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Assessment of Quality of Life, Associated Factors and Effects of Physical Activity on Quality of Life amongst Menopausal Women

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A B S T R A C T

Background: Menopausal women undergo many physical and physiological changes which last for several years. The objective of this study was to evaluate the percentage of menopausal symptoms and association of quality of life with physical activity among participants.

Methods: This cross-sectional study included Self- administered questionnaires; Cardiovascular measures, Menopause-specific Quality of Life (MENQOL) questionnaire and International Physical Activity Questionnaire-Short Form (IPAQ-SF) as the outcome measures.

Result: In vasomotor domain, 26.8% of women had issue of hot flushes. In psychosocial domain, 66.8% menopausal women felt they can accomplish less than they used to before. In physical domain, almost 80-85% postmenopausal women experienced aching in muscles and joints, decrease in stamina, feeling a lack of energy and decrease in physical strength. In sexual domain, 52-57% women had change in Sexual Desire, Vaginal Dryness during Intercourse and Voiding Intimacy. Prevalence of overweight category was 43.7% and 53.2% population was under high risk of developing cardiovascular issues. 96% of population was physically minimally active. The MENQOL total score was analyzed with physical activity revealed that there was no significance relationship of Menopausal symptoms with physical activity.

Conclusion: The study concluded that the quality of life among the menopausal women of was mildly affected. On the contrary, the risk factors for cardiovascular health was greatly affected. Physical activity level among participant was physically inactive. There was no significant association found between the quolity of life among menopausal women with the physical activity.

Keywords: Menopausal women, Quality of life, Physical Activity, cardiovascular risk, MENQOL

Introduction:

Menopause is a transitional phase where women experience various physical, physiological, psychological and emotional changes. All such changes during menopause may affect the quality of life of postmenopausal women. Post menopausal women suffer many vasomotor symptoms like sweats at night, hot flushes, sleep disturbances, vaginal dryness, irritability, etc. Physiologically, reduction in production of estrogen and progesterone hormones from the ovaries seems responsible for menopausal changes or transition or symptoms. Aging is equally responsible for reduction in muscle mass, known as sarcopenia.[1-4] Central fat deposition and loss of lean mass is common during menopausal transitional period. Accordingly, body composition and fat distribution changes will be marked during menopausal period, which indicates menopause is another significant transition period where redistribution of fat from the periphery to the center will be seen.[5-7]

Menopausal symptoms can be dealt easily by hormone replacement therapy, including possible hazardous effects of the therapy. The alternatives to hormone replacements are under scrutiny, including physical activity in forms of exercise. Possible health benefits related to physical activity involves reduction in incidence of osteoporosis, metabolic syndrome, cancer, depression, anxiety and cardiac diseases. Physical activity may help preventing or reducing physical, physiological, vasomotor and psychological menopausal issues. Several researches have hypothesized the role of physical activity reducing the intensity of different menopausal symptoms and improving the quality of life.[8-10] Blood pressure changes are one among the major cardiovascular changes associated with menopause. Hormonal changes during menopause seem to be one of the causes for increasing blood pressure. Along with hormonal changes, obesity, age and physical activity also contribute to hypertension. Considering fatty tissue mass, weight and body mass index have been strongly associated with hypertension.[11]

Quality of life during menopausal period was affected and associated with obesity, changes in anthropometric measures, depression and anxiety. Menopausal transitions also demand sufficient maintenance of psychological functions and a feeling of well being. Feeling of being well has an extreme importance for later age functionality as well as better health outcomes. Research studies have been controversial regarding the psychological well being and effects of menopause on it. Overall it was considered via the studies that some degree of negative mood swings and irritability with depression is associated with menopausal transitions.

Physical activity positively proved to be improving the status of psychological well being and may assist reducing the effects of menopause on mental well being. The negative influence of menopausal transitions can be minimized by improving the quality of life of menopausal women by recruiting essential physical activity in the routine. By weakening the impact of negative outcomes of the menopause, physical activity found to modify the status of mental well being and there by enhancing the quality of life of the menopausal women. On the contrary, menopausal transition increases the sedentary behavior along with compromised physical activity. These effects will be accentuated among the women with low level of physical activity prior menopausal changes. Though majority of previous studies are in favor of physical activity improving the mental well being and quality of life, women who are belonging to low physically active category the quality of life with menopausal transitional phase may not be satisfied.[(12)]

Physical activity is a complex phenomenon to calculate as they are dependent on life style and habits in day to day life. Level of physical activity of individual varies with day to day activities and time to time variation of physical activities may be due to season changes too. Apart from these changes, categories of physical activities among menopausal vary from simple walk, traditional activities, instrumental activities or structural exercises. Physical activity like walking is most favorable and highly accepted among the menopausal population as it's a physiological activity and it can be habituated as well as structured easily and implemented safely.[(13)]

A behavior which includes the movement, resulting in physiological attributes involving raised energy expenditure and raised physical fitness is known as physical activity. Enormous evidences are available from years regarding exercise training and public health research has revealed the role of physical activity on a broad spectrum of health outcomes in adults. In spite of being aware, about the positive outcomes of physical activity, most of the midlife women (45–64 years) are not physically active to meet 2008 Physical Activity Guidelines. The stipulated guidelines for physical activity will encourage adults to engage in at least 150 minutes per week of moderate intensity (activity types between 3 and 6 metabolic equivalent of task (METs), such as a brisk walk), or at least 75 minutes per week of vigorous intensity (activity types ≥6 METs, such as jogging), or an equivalent combination of moderate to vigorous intensity PA. In addition, all adults should incorporate moderate or high intensity muscle strengthening activities that involve all major muscle groups on two or more days of the week. Public health surveillance data are particularly useful for monitoring trends in physical activity behaviors, including examining differences in prevalence estimates by various population sub-groups.[(14)]

The fact that menopause is a physiological process of aging in women is widely accepted. The menopausal transition is associated with hormonal changes leading to physiological, physical, social and psychological changes. There is a considerable variations in symptoms of menopause so some women will be highly vulnerable than other during these transition. The overall outcome of various physiological and psychological disturbances may be responsible for impacting the quality of life of menopausal women. Several researches have been published in relation to quality of life among menopausal women. Quality of life involves interference of menopausal symptoms in physical, habitual, functional and psychological well being of the women.[(15)] Menopausal symptoms vary with individual woman considering many factors like level of physiological and psychological vulnerability to get affected by menopausal transition. Individual experiences are attributed to general aging, menopausal fluctuations, or socially constructed phenomena.[(16)]

Knowledge regarding the transitional phase of menopause and menopausal symptoms is of prime importance as that will help the women to cope with the changes and adapt them. Positive and open approach to understanding and unavoidable changes of menopause helps reducing the effects of symptoms. Inadequate knowledge and negative behavior plays a vital role in compromising the quality of life of menopausal women. So current study would provide the data which will help improving health education and thereby imparting the positive attitude and correct knowledge about menopausal issues. By improving the understanding and attitudes help improving quality of life of menopausal women and there by empower the menopausal women to control their own lives.[(17)]

Menopause is still an important public health problem which may have a negative impact on middle aged women's physical and psychological health status, social relationship and other activities. This study investigates the prevalence of age of menopausal transition, physiological changes (like body mass index, blood pressure, and waist hip ratio), menopause specific quality of life, level of physical activity and association of menopausal symptoms and physiological changes as well as association of menopausal symptoms with physical activity level among the menopausal women.

Materials and Methods:

Participants who were willing to participate voluntarily from areas of urban Surat and urban Ankleshwar were included in this research study. This cross sectional study included 600 postmenopausal women who were available and provided consent to participate in this study by convenient sampling method. Inclusion criteria among menopausal women included women above 45 years and not having their menstruation since at least a year. Women who were not willing to participate voluntarily were excluded from the study. The procedure has been divided into three parts. First part included details regarding basic socio-demographic details, reproductive characteristics and cardio vascular characteristics. Second part of the study included Menopause-specific Quality of Life (MENQOL) Questionnaire. Third part involved International Physical Activity Questionnaire- Short Form (IPAQ-SF) questionnaire.

Basic demographic details included age, marital status, level of education, type of education, occupational details and socio economical condition. Marital status was subcategorized into single, married, divorced and widow. Participants were considered for level of education in five subdivisions namely, illiterate, primary education, secondary education, higher secondary education and studied up to university degree. Occupation among postmenopausal

women was divided into four categories namely, home maker, professional, work involving hand work and retired. Participant's socio-economic condition were categorized into four subdivisions namely, those earning < 25000 per month, those earning 25000-50000 per month, those earning 50000-1 lakh per month and those earning >1 lakh per month.

The reproductive characteristics included time since menopause, parity, hysterectomy and hormone replacement therapy. Time since menopause was categorized into- < 5 years post menopause, 5-10 years post menopause and => 10 years post menopause. Parity was divided into three categories namely, nulliparous, having a or two children and having three or more children. All the menopausal women were asked whether hysterectomy was done or not. Hormone replacement therapy was also considered in the questionnaire in form of yes or no, the participant has to answer.

The first part of the questionnaire included cardio vascular characteristics including their blood pressure, pulse rate, height and weight to calculate the Body Mass (BMI) and waist and hip circumference were measured to calculate waist hip ratio among the participants. Blood pressure included both systolic and diastolic blood pressures. Blood pressure was measured using digital sphygmomanometer. The sphygmomanometer is placed on the table. Blood Pressure is recorded after the participant has rested for 5 minutes. The participant is seated with the arm resting on the table, the elbow approximately at the level of the heart. The cuff is kept just above the cubital fossa, considering the brachial artery. Once the participant is relaxed the start button is pressed in digital sphygmomanometer and waits for the reading to get visible on the screen. Two reading were recorded using the same procedure in between 8-10 minutes rest period between readings. Systolic blood pressure, diastolic blood pressure and heart rate were noted from the display screen both the time.

Weight was measured using digital weighing scale. The machine was placed on leveled surface and the participants were asked to stand on the weighing scale erect with hands by their side and looking in front. Shoes and socks were removed by the participant prior standing on the weighing scale. Weight is measured on screen in kilograms and noted for all the participants. Height was measured using ruler and measure tap. Standing height is the measurement of maximum distance from the floor to the highest point of the head, when the participant is facing directly in front. Shoes should be off, feet together and arms by the side. Heels, buttocks and upper back should also be in contact with the wall when measurement is made. Shoulder and pelvis should be in symmetric alignment. Height is then measured from the floor to the highest point of head in centimeters using the measuring tape. The purpose of measuring height and weight is to calculate the body mass index among the participant to calculate whether the participants belong to the categories of underweight, normal range weight, overweight or obese.

Waist and hip circumference was measured using measure tap. The waist measurement is taken at the narrowest part of the abdomen or if this is not apparent, at the midpoint between the lowest rib and the top of the hip bone (iliac crest). The hip girth measurement is taken at the level of the greatest protrusion of the gluteal region, area of greater trochanters. The participant standing straight with their weight distributed evenly on both feet while taking hip and waist circumferences. Waist and hip circumferences are taken to calculate the waist to hip ratio. Waist to hip ratio is a significantly associated with the cardio vascular risk among the participants.

The Menopause-specific Quality of Life (MENQOL) Questionnaire was introduced in 1996 as a tool to assess health-related quality of life in the immediate post-menopausal period. An inherent assumption of the Menopause-specific Quality of Life (MENQOL) is that disease states and conditions like menopause, which produce symptoms, may disrupt emotional, physical, and social aspects of an individual's life, which must be considered concomitantly with treatment decisions. The Menopause-specific Quality of Life (MENQOL) is self-administered questionnaire. It consists of a total of 29 items in a likert-scale format. Menopause-specific Quality of Life (MENQOL) questionnaire consists of four domains namely, vasomotor, psychosocial, physical and sexual. The Each item out of 29 assesses the impact of one of four domains of menopausal symptoms, as experienced over the last month.

In vasomotor domain (item 1-3) whether the participants experiencing the symptoms like hot flushes or flashes, night sweats and sweating are included. In psychosocial domain (item 4-10) whether the participants experiencing the symptoms like being dissatisfied with my personal life, feeling anxious or nervous, experiencing poor memory, accomplishing less than i used to, feeling depressed, down or blue, being impatient with other people and feelings of wanting to be alone are considered. In physical domain (item11-26) whether the participants experiencing the symptoms like flatulence (wind) or gas pains, aching in muscles and joints, feeling tired or worn out, difficulty sleeping, aches in back of neck or head, decrease in physical strength, decrease in physical strength, decrease in stamina, feeling a lack of energy, drying skin, weight gain, increased facial hair, changes in appearance texture or tone of your skin, feeling bloated, low backache, frequent urination and involuntary urination when laughing or coughing are included. In sexual domain (27-29) whether the participants experiencing the symptoms like changes in your sexual desire, vaginal dryness during intercourse and avoiding intimacy are included.

Items pertaining to a specific symptom are rated as present or not present, and if present, how bothersome on a zero (not bothersome) to six (extremely bothersome) scale. Mena is computed for each subscale by dividing the sum of the domain's items by the number of items within that domain. Non-endorsement of an item is scored a "1" and endorsement a "2", plus the number of the particular rating, so that the possible score on any item ranges from one to eight. Mean of each domain will provide domain wise quality of life of menopausal women and the total mean of all 29 items will provide overall quality of life of menopausal women.

International physical activity questionnaire-short form (IPAQ-SF) assesses physical activity undertaken across a comprehensive set of domains including leisure time, domestic and gardening (yard) activities, work-related and transport-related activity. The IPAQ short form asks about three specific types of activity undertaken in the three domains introduced above and sitting. The specific types of activity that are assessed are walking, moderate-intensity activities and vigorous intensity activities. The frequency (measured in days per week) and duration (time per day in minutes) are collected separately for each specific type of activity. The items were structured to provide separate scores on walking; moderate-intensity; and vigorous-intensity activity as well

as a combined total score to describe overall level of activity. Computation of the total score requires summation of the duration (in minutes) and frequency (days) of walking, moderate-intensity and vigorous-intensity activity. These following values continue to be used for the analysis of International physical activity questionnaire-short form (IPAQ-SF) data. Walking = 3.3 METs, Moderate PA = 4.0 METs and Vigorous PA = 8.0 METs. The criteria for these three levels are shown below. The first one is "Inactive" (Category 1) is the lowest level of physical activity. Those individuals who not meet criteria for Categories 2 or 3 are considered insufficiently active. Second category is "Minimally Active" (Category 2). The minimum pattern of activity to be classified as sufficiently active is any one of the following. The third category has three subdivisions namely, a) 3 or more days of vigorous activity of at least 20 minutes per day OR b) 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR c) 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities. Individuals meeting at least one of the above criteria would be defined as achieving the minimum recommended criteria to be considered minimally active' (Category 2). Median values can be computed for walking (W), moderate-intensity activities (M), and vigorous-intensity activities (V) using the following formulas: MET values and Formula for computation of Met-minutes Walking MET-minutes/week = 3.3 * walking minutes * walking days. Moderate MET-minutes/week = 4.0 * moderate-intensity activity minutes * moderate days. Vigorous MET-minutes/week = 8.0 * vigorous-intensity activity minutes. The IPAQ sitting question is an additional indicator variable and is not included as part of any summary score of physical activity. Data on sitting should be reported as median values and in inter quartile range.

Statistical analysis and tests:

Statistical analysis was done using SPSS version 26. The different components of Socio Demographic Characteristics, Reproductive Factors, Body Mass Index Categories, Waist to Hip Ratio Categories and Physical Activity Levels were analyzed using frequency distribution analysis by SPSS 26 version. Descriptive statistics were used for calculating mean of Age, Systolic Blood Pressure, Diastolic Blood Pressure, Pulse Rate, Body Mass Index, Waist to Hip Ratio and Physical Activity characteristics among the menopausal women. Descriptive statistics were used for calculating mean of each Domain of MENQOL and Total Mean of Menopause Related Quality Of Life Questionnaire (MENQOL). Pearson's Correlation analysis was carried out to find the relationship between Physical Activity and MENQOL Total Score, Physical Activity and Vasomotor Domain of MENQOL, Physical Activity and Psychosocial Domain of MENQOL, Physical Activity and Physical Domain of MENQOL and Physical Activity and Sexual Domain of MENQOL by SPSS 26 version.

Results:

Table: 1 Socio Demographic Characteristics of Participants

VARIABLES	LEVELS	N	%
Marital Status	Single	19	3.2
	Married	437	72.8
	Divorced	22	3.7
	Widow	122	20.3
Education	Illiterate	108	18.0
	Primary	182	30.3
	Secondary	143	23.8
	Higher secondary	75	12.5
	University	92	15.3
Occupation	Home maker	349	58.2
	Professional	96	16.0
	Hand work	100	16.7
	Retired	55	9.2
Socio Economic Condition	<25000	186	31.0
	25000-50000	130	21.7
	50000-1 lac	115	19.2
	>1 lac	169	28.2

Table: 2 Reproductive Factors among Participants

VARIABLES	LEVELS	N	%
Time Since Menopause	<5 years	179	29.8
	5-10 years	177	29.5
	>10 years	244	40.7
Parity	Nulliparous	27	4.5
	1 or 2 Children	273	45.5
	>=3	300	50.0
Hysterectomy	Yes	100	16.7
	No	500	83.3
Hormone Replacement Therapy	Yes	16	2.7
	No	584	97.3

Table: 3 Descriptive statistics of Cardiovascular Characteristics among Participants

VARIABLES	MINIMUM	MAXIMUM	MEAN	SD
Age (years)	4	85	56.76	8.83
Systolic Blood Pressure (mmHg)	90	201	136.61	14.36
Diastolic Blood Pressure (mmHg)	58	113	84.26	9.08
Pulse Rate (bpm)	40	138	84.87	12.35
Body Mass Index (kg/m^2)	16	72	26.68	5.22
Waist-Hip Ratio	0.57	27.33	0.89	1.08
Physical Activity (MET)	231	7759	817.55	559.03

Table: 4 Percentages of Participants Who Answered Yes to Experiencing Menopausal Symptoms

No.	SYSTEMS	N	%
1	Hot Flushes or Flashes	140	23.3
2	Night Sweats	98	16.3
3	Sweating	161	26.8
4	Being Dissatisfied With My Personal Life	108	18.0
5	Feeling Anxious or Nervous	347	57.8
6	Experiencing Poor Memory	192	32.0
7	Accomplishing Less than I Used to	401	66.8
8	Feeling Depressed, Down or Blue	351	58.5
9	Being Impatient with Other People	356	59.3
10	Feeling of Wanting to Be Alone	162	27.0
11	Flatulence (Wind) or Gas Pains	303	50.5
12	Aching in Muscles and Joints	510	85.0
13	Feeling Tired or Worn Out	472	78.7
14	Difficulty Sleeping	198	33.0
15	Ache in Back of Neck or Head	423	70.5

16	**Decrease in Physical Strength**	**502**	**83.7**
17	**Decrease in Stamina**	**509**	**84.8**
18	**Feeling a Lack of Energy**	**507**	**84.5**
19	**Drying Skin**	**132**	**22.0**
20	**Weight Gain**	**184**	**30.7**
21	**Increased Facial Hair**	**63**	**10.5**
22	**Changes in Appearance, Texture or Tone of Your Skin**	**125**	**20.8**
23	**Feeling Bloated**	**205**	**34.2**
24	**Low Back Ache**	**453**	**75.5**
25	**Frequent Urination**	**195**	**32.5**
26	**Involuntary Urination When Laughing or Coughing**	**202**	**33.7**
27	**Change in Sexual Desire**	**330**	**55.0**
28	**Vaginal Dryness during Intercourse**	**315**	**52.5**
29	**Avoiding Intimacy**	**347**	**57.8**

Table: 5 Association of Total MENQOL with Physical Activity among the Participants

CORRELATIONS			
		Physical Activity	**MENQOL Total Score**
Physical Activity	**Pearson Correlation**	**1**	**0.009**
	Sig. (2-tailed)		**0.823**
	N	**600**	**600**
MENQOL Total Score	**Pearson Correlation**	**0.009**	**1**
	Sig. (2-tailed)	**0.823**	
	N	**600**	**600**

Discussion:

Menopause marks a time of dramatic hormonal as well as social change for the women. It is the most crucial period in women life time when their menstrual period stops permanently. At the physiological level, menopause occurs due to the decreased production of the hormones in the ovaries, estrogen and progesterone. The purpose of this study was to assess the quality of life among the menopausal women. It also evaluates the relationship between physical activity and the self-reported vasomotor, psychosocial, physical, and sexual domains of menopausal women. Collected data was analyzed using Descriptive Statistics, Frequency Distribution and Pearson Correlation Tests. Level of significance was set up at <0.05.

This study included N=600 menopausal women from urban Surat and urban Ankleshwar. **Min Ju Kin et al [18]** conducted a study which included 631 participants having menopausal symptoms. 350 postmenopausal women were enrolled in a study carried out by **Z.M.Ibrahim, et al. [19]** In this study out of four categories of marital status among 600 menopausal women, maximum menopausal women were married and least women were single. **Deborah B. Nelson et al [20]** evaluated 380 women and found that married women were more than unmarried**. Nasibeh Barghandan et al [12]** evaluated 320 menopausal women and found that married women were more than single and others categories like divorced and widow. **Dmitriy Bondarev et al [21]** evaluated 1627 women and found that married or registered partnership women were more than single and divorced, separated or widowed. Single is less than the divorced, separated or widowed. It is believed that the hormonal disturbances during menopausal transitions are related with the marital status of the menopausal women. It is one among the important factor for reproductive health.

The current study reveals that the primary and secondary level of education was the highest level of education of majority of menopausal women. On the other hand less number of menopausal women had higher secondary and university level of education. Almost one sixth of the population was illiterate. **Min-ju kim et al [18]** evaluated 631 postmenopausal women and found that high school or lower educated women were less in number than the college or university educated women. So, in this study level of education among the women was higher. **Dmitriy Bondare et al [21]** evaluated 1627 postmenopausal women and found that primary educated women were less than tertiary educated women and tertiary educated women were less than the secondary educated women. **Kirsi Mansikkamaki et al [22]** evaluated 5000 post and perimenopausal women and found that secondary educated women

were more in number than the primary educated and the higher secondary educated women among population. Level of education is directly related to the understanding of the menopausal transition and identification of menopausal symptoms.

The current study focuses on the type of occupation the menopausal women involved. It reveled that more than half of postmenopausal women were home maker, least were retired and few were involved in hand work and very less were professionals. **Nasibeh Barghandan et al** [23] evaluated 320 postmenopausal women and found that unemployed women were more than retired women and the employed women were very less in number in the study. **Engida Yisma et al** [24] evaluated 226 women and found that NGO worker, merchant and others women were very less in number in compare to housewife or homemaker, private employee and civil servant**. Z.M.Ibrahim et al** [19] evaluated 350 women and found that house wife women were more in number than the clerk and compare to them hand workers are very less.

In this study almost one third of menopausal women had their income less than rupees 25000 per month. Almost one fifth of the population had a better socio economic condition ranging between 25000- 1 lac. **Engida Yisma et al** [24] evaluated 226 postmenopausal women and found that women with lowest and highest social economic condition were more in number than the moderate income**.** This result is in line with our results. **Paquito Bernard et al** [25] evaluated 8150 women found that woman with > 100000 and 45000 < 80000 social economical conditions were more in number in compare to women with 30000 < 45000 and 15000 < 30000. Women with <15000 social economic condition were very less in number**. Z.M.Ibrahim et al** [19] evaluated 350 women and found that postmenopausal women with high socio economic condition were very less in number in compare to intermediate and low socio economic condition. Majority women with intermediate social economic condition were present in the study.

In the present study majority of women had their menopause from more than ten years. Less than ten years and less than five years incidence of participants was almost equal i.e. one third of the menopausal women. Women with more than or equal to three children and one or two children are almost similar. More than three fourth of women were having their uterus intact (not operated for hysterectomy). And maximum number of women did not undergo any type of hormone replacement therapy.

Z.M.Ibrahim et al [19] evaluated 350 women and found that women who have menopausal symptoms since five years and between five and ten years since menopause are more than the more than those who have menopausal symptoms since ten year**. Veronica Colpani et al** [26] evaluated 292 postmenopausal women and found that very few women had undergone hysterectomy. **Leena salunkhe et al** [27] evaluated 115 postmenopausal women in their study and found that women without hysterectomy are more in number in compare to menopausal participants with hysterectomy**. Min-ju kim et al** [18] evaluated 631 menopausal women and found that women having one or two children were more in number in the study and women having three or more children were less in the study**.**

Dmitriy Bondarev MSc et al [21] evaluated 304 postmenopausal women and found that women with one or two children were more in number, women having three or more than three children were less in compare to it and women with nulliparous were least in their study. As not many women have undergone hysterectomy it cannot be determined whether removal of hysterectomy has any major effect on menopausal women or not.

The current study reveals that almost two third of the menopausal participants were belonging to overweight and obese category. High body mass index categories can be explained by ageing and hormonal disturbances related to menopausal changes. In the year 2012, **Jin Kyu Park et al** [28] conducted a study where 2556 postmenopausal women were assessed for body mass index. The women who were overweight were less in frequency than current study**,** majority of women were belonging to healthy ranges of body mass index. **Veronica colpani et al** [26] conducted a study in 2012 in which 292 women were evaluated for body mass index. Obese and overweight women were less in frequency than current study. The study) conducted by **Makbule Nelisah Tan et al** [29], in 2014 found that frequency of women who were obese was more than this study. Frequency of menopausal women in overweight category and normal categories of body mass index was lesser as compare to the current study. The risk of cardiovascular diseases increases as the level of obesity increases after women goes through menopausal transition. A study conducted by **Veronica colpani et al** [26] in the year 2012. 292 premenopausal, perimenopausal and postmenopausal women were assessed and revealed the postmenopausal women who were at higher risk of cardiovascular diseases were less compared to the menopausal women in the current study.

Jin kyu park et al [28] evaluated 1422 women, age between 45 to 55 years, found that pre-menopausal women were more in number (n=1029) and post-menopausal women are less in number (n=393) and found that waist circumference greater in pre-menopausal women in compare to post-menopausal women. **Veronica Colpani PT et al** [26] evaluated 292 women, waist-to-hip ratio were very less in physically active women in compare to inactive women. Body mass index values were in overweight category more than in obese category.

In the current study mean values of systolic blood pressure and diastolic blood pressure were higher than its acceptable range. This result can be associated with high prevalence of overweight and obese menopausal women in the current study. Waist to hip ratio in the current study shows the unacceptable range among the participants. This directly signifies the higher risk of cardio vascular diseases. Adding further, the physical activity level of majority of participants demonstrated in the current study to be physically inactive. **Sira Karvinen at el** [30] evaluated 886 menopausal women and found that body mass index was in acceptable range among the majority of participants and comparatively less number of participants in overweight category and least were in obese category of unacceptable ranges.

Quality of life among the menopausal women was evaluated by assessing their symptoms in vasomotor domain, psychosocial domain, physical domain and sexual domain. In current study, “Sweating” was the most frequently reported symptom among participants in vasomotor domain. “Accomplishing less than what they used to do” was the most frequently reported symptom among the current participants in psychosocial domain. “Being dissatisfied” was least experienced symptom among menopausal women with their personal life. “Aching in muscles and joints” is the most reported symptom in physical domain of MENQOL in the current study. “Avoiding intimacy” was the most experienced symptom in sexual domain in the current study. Lower

estrogen levels from menopause can cause the vagina to atrophy, reducing its lubrication and elasticity. As a result, sexual intercourse can be painful and may lead to avoiding intimacy.

Z.M.Ibrahim et al [19] evaluated the presence of menopausal symptoms, their severity and the degree to which they adversely affect women's lives by using MENQOL questionnaire. In vasomotor domain, the most frequently reported symptom was "sweating". **Linda Smail et al** [31] found out that, in vasomotor domain the most frequently reported symptoms was "hot flashes". **Z.M.Ibrahim et al** [19] revealed that "Impatience with other people" was the most common symptom assessed in psychosocial domain. **Linda Smail et al** [31] reported "Feeling anxious or nervous" was the most common symptom assessed in psychosocial domain.

Z.M.Ibrahim et al [19] found out that third the most frequently reported symptoms in the study was "Feeling lack of energy" in the physical domain among the menopausal participants. **Linda Smail et al** [31] revealed that "Low back ache" was the most frequently reported symptom in physical domain of MENQOL. **Z.M.Ibrahim et al** [19] conducted a study signifies that the most frequently reported symptoms in sexual domain in this study was "Vaginal dryness during intercourse"**.** For **Linda Smail et al** [31] reported in the sexual domain the most frequently reported symptom was "Vaginal dryness during intercourse".

In the year 2017, **Z.M.Ibrahim et al** [19] conducted a study revealed that mean value of vasomotor domain is greater than the mean value of vasomotor domain of the current study. The mean value of vasomotor domain of a study conducted in 2019 by **Linda Smail et al** [31] is greater than both the mean values mentioned in the above studies. **Linda Smail et al** [31] mean value of psychosocial domain is greater than the current study. **Z.M.Ibrahim et al** conducted a study [19] has a higher mean value in psychological domain than the current study.

Z.M.Ibrahim et al [19] conducted a study which revealed that the physical domain is this study is greater than the current study. **Linda Smail et al** [31] conducted a study that shows regarding the mean value of physical domain is greater than the current study mean value for physical domain. In 2019, **Linda Smail et al** [31] conducted a study signifies that the mean value of sexual domain is lesser than the mean value of sexual domain of the current study. The mean value of sexual domain of the current study is greater than the mean value of sexual domain of a study conducted by **Z.M.Ibrahim et al.** [19]

Linda Smail et al [31] conducted a study on "Menopausal-specific quality of life among Emirati women" revealed that the mean of total MENQOL score is greater than the current study. The mean of total MENQOL score is greater than this particular study according to a study conducted by **Z.M.Ibrahim et al** [19] in the year 2017. It is difficult to conclude regarding the quality of being affected by specific criteria as its results vary in different studies among menopausal women in different countries. Probable reason for differences in results in different population regarding the menopausal symptoms may be due to hormonal changes, age related changes, changes in body mass index, variation in waist to hip ratio and other cardiovascular changes like systolic blood pressure, diastolic blood pressure and pulse rate.

The MENQOL total score was analyzed with physical activity by Pearson Correlation Test in the current study. The result reveals that there was no significance relationship of Menopausal symptoms with physical activity. Domain wise menopausal symptoms were also checked for the relationship with the physical activity by using Pearson Correlation Test. The outcome of all four domain namely, vasomotor, psychosocial, physical and sexual with relationship to physical activity was not significant. Therefore, it reveals that neither each domain nor the total score of menopausal symptoms is significantly associated with physical activity among the menopausal women.

Conclusion:

The current study concluded that the quality of life among the menopausal women of was mildly affected. On the contrary, the risk factors for cardiovascular health was greatly affected. Body mass index of participants in the current study shows majority of women were in over weight category. Waist to hip ratio among the participants was higher which signifies higher cardiovascular risk. Physical activity level among participant was physically inactive. There was no significant association found between the quolity of life among menopausal women with the physical activity.

Consent for publication

All the authors agreed to publish the paper in the International Journal of Research Publication and Reviews

Availibility of data and materials

Not applicable

Conflict of interest

Authors do not have conflicting interest to declare

Declaration about the amount of funds and its source

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