Relationship between Physical Activity and menopausal Symptoms among Menopausal Women

Samar K. Hafez , PhD[1]. , Isis E. Gohar, PhD[2]. , Amany A. Ahmed, PhD[3*].
Department of Obstetrics and Gynecological Nursing, Faculty of Nursing,
Alexandria University[1, 2] , Sohag University[3], Egypt.

Background: The menopausal transition is known to play a major role in the etiology of various somatic, vasomotor, sexual and psychological symptoms. A large number of women are choosing not to take hormonal therapy, it is increasingly important to identify evidence-based lifestyle modifications. **The aim** was to assess the relation between the level of women activity and the severity of their menopausal symptoms. **Methods:** A descriptive correlational research design was utilized, conducted at four faculties selected randomly from all the theoretical faculties (namely art, commerce, law, tourism) affiliated to University. A convenience sample of (100) peri menopausal working women at the previously mentioned settings. Three tools were used to collect the necessary data. Tool (I): Socio - demographic and clinical data structured interview schedules, Tool (II): Menopause rating scale (MRS) was used to measure the severity of menopausal symptoms it compromises of 11 statements that are subdivided into three main groups; somatic, urogenital and psychological symptoms and Tool (III): International Physical Activity Questioner (IPAQ) short form, this tool was used to assess the physical activity of the women **Results:** more than two thirds (67%) of study participants aged between 51-55 years old. Also, it was observed that level of activity of more than three fifths (65%) of the women in this study was low compared to 35% of them their level of activity was moderate. Moreover. A non-significant negative correlation was found between participants' level of activity and their somatic, psychological as well as total score of menopausal symptoms {-.065 (.521), -.172(.088) &-.108 (.284)} respectively. **Conclusion**: the results of the present study supported the research hypothesis as moderate level of activity was associated with decreased severity of menopausal symptoms in general and severity of somatic and psychological symptoms in particular.
Key word: menopausal transition, physical activity, menopausal symptoms

INTRODUCTION

The menopausal transition is a progressive endocrinological continuum that takes reproductive-aged women from regular, cyclic menses to a final menstrual period and ovarian senescence [(1)]. Menopause signifies the permanent cessation of menstruation and the end of reproductive potential. It is the culmination of some 50 years of reproductive aging—a process that unfolds as a continuum from birth through ovarian senescence to the menopausal transition and the post menopause. A result of aging changes in the ovary and in hypothalamic-pituitary- ovarian axis function, the menopausal transition encompasses a period of dynamic changes in reproductive and non-reproductive tissues [(2)].

All women will go through the menopause. Natural menopause takes place between the ages 45 & 55 years for the women worldwide. It is generally accepted that average age at menopause is about 51 years in industrialized countries. But in developing countries it ranges from 43-49 year [(3)]. Although the menopause occurs at an average age of 51, the physiological changes which result in the final menstrual period (FMP) can start 10 years prior to this. Hormonal changes continue long after the FMP [(4)].

The menopausal transition is known to play a major role in the etiology of various somatic, vasomotor, sexual and psychological symptoms commonly reported and may be attributable to the hormonal aberrations experienced during the transition that impair the overall quality of life of women [(2,5)]. Many women complain of a numerous of symptoms including irregular menstrual cycles, heavy or a scarcity of menstrual bleeding, headaches, breast swelling and tenderness, myalgia, arthralgia, weight gain and central adiposity. In addition to memory difficulties, disturbed sleep patterns, mood swings, anxiety and depression [(6, 7)].

In fact, women going through the menopausal transition are more symptomatic than their postmenopausal counterparts. This is likely a reflection of the complex changes occurring in reproductive hormones and peptides within the hypothalamo-pituitary-ovarian axis. Erratic peaks in estradiol and inconsistent luteal phase levels of progesterone are common and as a result, there is a wide variation in menstrual cyclicity and menstrual flow. Women can complain of symptoms of both excess estrogen: headaches, breast tenderness, menstrual flooding and symptoms of estrogen deficiency: vaginal dryness, vasomotor symptoms [6,8].

At one time, hormone replacement therapy was prescribed extensively to decrease menopause symptoms because it was believed that this therapy reduced cardiovascular complications such as atherosclerosis or heart attacks as well. Hormone therapy is no longer prescribed routinely as such therapy does not appear to reduce cardiac risk or prevent osteoporosis and may be associated with endometrial cancer, cerebrovascular accidents (strokes), and perhaps breast cancer. However, hormones may be prescribed on a short-term basis (1 to 2 years) if a woman has symptoms so severe that they interfere with her life plans [9].

Consequently, many women are seeking alternatives. As large numbers of women are choosing not to take hormonal therapy, it is increasingly important to identify evidence-based lifestyle modifications including structured exercise and physical activity that have the potential to reduce menopausal symptoms [10, 11].

Studies show that women who take regular weight-bearing exercise have higher bone mineral densities compared to sedentary controls. Exercise appears to reduce bone loss rather than reverse osteoporosis. It also improves muscle tone thus reducing falls. In addition, physical activity and exercise can balance hormonal changes, prevent heart disease, as well as increase endurance. Psychologically, it

can improve mood, reduce the risk of dementia, and prevent depression and socially, it can physically reduce dependence on others, got many friends and increase productivity [4, 12].

In an era when the population is ageing; more than 30% of women are aged 50 years of age or over. Two hundred years ago only 30% of women lived through a menopause; now, more than 90% will. Worldwide life expectancy is increasing and women live longer than men. A woman's average life expectancy at birth in the Egypt is currently 73.76 years [4]. Thus, Egyptian women can expect more than 20yrs of post-menopausal life. This population expansion will lead to an increasing nursing awareness to importance of e health problems that affect post-menopausal women and the adoption of healthy life style to reduce such problems. This study aimed to assess the relation between the level of woman's activity and the severity of their menopausal symptoms.

MATERIALS AND METHOD

Aim of the study:

The aim of this study was to assess the relation between the level of women activity and the severity of their menopausal symptoms.

Hypothesis:

Women with moderate level of activity will exhibit less severity of their menopausal symptoms.

Design:

A descriptive correlational research design was utilized in this study.

Settings:

The study was conducted at four faculties selected randomly from all the theoretical faculties (namely art, commerce, law, tourism) affiliated to University of Alexandria except nursing and medical faculties because the study subjects in these settings attended workshop about menopause.

Subjects:

A convenience sample of (100) peri menopausal working women at the previously mentioned settings (25 women from each faculty) was selected according to the following criteria:

- Free or controlled medical or gynecological disease.
- Not taking hormone replacement therapy.
- Nonsmoker
- Willing to participate in the study

Tools

Three tools were used to collect the necessary data.

Tool (I): Socio - demographic and clinical data structured interview schedules this tool was developed and used by the researcher to collect the following data**.**

1. Socio-demographic data characteristics including: age, level of education, occupation, residence and marital status
2. Reproductive history such as: gravidity, parity, number of abortions and number of living children.
3. Physical assessment including: body weight and height were measured to the nearest 0.1Kg or 0.1Cm, and body mass index (BMI) was calculated as body weight (Kg) divided by height (meters) square. BMI was categorized as follows: Underweight = <18.5, normal weight =18.5–24.9, Overweight =25–29.9 and Obesity = BMI of 30 or great [13,14].

Tool (II): Menopause rating scale (MRS) [15]

This tool was originally developed in Germany by The Berlin Center for Epidemiology and Health Research in 1990s. This scale was translated and used to measure the severity of menopausal symptoms it compromises of 11 statements that are subdivided into three main groups; somatic, urogenital and psychological symptoms.

The subject's response to each symptom was rated according to 4-point category scale where: None (0), mild (1), moderate (2), severe (3) and very severe (4). The total score was classified as the following: no or little (0-4), mild (5-8), moderate (9-15) and severe (16+)

The psychological symptoms: 0 to 16 scoring points (4 symptoms: depressed, irritable, anxious, exhausted), its score was classified as the following: no or little (0-1), mild (2-3), moderate (4-6) and severe (7+)

The somatic symptoms: 0 to 16 points (4 symptoms: sweating/flush, cardiac complaints, sleeping disorders, joint & muscle complaints), its score was classified as the following: no or little (0-2), mild (3-4), moderate (5-7) and severe (8+)

The urogenital symptoms: 0 to 12 points (3 symptoms: sexual problems, urinary complaints, vaginal dryness), its score was classified as the following: no or little (0), mild (1), moderate (2-3) and severe (4+)

The composite scores for each of the dimensions (sub-scales) is based on adding up the scores of the items of the respective dimensions. The total score is the sum of the dimension scores.

Tool (III): International Physical Activity Questioner (IPAQ) short form [16]: this tool was used to assess the physical activity of the women; it was developed in Geneva in 1998 and was followed by extensive reliability and validity testing undertaken across 12 countries (14 sites) during 2000. It has been developed and

tested for use in adults (age range of 15-69 years). The IPAQ short form asks about three specific types of activity undertaken in the four domains. The specific types of activity that are assessed are walking, moderate-intensity activities and vigorous-intensity activities. The minutes spent every on each type of activity are computed separated by multiplying the duration and frequency of activity. a continuous activity score is calculated by multiplying the selected metabolic equivalent (MET)value and weekly minutes of activity bas MET-min per week. The subjects were categorized into low, moderate and high levels of physical activity based on their total activity and the frequency of the activities as the following:

Low: This is the lowest level of physical activity. Those individuals who not meet criteria for categories 2 or 3 are considered low/inactive.

Moderate: Any one of the following 3 criteria:

• 3 or more days of vigorous activity of at least 20 minutes per day OR

• 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day

• 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-min/week.

High: Any one of the following 2 criteria:

• Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/ week

• 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes/week

Method

The study was conducted according to the following steps:

1. Approvals:

- An Official letter from the Faculty of Nursing, Alexandria University was directed to the responsible authorities of the previous mentioned setting to take their permission to collect the data after explaining the purpose of the study

2. Development of the tools:

-Tool (I) was developed by the researcher after extensive review of recent and relevant literature.

- Tool (II & III) were adopted and translated into Arabic

3. Validity and reliability:

-Tool I was revised by 5experts in the fields of obstetric nursing for their content validity. The tool was designed in its final format and reliability was assured by Cronbach's alpha 0.60.

-Tool II is reliable and valid Menopause rating scale to measure the severity of menopausal symptoms.

-Tool III is a valid and reliable record to assess the level of the women activities.

5. Pilot study:

- A pilot study was carried out on (5) peri menopausal women who were excluded from the selected subjects to ascertain relevance, clarity and the applicability of the tools and to detect any problem peculiar to the statements as sequence and clarity that might interfere with the process of data collection. After conducting the pilot study, it was found that sentences of the tools were clear and relevant.

6. Collection of data:

-Data was collected over a period of 3 months starting from the beginning of December 2018 till the end of February 2019.

- Data was collected through an interview and body weight and height was measured during the interview, which was conducted individually and in total privacy.

- Data were collected 2-3days/week and the number of interviewee/days ranged from 2-3, the average time needed to complete the interview ranged between15-30 minutes.

5. Statistical analysis:

Statistical analysis of results were done after data were collected, it was revised, coded and fed to statistical software IBM SPSS version 20. Descriptive statistics including percentage, mean, and standard deviation were calculated. Cross tabulation was used to explore relationships between the variables. Chi-square was used also to find out the difference in the results at 0.05 level of significance. The given graphs were constructed using Microsoft excel software.

6. Ethical considerations:

For each recruited woman the following issues was considered: Securing the woman's informed written consent after explanation of research purpose, keeping her privacy, anonymity and right to withdraw at any time as well as assuring confidentiality of her data.

RESULTS

The socio-demographic characteristics (table 1) of the study participants showed that, more than two thirds (67%) of them aged between 51-55 years old and the mean age was (51.32 ± 2.159) years, more than one half (54%) of study participants were university educated. The vast majority (95%) of the women were

urban dwellers while the rest of them were rural dwellers. More than three fifths (66 %) of the study participants had enough monthly income and slightly less than three quarters (73%) of them live with their husbands and / or children. Table (2) illustrates reproductive history of the study participants where almost three quarters (73%) of them had three or more deliveries and only 13 % of them were nulliparas. When abortion was considered, it was found that a minority (6%) of the study participants had only one abortion. Figure (1) shows that12% of the study participants had normal weight while more than two fifths (41.00%) of the woman in the study were overweight and 47% of them were obese. The results revealed that 60 % of study participants had no medical history of chronic diseases, while two fifths (40%) had controlled chronic disease such as hypertension (25%), diabetes mellitus (10%) and only 5% of them had both hypertension and diabetes mellitus Table (3).

According to figure (2), it was observed that level of activity of more than three fifths (65%) of the women in this study was low compared to 35% of them their level of activity was moderate. Table (4) sheds the light on the severity of somatic menopausal symptoms among study participants. It was found that (27 % & 40 % &39%) respectively experienced moderate hot flashes and night sweating, heart discomfort and sleep problems. Furthermore, more than two fifths (45%) of them reported that they had severe muscle and joint pain. The sub- score of somatic symptoms showed that almost equal percent of the study subjects (21% & 20%) respectively had mild and moderate sub-score of the somatic menopausal symptoms while more than one half (53%) of the women had severe sub-score of the somatic symptoms. Psychological symptoms of menopause were observed among (27% ,26%,35% &26%) of the study participants respectively who complained of mild depressive mood and irritability, anxiety and physical and mental exhaustion compared to (20 %,20%,25% &39%) of them respectively who

complained of severe symptoms respectively. Concerning, the sub- score of menopausal psychological symptoms, it was found that an equal percent (7%) of the women obtained mild and no or little sub-score while 27% of them obtained moderate score while more one half (59%) of the study participants obtained severe sub score Table (5). Results demonstrated that (53%, 47% & 74%) of them respectively didn't experience any sexual problems, urinary problems or/and dryness of the vagina compared to (20%, 26% & 7 %) of them severely experienced these symptoms respectively. Furthermore, the sub score of urogenital symptoms revealed that almost an equal percent of the study participants (28% &26%) had no or little and moderate sub-score compared to 40% of them who had severe sub-score Table (6). Mild total score of menopausal symptoms were observed among (14%) of the study participants while more than one quarter (27%)of them had moderate total score of menopausal symptoms. Moreover, more than half of the study subjects (59.00%) had severe total score of menopausal symptoms. the mean of total score of menopausal symptoms was 18.340 ± 7.795 table (7). Table (8) shows that only (7%) of the study participants who obtained mild total score of menopausal symptoms were normal weight while near to one third (32%) of them who obtained severe total score were overweight. Finally, the table makes it clear that there was a highly statistically significant relationship between the study participants body mass index and their total score of menopausal symptoms where p=0.000 table (8).

Relationship between the study participants level of activity and their score of menopausal symptoms was examined as evidenced by table (9) which show that (39%,52% &26%) of the study participants respectively who had severe somatic, psychological and urogenital sub-scores were with low activity level. Moreover, the women in this study who had severe total score of menopausal were with low

activity compared to only (14%) of them who were with moderate level of activity. Finally, the table shows a significant statistical relationship between the study participants level of activity and their somatic, psychological, urogenital sub-scores and the total score of menopausal symptoms where p were (0.003, 0.000, 0.0.036 & 0.018)) respectively. A non-significant negative correlation was found between participants' level of activity and their somatic, psychological as well as total score of menopausal symptoms {-.065 (.521), -.172(.088) &-.108 (.284)} respectively.

DISCUSSION

Menopausal symptoms can be severe and disruptive to women's overall quality of life. Hormone replacement therapy, is known to be effective in ameliorating symptoms, however, reporting of side effects has resulted in alternative therapeutic options. Physical activity has been assessed as an alternative therapeutic option for alleviating menopausal symptoms, including, psychological, vasomotor, somatic and sexual symptoms [(17)].

The current study revealed that more than half of the study participant had a severe degree of total menopausal symptoms score with the most prevalent symptoms: muscle, joint pain, sleep problem and physical and mental exhaustion in the somatic and psychological subscales. These three symptoms were also the most prevalent in a study done by Sweed et al, (2012) [(18)] in Egypt with a higher rate

and explained these results by the fact that most of the somatic or psychological symptoms experienced by women are not exclusively the result of changes due to menopause alone, but could also result from other physical, psychological or problems related to ageing in this group of women. Joint and muscle pain, physical and mental exhaustion were also the most reported symptoms with more prevalence in a study done by AlDughaither et al, (2015) [(19)] in Saudi Arabia.

On the same line, a study done in Egypt by Ibrahim et.al,(2015) [20] denoted that The most common reported symptom among all subscales was joint and muscular discomfort, authors related these results to lack of exercise and inadequate supplementation of calcium. They added that menopause alone cannot explain all the somatic and psychological changes occurring among menopausal women; age-related changes play a significant role where prevalence of joint pain increases progressively with age in women. In the present study, over weight and obesity among more than four fifths of the study participant added further burden on the joints.

A highly statistically significant relationship between the study participants' body mass index and their total score of menopausal symptoms were observed where more than half of women obtained severe total score were overweight and obese. These results are supported by Lotfya & Eldahshanb (2018) [21] who investigated the effect of body mass index on menopausal symptoms among post-menopausal Egyptian women and found significant increasing trend in the total menopause rating score (MRS) from normal through overweight to obese participants. Similar results were reported by Koo et.al, (2017) [22] who concluded that obese women had more frequent menopausal symptoms than normal or overweight women but the associated menopausal symptom differed depending on the menopausal stage: in perimenopause, obesity associated significantly with physical symptoms while, in postmenopause, obesity associated significantly with vasomotor symptoms.

About two thirds of women in the study were likely to participate in low levels physical activity. Freedman (2005) [23] presumed that acute exercise increases core body temperature which can serve as a trigger for vasomotor symptoms. Furthermore, Lambiase & Thurston (2013) [24] reported menopausal symptoms

such as muscle, joint pain and physical and mental exhaustion may discourage women from voluntarily participating in structured leisure time physical activity.

On correlating level of activity and total score of menopausal symptoms (degree of severity), inverse correlations were observed between level of activity and somatic as well as psychological menopausal symptoms. These results are in agreement with findings from previous studies have shown that getting physical exercise is correlated with lower estimates of the perceived severity of symptoms and that exercise moderates the psychological symptoms associated with menopause [25,26].

Stojanovska et al, (2014) [17] added that Physical exercise has been proposed as an alternative to hormonal replacement therapy for improving the quality of life of menopausal women. Such improvements can even be achieved with low intensity aerobic activity, such as walking. The Health 2000 study in Finnish women reported that physically active women reported significantly fewer somatic symptoms and pain compared to women that were not physically active [17, 27]. Different studies denoted that physical activity has positive associations in reducing cholesterol, triglycerides, apolipoprotein and glucose levels, and, is associated with reducing hot flash symptoms [28, 29, 30]. Also, sleep quality has also been found to be better in menopausal women who are physically active. For example, physically active women have favourable sleep characteristics with fewer awakenings during the night and improved quality of sleep [17, 31].

Lambiase & Thurston (2013) [24] was in agreement with these results and concluded that considering the potential impact of physical activity on sleep, even at the relatively modest levels characteristic of household physical activity, may be important for women with vasomotor symptoms, a subgroup at high risk for sleep problems.

The observed inverse correlations between level of activity and psychological menopausal symptoms in the study are in accordance with the results of Guimaraes & Baptista (2011) [32] who reported that habitual physical activities, those that are part of the participants lifestyle, such as, walking, cycling, gardening and work related physical activities of no more than 60 minutes per day, have been found to have a favorable effect on menopause symptoms and quality of life. They improve mood and enhance psychological functioning. Also, Liang et al, (2017) [33] observed that walking was effective in reducing menopausal symptoms and depression as well as enhancing physical self-esteem and satisfaction with life. In addition, they noted that changes in physical activity, menopausal symptoms, body mass index, physical self-esteem, and depression were predictors of change in satisfaction with life. Moreover, A randomized controlled trial involving walking, yoga performed by Elavsky (2009) [34] indicated that physical activity and menopausal symptoms were related to physical self-worth and positive affect, and in turn, greater levels of physical self-worth and positive affect were associated with higher levels of menopause-related quality of life. Results of the present study are also consistent with those of Kim et al, (2014) [35] which showed that physical activity correlates inversely with psychological and physical symptoms but not sexual symptoms. Despite the known fact that changes in sexuality and urogenital function are a source of concern for many post-menopausal women , more than half of women in the present study did not reported sexual problem and about three quarters of them had no complain of vaginal dryness. Such low prevalence of sexual problems can be explained by low reporting due to reluctance to admit such problems in the conservative cultural context of Egypt or to diminished sexual desire among this age group [18].

Finally, evidences suggest that physical activity and regular exercise are useful intervention strategy for women during and post menopause to alleviate symptoms.

More importantly, exercise has numerous other benefits on bone cardiovascular, metabolic diabetes, cancer, longevity, psychological well-being and overall quality of life and is safe with no reported side-effects [17,36,37,38].

Nurses should support the assumption that menopause can be seen as a window of opportunity, since it may motivate women to modify their lifestyle. Many menopausal women are receptive to general health counseling and maintenance advice at this time of their life and should be encouraged to participate in regular exercise and supported this endeavor through development of easily implemented home-based exercise programs or incorporation of physical activity programs into public-health initiatives [39,40]. Hence, it is appropriate for women to be physically active throughout the menopausal transition and afterwards.

CONCLUSION

In conclusion, the results of the present study supported the research hypothesis as moderate level of activity was associated with decreased severity of menopausal symptoms in general and severity of somatic and psychological symptoms in particular. Therefore, these findings can suggest that physical activity can improve the symptoms of menopause, thereby improving the quality of life.

RECOMMENDATIONS

Physical activity can be used as an effective management for treating menopausal symptoms among women. Qualitative research is needed to evaluate the experience of menopausal symptoms.

REFERNCES:

1. Hoffman B, Schorge J, Bradshaw K, Halvorson L, Schaffer J, Corton M. William Gynecology Textbook.3rd ed. New York: McGraw-Hill Education.2016; 471.
2. Sherry Sherman S. Defining the Menopausal Transition. The American Journal of Medicine. 2005; 118 (12B): 3S–7S
3. Avin B, Chethan T . A Study to Assess the Average Age of Menopause and Menopause Associated Symptoms among Rural Women in Mangalore, Karnataka. Ntl J Community Med 2016; 7(5):404-408.
4. Edmonds D. Dewhurst'S Textbook of Obstetrics & Gynaecology.7th ed. UK London:Blackwell.2007; 479.
5. Moustafa M, Ali R, El saied S, Taha S. Impact of Menopausal Symptoms on Quality of Life among Women's in Qena City. Egyptian Nursing Journal. Jan. 2015;1-18
6. Li R X, Ma M, Xiao X, Xu Y, Chen X, Li B. Perimenopausal Syndrome and Mood Disorders in Perimenopause: Prevalence, Severity, Relationships, and Risk Factors. Medicine (Baltimore). 2016;95(32): e4466
7. Mishra G,Kuh D. Health Symptoms During Midlife in Relation to Menopausal Transition: British Prospective Cohort Study. BMJ. 2012;344:e402.
8. Hale G, Hughes C, Burger H, Robertson D, Fraser I. Atypical Estradiol Secretion and Ovulation Patterns Caused By Luteal Out-Of-Phase (LOOP) Events Underlying Irregular Ovulatory Menstrual Cycles In The Menopausal Transition. Menopause. 2009;16(1):50-9
9. Pillitteri A. Maternal & Child Health Nursing:Care of the Childbearing & Childrearing Family. 6th ed, New York: Lippincott Williams & Wilkins .2010; 102

10. Daley A, Lampard S, MacArthur C: Exercise to Reduce Vasomotor and Other Menopausal Symptoms: A review. Maturitas 2009, 63(3):176-180.
11. Elavsky S, Gonzales J, Proctor D, Williams N, Henderson V: Effects of Physical Activity on Vasomotor Symptoms: Examination Using Objective and Subjective Measures. Menopause 2012;19(10):1095-1103.
12. Pradanie R , Mar'ah E. Correlation of Physical Activity and Menopause Symptoms. Advances in Health Sciences Research. 8th International Nursing Conference (INC 2017).2017;(3):152-156
13. Flegal K, Ogden C, Yanovski J, Freedman D, Shepherd J, Graubard B, Borrud L.Am J Clin Nutr. 2010;;91(4):1020-1026.
14. Steinberger J, Jacobs D, Raatz S, Moran A, Hong C, Sinaiko A. Int J Obes (Lond). 2005;29(11):1346-1352.
15. Heinemann K, Ruebig A, Potthoff P, Schneider H, Strelow F, Heinemann LJ, Do Minh T. The Menopause Rating Scale (MRS) scale: A methodological review. Health and Quality of Life Outcomes 2004; (2):45
16. Sternfeld B, Dugan S. Physical activity and health during the menopausal transition. Obstet Gynecol Clin North Am. 2011;38(3):537-566.
17. Stojanovska L, Apostolopoulos , Polman R, Borkoles E . To Exercise, Or, Not To Exercise, During Menopause and Beyond .Maturitas 2014;77(4):318-323.
18. Sweed H, Elawam A, Nabeel A, Mortagy A. Postmenopausal Symptoms among Egyptian Geripausal Women. Eastern Mediterranean Health Journal. 2012; 18(3): 213-220.
19. AlDughaither A, AlMutairy H, AlAteeq M.Menopausal Symptoms and Quality of Life among Saudi Women Visiting Primary Care Clinics in

Riyadh, Saudi Arabia.International Journal of Women's Health. 2015;(7): 645–653.

20. Ibrahim Z, W.A. AhmedS, El-Hami A. Prevalence of Menopausal Related Symptoms and Their Impact on Quality of Life Among Egyptian Women. Clinical and Experimental Obstetrics & Gynecology. 2015; ISSN: 0390-6663:161-167
21. Lotfya M , Eldahshanb Nahed. Effect of Obesity on Menopausal Symptoms in Postmenopausal Egyptian Women. Critical Care Obstetrics and Gynecology.2018; (4):56
22. Koo S, Ahn Y, Lim J, Cho J, Park H. Obesity Associates with Vasomotor Symptoms in Postmenopause but with Physical Symptoms in Perimenopause: A cross-sectional study. BMC Women's Health 2017; 17:126
23. Freedman R. Hot flashes: Behavioral Treatments, Mechanisms, and Relation to Sleep. Am J Med. 2005; 118(Suppl 12B):124–130.
24. Lambiase M, Thurston R. Physical Activity and Sleep among Midlife Women with Vasomotor Symptoms.Menopause. 2013; 20(9): 946–952.
25. Elavsky S. Physical Activity, Menopause and Quality of Life: The Role of Affect and Self-Worth across Time. Menopause 2009;16:265–71.
26. McAndrew L, Napolitano M, Albrecht A. When, Why and for Whom There is a Relationship Between Physical Activity and Menopause Symptoms. Maturitas 2009;64:119–25
27. Moilanen J, Aalto AM, Hemminki E, Aro AR, Raitanen J, Luoto R: Prevalence of Menopause Symptoms and their Association with Lifestyle among Finnish Middle-Aged Women. Maturitas 2010, 67(4):368-374.
28. Elavsky S, Molenaar P, Gold C, Williams N, Aronson K: Daily Physical Activity and Menopausal Hot Flashes: Applying a Novel Within-Person

Approach to Demonstrate Individual Differences. Maturitas 2012; 71(3):287-293.

29. Seo D, So W, Ha S, Yoo E, Kim D, Singh H, Fahs C, Rossow L, Bemben D, Bemben M: Effects of 12 Weeks of Combined Exercise Training on Visfatin and Metabolic Syndrome Factors in Obese Middle-Aged Women. J Sports Sci Med 2011; 10(1):222-226.
30. Hunter S, Dhindsa M, Cunningham E, Tarumi T, Alkatan M, Tanaka H: Improvements in Glucose Tolerance with Bikram Yoga in Older Obese Adults: A pilot study. J Bodyw Mov Ther 2013, 17(4):404-407.
31. Newton K, Reed S, Guthrie K, Sherman K, Laforce C, Caan B, Sternfeld B, Carpenter J, Learman L, Freeman E: Efficacy of yoga for Vasomotor Symptoms: A Randomized Controlled Trial. Menopause 2013;(13)02015-2.
32. Guimaraes A, Baptista F: Influence of Habitual Physical Activity on the Symptoms of Climacterium/Menopause and the Quality of Life of Middle-Aged Women. Int J Womens Health 2011; 3:319-328.
33. Liang H, Zhu L, Lyu J, Zhu W, Xu Y, Yang L. Benefits of Walking on Menopausal Symptoms and Mental Health Outcomes among Chinese Postmenopausal Women. International Journal of Gerontology. 2017; (11): 166-170
34. Elavsky S. Physical Activity, Menopause, and Quality of Life: The Role of Affect and Self-Worth Across Time. Menopause.2009; 16(2):265-271
35. Kim M, Cho J, Ahn Y, Yim G, Park H. Association Between Physical Activity and menopausal Symptoms in Perimenopausal Women. BMC Women's Health 2014; (14):122
36. Kemmler W, Weineck J, Kalender W, Engelke K: The Effect of Habitual Physical Activity, Non-Athletic Exercise, Muscle Strength, and VO2max on

Bone Mineral Density is Rather Low in Early Postmenopausal Osteopenic Women.Journal of Musculoskeletal Neuron Interaction 2004; 4(3):325-334.

37. Donnelly J, Blair S, Jakicic J, Manore M, Rankin J, Smith B: American College of Sports Medicine Position Stand. Appropriate Physical Activity Intervention Strategies for Weight Loss and Prevention of Weight Regain for Adults. Medicine and science in sports and exercise 2009;41(2):459-471.
38. Lovejoy JC, Champagne CM, de Jonge L, Xie H, Smith SR: Increased Visceral Fat and Decreased Energy Expenditure during The Menopausal Transition. International Journal of Obesity 2008; 32(6):949-958.
39. Mansikkamäki K, Raitanen J, Nygård C, Tomás E, Rutanen R,3 Luoto R .Long-term Effect of Physical Activity On Health-Related Quality of Life among Menopausal Women: a 4-year follow-up study to a randomised controlled trial. BMJ Open 2015; 5:e008232.
40. Daley A, Stokes H, Thomas A. Aerobic Exercise as a Treatment for Vasomotor Menopausal Symptoms: Randomized Controlled Trial Protocol. Maturitas 2013;76 (4):350–356.

Table (1): Number and percent distribution of the study participants according to their socio-demographic characteristics

Socio-demographic characteristics	No.(n=100)	%
Age		
45-50	33	33.00
51-55	67	67.00
Min. – Max.	47– 55	
Mean ± SD.	51.32± 2.159	
Level of education		
Secondary school	46	46.00
University	54	54.00
Social status		
Single	8	8.00
Married	73	73.00
Widow	19	19.00.
Residence		
Rural	5	5.00
Urban	95	95.00
Monthly income		
Enough	66	66.00
Not enough	34	34.00
Cohabitation:		
Alone	8	8.00
Sibling /Relatives	19	19.00
Husband /children	73	73.00

Table (2): Number and percent distribution of the study participants according to their reproductive history

Reproductive History	No. (n=100)	%
Parity		
Nullipara	13	13.00
Two	73	73.00
Three or more	14	14
Abortion		
None	94	94.00
One **or more**	6	6.00
Number of children		
None	13	13.00
Two	73	73
Three or more	14	14

Figure (1): Percent distribution of the study participants according to their Body Mass Index (n=100)

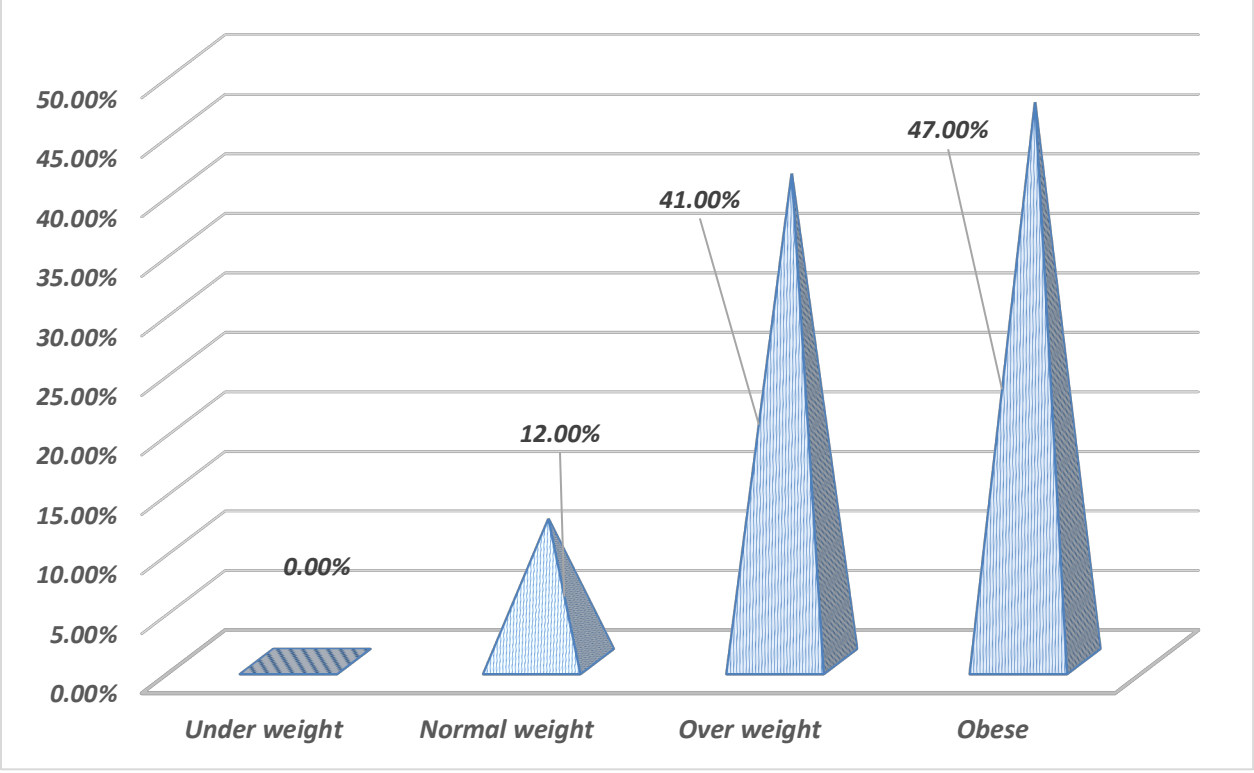

Table (3): Number and percent distribution of the study participants according to their medical history

Chronic Disease	No. (n=100)	%
Free from chronic diseases	60	60.00
Hypertension	25	25.00
Diabetes Mellitus	10	10.00
Hypertension and diabetes	5	5.00

Figure (2): Percent distribution of the study participants according to their level of activity

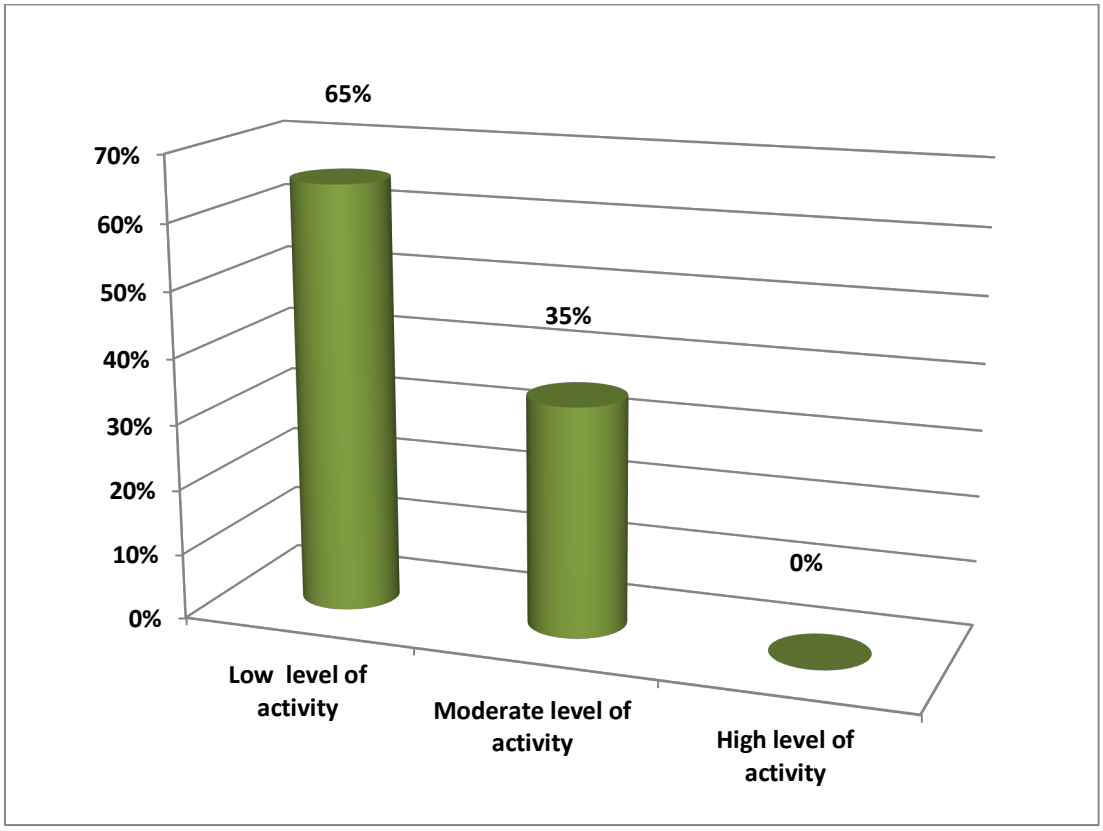

Table (4): Number and percent distribution of the study participants according to their severity of somatic symptoms of menopause (n=100)

	Somatic Symptoms	Degree of Severity									
		None		Mild		Moderate		Severe		Very severe	
		No	%	No	%	No	%	No	%	No	%
1	Hot flashes and night sweating	33	33.00	21	21.00	27	27.00	13	13.00	6	6.00
2	Heart discomfort (unusual awareness of heartbeat, heart skipping, heart racing, tightness	40	40.00	7	7.00	40	40.00	13	13.00	0	0.00
3	Sleep problems (difficulty in falling asleep, difficulty in sleeping through, waking up early	13	13.00	14	14.00	39	39.00	34	34.00	0	0.00
4	Muscle and joint pain	7	7.00	7	7.00	13	13.00	28	28.00	45	45.00

Somatic symptoms sub-score	No	%
- No or little	6	6.00
- Mild	21	21.00
- Moderate	20	20.00
- Severe	53	53.00

Table (5): Number and percent distribution of the study participants according to severity of psychological symptoms of menopause (n= 100)

Psychological Symptoms		None		Mild		Moderate		Severe		Very severe	
		No	%	No	%	No	%	No	%	No	%
1	Depressive mood (feeling down, sad, on the verge of tears, lack of drive, mood swings)	21	21.00	27	27.00	19	19.00	20	20.00	13	13.00
2	Irritability (feeling nervous, inner tension, feeling aggressive)	28	28.00	26	26.00	13	13.00	20	20.00	13	13.00
3	Anxiety (inner restlessness, feeling panicky	7	7.00	35	35.00	6	6.00	25	25.00	27	27.00
4	Physical and mental exhaustion	21	21.00	26	26.00	14	14.00	39	39.00	0	0.00

Psychological Symptoms sub-score	No	%
- No or little	7	7.00
- Mild	7	7.00
- Moderate	27	27.00
- Severe	59	59.00

Table (6): Number and percent distribution of the study participants according to severity of urogenital symptoms of menopause (n= 100).

	Urogenital Symptoms	None		Mild		Moderate		Severe		Very severe	
		No	%	No	%	No	%	No	%	No	%
1	Sexual problems (change in sexual desire, in sexual activity and satisfaction)	53	53.00	7	7.00	20	20.00	14	14.00	6	6.00
2	Bladder problems (difficulty in urinating, increased need to urinate, bladder incontinence	47	47.00	27	27.00	26	26.00	0	0.00	0	0.00
3	Dryness of vagina	74	74.00	13	13.00	7	7.00	6	6.00	0	0.00

Urogenital symptoms sub-scores	No	%
- No or little	28	28.00
- Mild	6	6.00
- Moderate	26	26.00
- Severe	40	40.00

Table (7): Number and percent distribution of the study participants according to their total score of menopausal symptoms

Menopausal symptoms total score	No. (n=100)	%
No or little (0-4)	0	0.0
Mild (5-8)	14	14.00
Moderate (9-15)	27	27.00
Severe (16+)	59	59.00
Total score		
Min. – Max.	5.0 – 29.0	
Mean ± SD.	18.340 ± 7.795	

Table (8): Relationship between the study participants' Body Mass Index and their total score of menopausal symptoms

Menopausal symptoms total score	Body mass index								Total (n =100)	χ^2	P
	Underweight (n= 0)		Normal weight (n=12)		Overweight (n=41)		Obese (n =47)				
	No.	%	No.	%	No.	%	No.	%			
No or little	0	0.00	0	0.00	0	0.00	0	0.00	0		
Mild	0	0.00	7	7.00	0	0.00	7	7.00	14	**34.734**	**0.000***
Moderate	0	0.00	0	0.00	19	19.00	8	8.00	27		
Severe	0	0.00	5	5.00	22	22.00	32	32.00	59		

χ^2 and p values for **Chi square test**
*Statistically significant at $p \leq 0.05$

Table (9): Relationship between the study participants' level of activity and their score of menopausal symptoms.

Menopausal symptoms score	Level of activity				Total (n=100)	χ^2	P
	Mild (n=65)		Moderate (n=35)				
	No.	%	No.	%			
Somatic sub –scores							
No	6	6.00	0	0.00	6		
Mild	7	7.00	14	14.00	21	14.204	0.003*
Moderate	13	13.00	7	7.00	20		
Severe	39	39.00	14	14.00	53		
Psychological sub –scores							
No	7	7.00	0	0.00	7		
Mild	0	0.00	7	7.00	7	52.369	0.000*
Moderate	6	6.00	21	21.00	27		
Severe	52	52.00	7	7.00	59		
Urogenital sub-scores							
No	21	21.00	7	7.00	28		
Mild	6	6.00	0	0.00	6	8.521	0.036*
Moderate	12	12.00	14	14.00	26		
Severe	26	2	14	14.00	40		
Total menopausal score							
No	0	0.00	0	0.00	0		
Mild	7	7.00	7	7.00	14	8.050	0.018*
Moderate	13	13.00	14	14.00	27		
Severe	45	45.00	14	14.00	59		

χ^2 and p and p values for Chi square test
Statistically significant at $p \leq 0.05$

Table (10): Correlations between study participants' level of activity and their score of menopausal symptoms (n=100)

Score of menopausal symptoms	level of activity	
	Pearson correlation (r)	Significance (2-tailed)
Somatic sub-scores	-.065	.521
Psychological sub-scores	-.172	.088
Urogenital sub-scores	.181	.071
Total menopausal symptoms score	-.108	.284