

Impact of Body Mass Index (BMI) and Physical activities among menopausal women

Rahman MM^{1*}, Rahman MA¹, Alo K², Mehrin F¹

¹Department of Community Medicine, Anwer Khan Modern Medical College, Dhaka, Bangladesh;

²Department of Physiology, Khwaja Yunus Ali Medical College, Enayetpur, Serajganj; Bangladesh

Abstract

Background: The impact of body mass index (BMI) and physical activity on menopausal symptoms is still unclear. The relationship between menopausal symptoms with physical activity and BMI may differ depending on the specific symptom and socio-demographic factors may have impact on the symptoms.

Objectives: It was aimed to determine most common presenting symptoms as per MRS scale, and to assess physical activity status as per IPAQ scale. Also to assess the impact of physical activity and BMI on common menopausal symptoms in addition to socio-demographic characteristics of the respondents in particular.

Methods: This was a descriptive cross-sectional study among menopausal women age between 45-60 years attended at Outpatient Department (OPD) of Obs & Gynae in three randomly selected tertiary care hospital of the country during November 2017 to April 2018. The data were generated as per Menopause Rating Scale (MRS) and by International Physical Activity Questionnaire (IPAQ) and by calculation of Body Mass Index (BMI).

Results: About 70.0% respondents were within 45-54 years of age group, 28.0% respondents were illiterate and 78.0% were housewife. Overweight was to be found almost 30.0% within 50-54 years age group. Respondent's somato-vegetative menopausal symptoms like hot flashes, heart discomfort and sleeping problems were found mild to moderate among 53.0-67.0% respondents mostly. Psychological and urogenital menopausal symptoms were found mild to moderate among 52-62.0% and 45-53.0% respondents respectively. The irritability and heart discomfort were found significantly associated with age. Moreover, joint and muscular discomfort, hot flushes, sweating and heart discomfort were also found significantly associated with BMI ($p < .05$).

Conclusion: Findings of the study will help planners and policy makers in developing one stop comprehensive services as appropriate in minimizing symptoms without medications and will also help minimizing burden of symptoms among menopausal women towards a comfortable end stage life line towards menopause specific quality of life (MENQOL).

Keywords: Menopause rating scale, International physical activity questionnaire, Body mass index, Obesity

Introduction

Menopause is a physiological phase that is characterized by the permanent cessation of menstrual periods in women due to loss of ovarian follicular function.¹ During the menopausal transition, women experience various physical, psychological, and social changes that may affect their quality of life.² Several symptoms, including hot flushes, night sweats, vaginal dryness, depression, irritability, headache, and sleep disturbance, can occur more frequently in this period.³ In the Menopause specific Quality of Life (MENQOL) questionnaire, these symptoms are divided into four domains, namely, the physical, vasomotor, psychosocial, and sexual symptom domains.⁴ Hormone replacement therapy can be

used to alleviate menopausal symptoms⁵, but given the possible serious adverse effects of hormone therapy, many women are searching for alternative therapies to reduce their menopausal symptoms.⁵ One such therapy is exercise, which is one of the most commonly used alternatives for menopausal symptoms.⁵ Physical activity is also associated with many health benefits, including a decreased risk of cardiovascular disease, metabolic syndrome, obesity, cancer, osteoporosis, and depression.⁶ There is evidence that regular physical activity may be an effective way of preventing or attenuating menopause-related symptoms. Several previous studies showed that physical activity significantly reduces menopausal symptoms⁷ but other studies have found that physical activity improves general symptoms such as physical and psychosocial symptoms, although it does not influence specific symptoms such as vasomotor and sexual symptoms.⁸ A meta-

*Correspondence: Dr. Md. Mahfuzar Rahman, Department of Community Medicine, Anwer Khan Modern Medical College, Dhaka, Bangladesh; e-mail: mahfuzarrahan26@yahoo.com, ORCID: 0000-0002-6282-7164

analysis has reported inconsistent results regarding the effect of physical activity on menopausal symptoms, with mixed results being observed for different types of symptoms.⁹ In addition, engaging in habitual physical activity at least 60 minutes/day showed favorable effects on the prevention of menopausal symptoms, and a high total physical activity level was also associated with less climacteric symptoms.¹⁰ Previous study in multiethnic groups of midlife women showed that the specific types of women's physical activity influenced the prevalence and severity of menopausal symptoms, which was differed by ethnicity.¹¹ There are conflicting results related to the effects of body mass index on menopausal symptoms, especially hot flushes. Body weight is primarily regulated by a series of physiological process but is also influenced by external societal and cognitive factors.¹² Several studies showed that BMI is the main determinant of endogenous estrogen levels. In addition, it appears that estradiol (E1) and estrone (E2) are at higher levels among obese women than women within the normal range. Some studies demonstrate the fact that fewer vasomotor symptoms occur in obese women as compared to non-obese women.¹³ In contrast, in other study E1 and E2 levels decrease earlier in obese women as compared to non-obese women. Menopause can lead to a wide range of symptoms including hot flashes, night sweats, sleeping problems, emotional and cognitive symptoms, irritability, anxiety, vaginal itching and dryness, and urinary symptoms. Reported hot flushes rates for peri-menopausal women ranged from 40 to 60%.¹⁴ The prevalence of vaginal atrophy in the early stages of the menopause increases as a woman advances through the postmenopausal years.¹⁵ In a study conducted by Khan BEZ, Rahman AM, Begum N et al among urban post menopausal women revealed that the most prevalent menopausal symptoms were joint & muscular pain, anxiety and sleep disturbance, chest discomfort as well as physical and mental exhaustion were among 90.1%, 80.3%, and 78.9% respectively.¹⁶ The study also revealed relationship between BMI and hot flash was statistically significant ($p < 0.001$). Urogenital symptoms and depression were also found to be statistically significant in relation with history of chronic disease.¹⁷ Moreover, proportion of sleep problems, physical and mental exhaustion, bladder problems (urinary incontinence), joint & muscular discomfort were more in inactive than minimally active but the relationship were not statistically significant ($p > 0.05$). This result indicates that physical activities may have some role in reducing

menopausal symptoms.¹⁷ In addition, with regard to recent evidence, the impact of body mass index (BMI) and physical activity on menopausal symptoms is still unclear. The relationship between menopausal symptoms with physical activity and BMI may differ depending on the specific symptom and socio-demographic factors may have impact on the symptoms. Most studies of menopause to date have been based either on Euro-American populations or far away from Bangladesh. So far, the impact of physical activity and body mass index on menopausal symptoms and associated socio-demographic characteristics has not been studied in Bangladesh. Therefore, the objective of this study was to determine the impact of physical activity and BMI on menopausal symptoms among Bangladeshi women in addition to socio-demographic factors.

Material and Methods

It was a descriptive cross-sectional study in a randomly selected three tertiary care hospitals. The respondents were menopausal women between the ages of 45-60 years attended at the Gynae & Obs OPD of tertiary care hospitals in three randomly selected divisions; Dhaka, (SSMCH) Sylhet MAG Osmani MCH and Rajshahi SZRMCH. The criteria for selection of respondents were included as women of postmenopausal (no more menses in the last 12 months) who are willing and able to respond. However, women having pregnancy or breastfeeding, hysterectomy with intact ovary, chronic irregular menstruation, use of hormonal medication in the last 3 months or the inability to complete the questionnaire were excluded as respondents. The periods of study were of six months from November 2017 to April 2018. The data were generated as per MRS and IPAQ duly pre-tested and by calculation of BMI. The total sample size was 390 (130 in each division) as per sample size formula according to Cochran's and respondents were selected conveniently as per inclusion and exclusion criteria. Ethical issues were dealt using written informed consent form duly signed by respondents covering privacy and confidentiality of information in addition to matter of withdrawal at any point of time. Ethical clearance was taken from BMRC ethical review board as its regular process for funding. The study also involved measurement of weight and height for calculating BMI status. After collection, data were cleaned, compiled, edited and analyzed manually and also by using appropriate computer software and presented by tables and diagrams as appropriate.

Results

Table I: Age and BMI status of the respondents (n= 390)

Age in years	Under wt. <18.5	Normal wt. 18.5-24.9	BMI		
			Over wt. 25.0-29.9	Class I Obes. 30.0-34.9	Class II Obes. 35.0-39.9
45-49 n= 140	00	95 (67.85)	42 (30.00)	03 (2.15)	00
50-54 n= 133	05 (3.76)	86 (64.66)	39 (29.33)	03 (2.25)	00
55-59 n= 57	03 (5.27)	33 (57.89)	14 (24.56)	07 (12.28)	00
60+ n= 60	00	39 (65.00)	21 (35.00)	00	00

Mean age: 52.47 years SD: ± 5.27. About 70% respondents were within 45-54 years of age group.

N:B: Figures in the parenthesis indicate percentages

Overweight was found almost 30.0% within 50-54 years of age. However, class I obesity was within the age of 55-59 years. None was found as class II obesity. The age in any group found no significance with BMI (table II).

Table II: National status based on BMI (n= 390)

BMI group	Age group				p-value
	45-49 (n=140)	50-54 (n=133)	55-59 (n=57)	>60 (n=60)	
Under weight(<18.5)	00	18.23±0.5	17.21±0.3	17.20±0.2	0.544
Normal weight(18.5-24.9)	23.56±3.3	23.43±3.2	22.43±3.12	21.43±2.1	0.884
Over weight(25.0-29.9)	28.23±3.3	28.22±3.2	26.22±2.1	26.22±3.2	0.718
Class I Obese(30.0-34.9)	33.5±2.1	33.5±3.1	32.00±2.1	00	0.681
Class II Obese(35.0-39.9)	00	00	00	00	-----

N:B: Age in any group found no significance with BMI

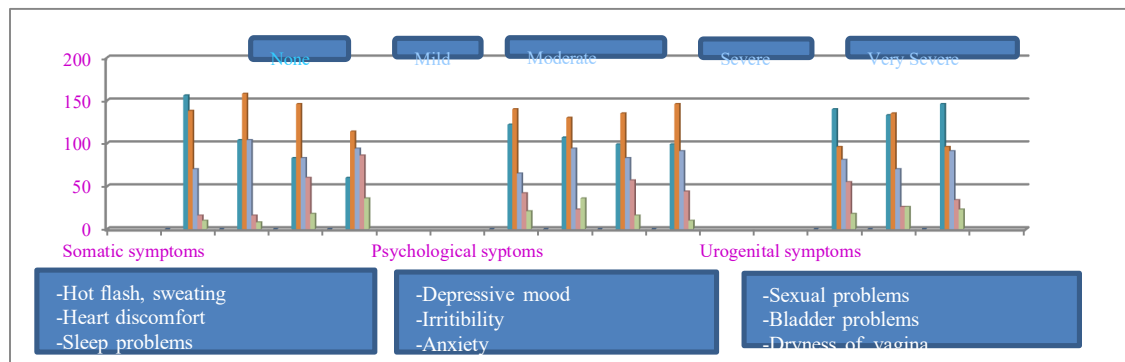


Figure1: Menopausal symptoms as per MRS sub-scale (Somato-vegetative, Psychological and Urogenital)

Table III: Association of MRS symptoms by selected socio-demographic characteristic and BMI

Symptoms	Age	Marital status	Monthly income	BMI
Joint and muscular discomfort	0.463	0.528	0.615	0.021*
Physical & mental exhaustion	0.552	0.527	0.266	0.386
Irritability	0.048*	0.073	0.401	0.756
Hot flushes & sweating	0.966	0.369	0.697	0.001*
Sleep problems	0.586	0.424	0.025*	0.683
Anxiety	0.585	0.712	0.154	0.958
Depressive mood	0.141	0.406	0.153	0.681
Heart	0.003*	0.541	0.623	0.001*

discomfort				
Vaginal dryness	0.065	0.672	0.739	0.541
Sexual problems	0.032	0.052	0.038*	0.931
Bladder problems	0.276	0.712	0.379	0.683

*Value indicates significant association

The symptoms irritability and heart discomfort were found significantly associated with age. On the other hand, sleep and sexual problem were found significantly associated with monthly income. Moreover, joint and muscular discomfort, hot flushes and sweating including heart discomfort were also found significantly associated with BMI (p<.05).

Table IV: MRS Symptoms by IPAQ physical activity level

MRS symptoms	Physical activity level		
	Low	Moderate	High
Somato-vegetative			
Hot flushes, sweating n=234	140 (59.82)	81 (34.62)	13 (5.56)
Heart discomfort n=286	165 (57.69)	96 (33.57)	25 (8.74)
Sleep problems n=307	206 (67.10)	78 (25.40)	23 (7.50)
Joint and muscular discomfort n=330	188 (56.97)	112 (33.94)	30 (9.09)
Psychological			
Depressivemood n=268	155 (57.84)	88 (32.83)	25 (9.33)
Irritability n=283	167 (59.01)	89 (31.45)	27 (9.54)
Anxiety n=291	145 (49.83)	125 (42.95)	21 (7.22)
Physical and mental exhaustion n=291	168 (57.73)	107 (36.77)	16 (5.50)
Urogenital			
Sexual problems n=250	136 (54.40)	104 (41.60)	10 (4.00)
Bladder problems n=257	138 (57.70)	92 (35.80)	27 (10.50)
Dryness of vagina n=244	129 (52.87)	108 (44.26)	07 (2.87)

N:B: MRS symptoms mostly predominant within low and moderate physical activity level (table IV).

Table V: Association of MRS symptoms by physical activity level

MRS Symptoms	Physical activity level		
	Low	Moderate	High
Somato-vegetative			
Hot flushes, sweating	0.463	0.528	0.015*
Heart discomfort	0.552	0.527	0.016*
Sleep problems	0.048*	0.073	0.401
Joint and muscular discomfort	0.036*	0.369	0.697
Psychological			
Depressive mood	0.003	0.424*	0.645
Irritability	0.585	0.712	0.154
Anxiety	0.141	0.406	0.153
Physical and mental exhaustion	0.586	0.541	0.623
Urogenital			
Sexual problems	0.002*	0.672	0.739
Bladder problems	0.563	0.052	0.674
Dryness of vagina	0.276	0.712	0.379

• Indicates statistically significant p value

Low physical activity was to be found significantly associated with symptoms like; sleep problems, and joint and muscular discomfort and sexual problems ($p < 0.05$). On the other hand, moderate physical activity was also found associated with psychological symptoms like; depressive mood. However, high physical activity was to be found

associated with symptoms like; hot flushes, sweating and heart discomfort as well ($p < 0.05$).

Discussion

In this study the age in any group found no significance with BMI. Menopause is a physiological phase that is characterized by the permanent cessation of menstrual periods in women. During the menopausal transition, women experience various physical, psychological, and social changes that may affect their quality of life.² Physical activity is associated with decreased risk of cardiovascular disease, metabolic syndrome, obesity, cancer, osteoporosis, and depression.⁶ There is evidence that regular physical activity may be an effective way of preventing menopause-related symptoms. In this study respondent's somato-vegetative menopausal symptoms like; hot flushes, heart discomfort, and sleeping problems were found mild to moderate among 53-67% respondents. Psychological menopausal symptoms like; depressive mood, irritability, anxiety, and physical and mental exhaustion were found mild to moderate among 52-60% respondents approximately. Urogenital menopausal symptoms like; sexual problem, bladder problem, dryness of vagina, joint and muscular discomfort were found mild to moderate among 45-52% respondents approximately. Several previous studies showed that physical activity significantly reduces menopausal symptoms⁸ but other studies have found that physical activity improves general symptoms such as physical and psychosocial symptoms, although it does not influence specific symptoms such as vasomotor and sexual symptoms.^{7,8} In addition, engaging in habitual physical activity at least 60 minutes/day showed favorable effects on the prevention of menopausal symptoms, and a high total physical activity level was also associated with less climacteric symptoms.¹⁰ There are conflicting results related to the effects of body mass index on menopausal symptoms, especially hot flushes. Several studies showed that BMI is the main determinant of endogenous estrogen levels. Some studies demonstrate the fact that fewer vasomotor symptoms occur in obese women as compared to non-obese women.¹³ This study revealed the symptoms like; irritability and heart discomfort were found significantly associated with age. On the other hand, sleep and sexual problem were found significantly associated with monthly income. Moreover, joint and muscular discomfort, hot flushes and sweating including heart discomfort were also found significantly associated with BMI. However, marital status was to be found no association with any of those

symptoms. In addition, with regard to recent evidence, the impact of body mass index (BMI) and physical activity on menopausal symptoms is still unclear. However, study conducted among urban postmenopausal women in Bangladesh also revealed symptoms were mostly of joint and muscular pain, anxiety, and sleep disturbance, chest discomfort as well as physical and mental exhaustion in addition to problem as well.¹⁸

Conclusion

Study respondents had the somato-vegetative menopausal symptoms like; hot flashes, heart discomfort, and sleeping problems were found mild to moderate among 53.0-67.0% respondents. Psychological menopausal symptoms like; depressive mood, irritability, anxiety and physical and mental exhaustion were found mild to moderate among 52.0-60.0% in addition to urogenital symptoms among 45.0-52.0% and those were of mild to moderate in nature. Although the selected respondents were the part of population, however a large-scale study in addressing those issues would have been considered to evaluate the health and wellbeing of menopausal women in this country. Thus, it would help evaluating the situation by the policymakers in developing strategies towards its prevention by early detection of the problems for this particular segment of women population.

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