoms

Article Info

Accepted:

18 January 2021

Available Online:

10 February 2021

Introduction

A woman goes to under several changes in their body with their growing age one of which is menopause. Menopause is the permanent cessation of the primary functions of human ovaries; the ripening and release of ova and hormones that cause both the creation and subsequent shredding of the uterine lining.

It is generally diagnosed when a woman has gone without a period for 12 consecutive months. Mostly it occurs in midlife, loss of estrogen can also occur if the, ovaries are during the late 40s or early 50s and indicates the end of the fertile phase of a woman [1].The process is gradual and is divided into three stages; Pre menopause, Peri menopause and Post menopause.

Excessive accumulation of fat in body is defined as obesity, which may adversely affect the health outcomes of an individual [2]. Obesity is serious health problem in both developed as well as developing countries [3]. Indian's are more susceptible to diabetes and cardio-vascular diseases with modest overweight, obesity and decreased physical activity has led to rapid increase in prevalence of diabetes mellitus and cardiac problems in India with major changes in diet and lifestyle [4].Many other diseases conditions including certain types of cancer, hypertension, dyslipidemia, osteoarthritis, musculoskeletal problem, gall bladder stone formation are risk factors having association with obesity[5], [6].Strong linkage of obesity and medical risks is attributed to abdominal distribution of fat, often measured by Waist Hip Ratio (WHR) or Waist Circumference (WC) and Body Mass Index (BMI). Both can be easily calculated and have emerged as high-risk indicators and predictors of obesity induced complications, independent of height and muscle mass [7]. Menopause symptoms vary from woman to woman in India as is the case for women

elsewhere. The Indian Menopause Society's (IMS) 2008, Consensus Statement contains important statistics about menopausal symptoms and recommendations to improve healthcare for Indian women. The Menopause Rating Scale (MRS) is a health-related quality of life scale (HRQoL) and was developed in response to the lack of standardized scales to measure the severity of aging-symptoms and their impact on the HRQoL in the early 1990s. An estimated 80 percent of females experience physical or psychosocial symptoms while approaching menopause, leading to change in their quality of life (QOL). These physiological and psychological changes are due to estrogen deficiency.

Symptoms experienced may include are somatic: hot flushes, heart discomfort, sleeping problems, muscles and joint problems. Psychological: depressive mood, Irritability, anxiety, physical and mental exhaustion. Urogenital: sexual issues, bladder problems and dryness of the vagina. Therefore, this study was undertaken with the following objectives: to find out the relationship between Body Mass Index (BMI) and sign and symptoms of the menopausal women.

Materials and Methods

The different rural areas Mahewa, Dandi and Indalpur of Prayagraj, U.P. India were purposively selected for the study. 155 women subjects of age group 40- 55 years were randomly selected and personally interviewed with the help of pre-set schedule.

The data pertaining to the study according to the research problem, Pre-structured questionnaire was used for the collection of data from the respondents. The schedule was included the aspects which lead to the fulfilment of the objectives of the study. The interview schedule consisted of General

profile, Anthropometric measurement (height, weight and BMI) and signs and symptoms of menopause. The selected women were further classified into three groups, i.e.; premenopausal (having regular menstrual bleeding) group (n=30), peri-menopausal (irregular menstrual bleeding) group (n= 70) and post-menopausal (had last menstrual bleeding at least 1 year before) group (n=55).

After obtaining the informed consent, person's age, sex, height, weight and symptoms were recorded using a pre-structured questionnaire. BMI of the respondents were categorised according to cut-off values of [8].

The Menopause Rating Scale (MRS) is a health – related quality of life scale (HRQoL) and was developed in response to the lack of standardization scales to measure the severity of aging associated symptoms was used to collect the information from respondents. Symptoms was sub divided into psychological, somatic and urogenital [8]. The data was obtained, statistically analysed by using correlation coefficients [9].

Results and Discussion

The data collected and tabulated under the study are presented with appropriate illustration and discussed in this chapter.

Age of respondents

The sample for the study was divided into two categories according to their age. 70.96 percent respondents belonged to age group 40-45 years whereas 29.03 percent respondents were belonging to 50-55 years. Menopause marks the beginning of ageing for women. It generally takes place during 45 and 55 years of age, bringing a variety of physiological changes, some of which are the result of cessation of ovarian functions and others are an effect of the ageing process [10].

Family type of respondents

Out of 155 respondents 72.90 percent respondents were belonging to nuclear type family and 27.09 percent respondents were belonging to joint type family.

Education of respondents

Out of 155 respondent's 53.54 percent were Illiterate, 30.32 percent women were educated at less than high school level, 11.61 percent women were educated at high school level, 4.51 percent women were educated at intermediate level. Illiteracy is the greatest barrier in improving the health and nutritional status of women [11].

Occupation of respondents

Out of 155 respondents, 74.19 percent female were housewife, 12.90 percent women were skilled worker, 10.96 percent women were unskilled worker. [12], which states that "working women have a better menopause-specific quality of life than their non-working counterparts".

Income of family

Out of 155 respondents, 52.90 percent of the respondents had family income between 10000- 20000 Rs, 25.81 percent respondents had family income between 20000- 30000 Rs, 11.61 percent respondents had family income between 30000- 40000 Rs and 9.67 percent had family income above 40000 Rs. In a study conducted by [13] it revealed that rise in household economic condition results in to the betterment of menopause-specific quality of life of postmenopausal women.

The above table 1 shows the Body Mass Index of respondents, it categorized under three categories premenopausal women, perimenopausal women and postmenopausal women.

Table.1 Distribution of respondents according to their Body Mass Index (BMI)

BMI	Indicator	TOTAL (n = 155)	
		N	(%)
< 18.5	Under weight	8	5.16
18.5-24.9	Normal weight	32	20.64
25- 29.9	Pre- obesity	60	38.70
30- 34.9	Class I obesity	34	21.93
35- 39.9	Class II obesity	21	13.54
>40	Class III obesity	–	–

Table.2 Distribution of respondents according to having symptoms

S. NO	Scale	Respondents having no symptoms		Respondents having the symptoms									
		No Symptoms		Mild		Moderate		Severe		V.severe		Total	
		N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
1	Hot flushes	65	41.9	31	20	30	19.3	27		2	1.2	90	58.6
2	Heart discomfort	138	89.3	14	9.03	3	1.93					17	10.9
3	Sleep problems	117	75.4	28	18.06	10	6.45					38	24.5
4	Depressive mood	89	57.4	58	37.41	7	4.5	1	0.6			66	42.5
5	Irritability	102	65.8	38	24.51	15	9.67					53	34.1
6	Anxiety	104	67.9	44	28.38	7	4.5					51	32.9
7	Physical problem	110	70.9	32	20.64	13	8.38					45	29.3
8	Sexual problem	128	82.5	16	10.32	11	7.09					27	17.4
9	Bladder problem	112	72.2	33	21.29	10	6.45					43	27.7
10	Dryness of vagina	91	58.7	50	32.25	14	9.03					64	41.2
11	Joint pain	57	36.7	65	41.93	23	14.3	10	6.4			98	63.2

Table.3 Correlation coefficients of Body Mass Index (BMI) with symptoms of menopause

Symptoms	N	(%)	Underweight (n= 8)	Normal weight (n= 32)	Pre- obesity (n= 60)	Class I obesity (n= 34)	Class II obesity (n= 21)
			(r- value)	(r- value)	(r- value)	(r- value)	(r- value)
Hot flushes	90	58.6	+2.41	+0.71	+0.72	+0.47	+0.74
Heart discomforts	17	10.9	-2.67	-0.73	+0.6	+0.79	+0.59
Sleep problems	38	24.5	+1.71	+0.51	+0.87	+0.67	+0.67
Depressive mood	66	42.5	+1.59	+0.49	+0.88	+0.69	+0.89
Irritability	53	34.1	+1.05	+0.34	+0.94	+0.80	+0.95
Anxiety	51	32.9	+2.54	+0.99	+0.9	-0.21	+0.11
Physical problem	45	29.3	+1.41	+0.44	+0.91	+0.73	+0.92
Sexual problems	27	17.4	-1.37	-0.37	+0.93	+0.99	+0.92
Bladder problems	43	27.7	-0.93	-0.2	+0.81	+0.96	+0.91
Dryness of vagina	64	41.2	-1.37	-0.37	+0.91	+0.91	+0.96
Joint pain	98	63.2	-1.37	-0.34	+0.92	+0.99	+0.92

Out of total 155 respondent’s 5.16 percent respondents were found to be underweight; 20.64 percent respondents were found to be normal weight; 38.70 percent were found to be pre- obesity; 21.93 percent respondents were found to be class I obesity and 13.54 percent respondents were found to be class II obesity. Study by [14] revealed that women who are underweight in early or mid-adulthood might be at increased risk for early menopause. Obesity is a risk of systematic illness in the post- menopausal women.

Table 2 shows that respondents having symptoms out of 155 respondents, 65.2 percent respondents having no symptoms, 23.9 percent respondents having mild symptoms, 8.38 percent respondents having moderate symptoms, 2.2 percent respondents having severe symptoms and 0.1 percent

respondents having very severe symptoms [15]. In Pakistan, the mean age at Menopause was 49.38 ± 14.29 years; the mean scores of menopause rating Scale were high in all domains, the significant difference was found in the mean somatic scores of women in Premenopause, perimenopause and postmenopause status ($P < 0.001$). The psychological symptoms were more severe for women in perimenopause and post menopause status while the scores for urogenital symptoms were found to be higher in perimenopause women ($P < 0.001$). The mean scores for the physical, psychological, social and environmental domains of WHO QOL questionnaire were found significantly impaired for all women at different status of menopause. The table 3 shows that a negative correlation found between the underweight, normal weight and symptoms like heart

discomfort, sexual behaviour, bladder problem, dryness of vagina and joint pain.

While positive correlation was observed between pre- obesity, class I obesity, class II obesity and symptoms hot flushes, anxiety, irritability, depression, sleep problems and physical and mental problem.

Result shows that as well as BMI of the women decreases, they have less chance to face symptoms like heart discomfort, sexual problem, bladder problem, dryness of vagina and joint pain while increasing BMI they have more chance to face symptoms.

On basis of findings it is concluded that out of 155 respondents, 45.16 percent women were belonging to perimenopausal stage, 35.48 percent were belonging to postmenopausal stage and 19.35 percent women were belong to premenopausal stage.

Among all selected respondents, 5.16 percent women were found to be under weight, 20.64 percent were found to be normal weight, 38.70 percent women were found to be pre-obesity and 21.93 percent women were found to be class I obesity, 13.54 percent women were found to be class II obesity.

A negative correlation found between the underweight, normal weight and symptoms like heart discomfort, sexual behaviour, bladder problem, dryness of vagina and joint pain. While positive correlation was observed between pre- obesity, class I obesity, class II obesity and symptoms hot flushes, anxiety, irritability, depression, sleep problems and physical and mental problem. Result shows that as well as BMI of the women decreases, they have less chance to face symptoms like heart discomfort, sexual problem, bladder problem, dryness of vagina and joint pain while increasing BMI they have more chance to face symptoms.

References

- Folsom AR, Kushi LH, Anderson KE, Mink PJ, Olson JE, Hong CP, *et al.*, (2000) Association of general and abdominal obesity with multiple health outcomes in older women. *Arch Intern Med.* 2000; 160:2117-128.
- Gupta, S.C. and Kapoor, V.K. (2002) "Fundamentals of applied statistics" 2nd edition, Chand and sons, 51-85.
- Jacob, S. (2001) Health status of women: A reality check, *Social welfare*, 47,10,29-31
- K L Szegea' B W Whitcomb A C Purdue-Smithe' M E Boutot' J E Manson' S E Hankinson' B A Rosner' E R Bertone-Johnson(2017) Adult adiposity and risk of early menopause. *National Centre for Biotechnology Information: Hum Reprod* 2017 Dec 1; 32(12): 2522-2531
- Kaur S, Walia I (2007) Body mass index, waist circumference and waist: hip ratio among nursing students. *Nursing and Midwifery Research Journal.* 2007;3(2):84-90.
- Manson JE, Colditz GA(1990)A prospective study of obesity and risk of coronary heart disease in women. *N Engl J Med.* 1990; 322:882-9.
- Nisar, N., and Nisar Ahmed Sohoo. (2009) Frequency of menopausal symptoms and their impact on the quality of life of women: a hospital-based survey. *Journal of medical association*, 59(11), 752
- Patil S, Sukumaran S, Bhate A, Mukherji A, Chandrakar S.(2012) Correlation of blood sugar with waist circumference and body mass index in an Indian. *Population Global Journal of Pharmacology.* 2012;6(1);8-11.
- Ray. S, D. Dasgupta (2009) Menopausal Problems among Rural and Urban Women from Eastern India, *Journal of*

- Social, Behavioural, and Health Sciences, Volume 3, Issue 1, Pages 20–33*
- Schneider, HG., Heinmann, L.J., Rosemeier, H.P., Potthoff, P., Behre, H.M. (2000) The Menopause Rating Scale (MRS): Comparison with Kupperman Index and Quality of Life Scale SF – 36. *Climacteric*, 3: 50-58
- Som N. and S. Ray(2012) Menopause-specific quality of life of urban women in West Bengal, India. *Menopause International*. 18:99-105.
- Stampfer MJ. (1990) A prospective study of obesity and risk of coronary heart disease in women. *N Engl J Med*. 1990; 322:882-9.
- WHO (1998) Nutritional anaemia, Technical Series No.503, World Health Organisation, Geneva, 133.
- World Health Organization (1997) Obesity: preventing and managing the global epidemic. Report of a WHO consultation presented at: The World Health Organization; Geneva, Switzerland. Publication WHO/NUT/NCD/98.1; 1997.
- Yang, T., Sung-Yuan, W., Yu-Cheng, Y., Chu-Hui, S., Fa-Kung, L., Su- Chee, C., Chao- Yang, T., Hei- Jen, J., Jian – Pei, H. and Ko- En, H. (2012) Effects of standardized phytoestrogen on Taiwanese menopausal women. *Taiwanese Journal of Obstetrics and Gynecology*, 51: 229-235.

How to cite this article:

Singh Jyoti, Verma Anisha and Neeru Bala. 2021. Correlation between Body Mass Index and Signs and Symptoms of Menopause in Women. *Int.J.Curr.Microbiol.App.Sci*. 10(02): 2060-2066. doi: <https://doi.org/10.20546/ijcmas.2021.1003.263>