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Original Research**Physical Activity and Climacteric Symptoms among Premenopause Women****Devi Permata Sari^{1*}, Sri Sat Titi Hamranani², Supardi³, Fera Damayanti⁴**^{1,2,3,4}University of Muhammadiyah Klaten***Corresponding author**

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ABSTRACT

Women experience physical changes before menopause. Women experience climacteric conditions caused by decreased reproductive hormones, so they experience the climacteric period. Climacteric is 4-5 years that occurs before menopause. Women experience problems during the climacteric period, such as hot flashes, sleep disorders, mood swings, and increased osteoporosis. Physical activity with conscious body movements produced by skeletal muscles requires energy expenditure. Physical activity includes all activities, with the intensity to help climacteric symptoms. This research aimed to identify the correlation between physical activity and climacteric symptoms. This research design used an analytical study with a cross-sectional approach. The sample was 72 women of premenopausal age, and it was obtained by cluster sampling. The research instrument was a questionnaire. The data analysis was the Kendal Tau test. The results of this study were $44.86 \pm 3.041\%$, and the average number of children in this study was $2.76 \pm 1.157\%$, elementary school education level was 47.2%, unemployed was 81.9%, respondents who did not use contraception hormonal and non-hormonal as many as 86.1%, respondents who did high physical activity were 93.1%, and respondents who did not have climacteric symptoms were 97.2%. The results of the Kendal Tau test showed a value (ρ value = 0.000), so there was a relationship between physical activity and climacteric symptoms in premenopausal women. In conclusion, physical activity has a relationship with climacteric symptoms in premenopausal women.

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Physical Activity and Climacteric Symptoms...

Introduction

Women experience changes in the reproductive system starting at the age of 4 -5 years before menopause. Levels of estrogen, the primary female hormone, in the body rise and fall unevenly during premenopause. Women are particularly affected by this shift since they go through menopause, a stage of ageing. Women will initially go through the premenopause period before entering the menopausal phase (Nasution, 2008). This premenopause phase occurs when there is a transition from the productive period to the absence of fertilization. Some women begin to experience premenopausal symptoms at the age of 40 years, and the peak occurs at the age of 50 years during menopause (Puspitasari, 2020).

According to estimates from the World Health Organization (WHO), there will be 1.2 billion premenopausal women globally in 2025, which will rise to 2 billion by 2050. Central Statistics Agency (BPS) census statistics from 2017 and 2018 showed that 67.18 million and 146 million women in Indonesia were 45 years of age or older, respectively. The Central Statistics Agency said the population of women aged 45 years and over in Central Java Province in 2019 reached 10.81 million out of a total population of 34.25 million (Harwati & ., 2020). Women aged 40-44 years in Klaten amount to 44,016 people, while women aged 45-49 years amount to 44,459 people (BPS Klaten, 2019).

Most women will begin to face premenopausal symptoms before entering the menopause period. Premenopausal symptoms occur due to decreased levels of estrogen and progesterone, causing symptoms that interfere with women's activities, especially threatening household happiness. The problem that arises is the loss of fertility and growing changes that have an impact on women's anxiety and worry. The impact that arises from premenopausal problems is called climacteric symptoms, issues that manifest as psychological and physical issues (Puspitasari, 2020).

Climacterium is a period that begins at the end of the reproductive stage. Various complaints mark this period. Climacterium is not a pathological condition but a natural transitional period lasting several years

before and after menopause (Rima Widiastuti, 2020). The climacteric complaints that appear are hot flashes, vaginal dryness, pain during intercourse, urinary tract problems, sweating at night, and heart palpitations. Not only that, there are psychological symptoms that arise during the climacteric period, namely difficulty sleeping, mood disorders, memory loss, and irritability (Aziza *et al.*, 2020).

Physical activity helps reduce the symptoms of climacterium. However, people of premenopausal age experience limitations in movement due to decreased muscle intensity. High physical activity is more common among respondents aged 45 – 59. A lack of physical activity exacerbates bone loss due to age. Bone and muscle endurance decrease and moderate or heavy activity will be challenging. One of the easiest non-pharmacological strategies to lessen the intensity of depression symptoms is to engage in physical activity. (Naworska *et al.*, 2020). Physical activity occurs because muscle and bone mass increase the calories needed, or the body consumes more calories than it needs. Travelling between locations, working out, and engaging in leisure or recreational activities, sitting, washing dishes, cooking, ironing, tennis, volleyball, cycling (16-22 km/hour), fitness or fitness, and running are some examples of physical activity (Nainggolan *et al.*, 2019). Based on the phenomena and problems above, research on the relationship between physical activity and climacteric symptoms needs to be carried out.

Method

This study's design employed a cross-sectional approach and descriptive correlation to investigate the association between premenopausal women's climacteric symptoms and physical activity.

This study used cluster sampling with a sample size of 72 premenopausal women. Samples came from 6 clusters in the research area. Researchers chose 12 respondents in each cluster with the criteria of premenopausal women aged 40-50 years who were willing to be respondents and did not experience disabilities or handicaps. The research instrument used the Menopause Rating Scale (MRS) and the Global Physical

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Activity Questionnaire (GPAQ), which consisted of demographic, physical activity, and climacteric symptoms characteristics. The results of the validity test of the GPAQ instrument in Indonesia are a value of $r = 0.65$ with details of moderate physical activity of $r = 0.45$, vigorous physical activity with a value of $r = 0.57$, moderate-to-vigorous physical activity with a value of $r = 0.54$.

Meanwhile, the reliability test of the GPAQ instrument is $r = 0.80$ (Xiaofen *et al.*,

Xiaolu Liu, Michael Hodges, Jingwen Liu, Jianmin Guan, Ashley Phelps, 2019). Meanwhile, the intraclass correlation coefficient (ICC) for the test-retest reliability of MRS ranged between 0.90 and 0.95. The Cronbach alpha coefficients were 0.92 (Susanti *et al.*, 2019). The Kendal tau test was employed in bivariate analysis to ascertain the association between physical activity and climacteric symptoms.

Results and Discussion

a. Ages

Table 1. Frequency Distribution of Respondents' Ages and Parity

Variable	Statistic				
	n	Min	Max	Mean	SD
Ages	72	40	50	44.86	3.041
Parity	72	0	5	2.76	1.157

Table 1 shows that the average age of the respondents was $44.86 \pm 3.041\%$. The youngest respondent was 40, while the oldest was 50. Proverawati's research (2019) states that most women have premenopausal symptoms in their 40s, peaking at the age of 50. This period occurs when there is a reduction in the ovaries' synthesis of the hormone estrogen, which is crucial for reproduction and fertilization. It can cause hormone levels in the body to be imbalanced, which ultimately causes various disorders. Research (Yildirim *et al.*, 2020) also explains that climacteric symptoms become more severe with increasing age when women reach menopause.

One of the things that can influence someone's activity level is their age. The amount of physical activity a person does will change with age. Their age might impact the quantity and quality of a person's daily physical exercise. This is because growing older will result in a decline in physical ability, including a reduction in maximal heart rate, muscle mass and strength. One of the things that can influence someone's activity level is their age. Their age might impact the quantity

and quality of a person's daily physical exercise. This is because growing older will result in a decline in physical ability, including a drop in maximum heart rate, muscular mass and strength, body fat, and cognitive performance (Dewi & Wuryaningsih, 2019).

The number of children is one of the factors that affect premenopause where women who give birth more often will take longer for the woman to enter the premenopause period (Jannah, 2018). Saimin *et al.* (2017) explained that the relationship between the number of children and premenopausal age was possible due to the involvement of a polymorphism gene that regulates the Anti Mullerian Hormone (AMH) receptor known as AMHR2. Along with the increase in the number of children, the AMHR2 gene will experience displacement due to the instability of the hormone progesterone during pregnancy. The effect of AMH causes the number of follicles in the ovaries to slough off, which will also be less. This will slow down the depletion of the supply of follicles in a woman's ovary, which will also slow her age towards premenopause.

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b. Level of Education, and Contraceptive Used

Table 2. Frequency Distribution of Level of Education, Contraceptive Used, Physical Activity and Climacteric Symptom

Variables	f	%
Education level		
Elementary	34	47.2
Junior High School	21	29.2
Senior High School	15	20.8
Diploma	2	2.8
Total	72	100
Contraceptive uses		
Hormonal	7	9.7
Non Hormonal	3	4.2
None	62	86.1
Total	72	100
Physical Activity		
Vigorous	67	93.1
Moderate	5	6.9
Low	0	0
Total	72	100
Climacteric Symptoms		
None	70	97.2
Low	2	2.8
Moderate	0	0
High	0	0

Table 2 shows that 42.2% (34 respondents) of research participants had only completed elementary school. The most common contraceptive use in this study was not contraception, at 86.1% (62 respondents). The study (Juliana *et al.*, 2021) obtained the findings of statistical tests, which indicate that there is no significant correlation between the degree of education and $p = 0.107$ ($p = 0.107 > 0.05$) and complaints during menopause, with the results of $OR = 2.510$, which means that respondents who have low education have 2,510 times more risk of experiencing severe complaints during menopause compared to respondents who have higher education. Education also includes people variables that can affect the spread of health problems. Where the prevalence of climacteric symptoms was found to be greater in educated women than in uneducated women, while among uneducated women, the prevalence of urogenital and psychiatric illnesses was higher. (Swetri, 2018)

Premenopausal women in this research do not use hormonal or non-hormonal contraception because most premenopausal women have their reasons, among others, choosing a family planning calendar, husbands who are not at home (migrating), fearing the effects of contraception on the body or health that will come if they continue to use them. Long-term use of hormonal contraception will result in the emergence of climacteric symptoms. The hormones contained in the contraceptive method have a negative effect on women's sexual lives in the long term. Research (Sari *et al.*, 2021) found that p -value = 0.00 indicates p -value < 0.05 , so there is a connection between the length of use of hormonal contraceptives and climatic symptoms in Gumul village. The correlation coefficient's value of $r = 0.902$ indicates a very strong positive correlation, meaning that the longer the use of hormonal contraception, the higher the Level of climacteric symptoms.

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Research (Swetri, 2018) entitled "Factors related to menopause complaints in menopausal women in the city of Pontianak" obtained a value = 0.651 (p-value > 0.05), which means H_0 is accepted (H_a is rejected), so it might be said that there is not a substantial connection between hormonal contraceptive use with menopausal complaints in the city of Pontianak. Hormonal contraceptives do not have a direct effect on menopausal complaints but rather on the length of time in entering menopause.

Considering the table above, the results showed that most of the respondents did strenuous physical activity, as many as 93.1% (67 respondents), and respondents who did not have symptoms, as many as 97.2% (70 respondents).

Daily activities routinely carried out by mothers who do not make money are doing daily household chores (washing, mopping and cooking), gardening, carrying heavy items such as carrying animal feed from the top of the mountain and doing physical sports activities such as volleyball and gymnastics. Sufficient physical activity can reduce complaints that occur in women who will experience menopause. Physical activity is one of the factors that affect the work of estrogen. Estrogen has an important role in climacteric complaints. As a person ages, the estrogen produced decreases due to a rise in the gonadotropin hormone and a fall in estrogen in the climacteric phase, which will cause physical and psychological symptoms. This result is supported by a study conducted (by El Hajj *et al.*, 2020), which showed that

premenopausal women's quality of life, menopausal symptoms, and physical activity levels are statistically significantly correlated. Physical activity can reduce vasomotor symptoms because of its effect on the balance of the endocrine system in the nervous system. It can increase the production of endorphins in the hypothalamus and peripheral nervous system. Thus, it helps stabilize body temperature, heart rate and breathing, improves pain stimulation, and reduces the risk of hot flushes.

The results of research conducted on complaints of discomfort in muscle joints and reduced memory were felt mainly by respondents. Women at the age of 46-55 years will experience signs of premenopausal symptoms, including physical changes in the form of menstrual irregularities caused by decreased levels of the hormones estrogen and progesterone; in addition to menstrual irregularities, the decrease in these hormones can cause other physical disorders, including vaginal dryness, dyspareunia, and other psychology disorders, such as dementia and depression. Research by Naworska *et al.* (2020) explains that depression symptoms are experienced by 32% and even 50% of women during menopause. In menopausal women, the risk of mood disorders is 2-3 times higher than in premenopausal women; moreover, females with moderate to severe vasomotor symptom intensity are more likely to experience depressive symptoms, and depressive symptoms are more common in the early menopause period.

c. Correlation Between Physical Activity and Climacteric Symptoms

Table 3. Correlation Between Physical Activity and Climacteric Symptoms

Physical activity	Climacteric Symptoms								P value	r
	None		Low		Moderate		Total			
	f	%	f	%	f	%	f	%		
Vigorous	67	93.1	0	0.0	0	0.0	67	93.1	0.000	-0.950**
Moderate	3	4.2	2	2.8	0	0.0	5	6.9		
Low	0	0.0	0	0.0	0	0.0	0	0.0		

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Table 3 shows that respondents who have strenuous physical activity have no climacteric symptoms as many as 93.1% (67 respondents), respondents who have moderate physical activity do not have climacteric symptoms as many as 4.2% (3 respondents), respondents who have moderate physical activity have mild symptoms as much as 2.8% (2 respondents). Bivariate analysis revealed that the p-value was $0.000 < 0.05$, indicating that H_a was accepted and H_o was rejected. This suggests that physical activity and climacteric symptoms were significantly correlated in premenopausal women. The Correlation coefficient value or r value 0.950 indicates a very strong negative relationship, meaning that the heavier the physical activity, the lower the climacteric symptoms in premenopausal women. The findings of this investigation are consistent with a study titled "Physical Activity and the Degree of Climate Complaints in Women aged 40-65 years in Sikeli Village in 2017". The results of data analysis obtained P value ($0.003 < (0.05)$). The amount of climacteric complaints in women between the ages of 40 and 65 correlates with physical activity; it can be determined. The Correlation Coefficient Value Or R-Value = -0.950^{**} Indicates A Very Strong Negative Relationship, indicating that in premenopausal women, climacteric symptoms decrease with increasing physical activity. This study's findings are consistent with the investigation named "Between Physical Activity and Delayed Levels of Premenopausal Women in Merjosari Village, Lowokwaru District, Malang City" explaining that Physical activity and the severity of urogenital symptoms are correlated ($R = -0.340$) and psychological ($r = -0.309$). this research can conclude that the heavier the physical activity, the lighter the urogenital and psychological complaints (Azura, 2017). Additionally, the study's findings are consistent with Jannah (2018) explaining that based on research conducted as many as 52.7% of respondents experienced mild physical changes, mild physical changes experienced by respondents were marked by early symptoms in the form of menstrual irregularities, where menstrual irregularities in menopausal women were caused by decreased menstruation levels of estrogen and

progesterone hormones produced by the ovaries in women.

Physical activity is one of the factors that affect the work of estrogen. Estrogen has a vital role in climacteric complaints. As a person ages, the estrogen produced decreases due to a rise in gonadotropin hormones and a fall in estrogen during the climacteric phase, which will cause physical and psychological symptoms. Physical activity is indirectly related to complaints through activities that can affect physical and mental health. Women who increased their physical activity over time had fewer somatic, urogenital and psychological complaints. Physical activity can affect these complaints. Physical activity can inhibit the decline in motor skills. Regular physical activity can help to lose weight, improve sleep quality, strengthen bones and improve mood (Azura, 2017).

Conclusion

Physical activity in premenopausal women is mostly vigorous. Most of the climacteric symptoms in premenopausal mothers were not climacteric symptoms. In premenopausal women, there is a connection between physical activity and climacteric symptoms.

Limitations of the study

In this study, data collection regarding the duration of physical activity depended on the respondents' perceptions or memories when filling out the questionnaire.

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Conflict of Interest

Research has not identified factors that influence climacteric symptoms in premenopausal women. Future research is hoped to address this topic.

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