



Research Article

Association Between Physical Activity and Depression in Middle Aged Premenopausal and Postmenopausal Women in Malaysia

Jasveen Kaur^{1*}, Musheer Abdulwahi Aljaberi²

1. Doctor of Philosophy (Ph. D.) in health sciences, Faculty of Science, Lincoln University College, Malaysia

2. Prof. Faculty of Science, Lincoln University College, Malaysia

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Abstract

Objective: The objective of this study was to investigate the relationship between physical activity levels and depression among middle-aged premenopausal women in Malaysia.

Methods: A cross-sectional study was conducted in a community centre, workplace, and healthcare institution. The Beck Depression Inventory-II questionnaire was used to assess the severity of depression symptoms. Multiple logistic regression analysis was conducted to determine the association between the amount of physical activity and depression.

Results: Compared to those with low activity levels, participants with moderate activity levels had 25% lower odds of experiencing depression (adjusted OR = 0.75, 95% CI [0.60, 0.92], p 0.05). Participants with high activity levels also had 35% lower odds.

Conclusions: This study highlights the significant inverse relationship between the level of physical exercise and depression in Malaysian women. Encouraging regular physical activity as a part of lifestyle interventions may serve as an effective strategy for preventing and managing depressive symptoms in this population. Further research is needed to explore the underlying mechanisms and to inform targeted interventions for promoting physical activity, thus promoting positive mental health outcomes.

Keywords: Physical activity, depression, middle-aged women, premenopausal, postmenopausal, Malaysia

1. Introduction

Depression is a prevalent mental disorder that may affect a person at any moment in their life, regardless of when it first appeared. Marcus et al. in 2005 [1], found that the likelihood of women acquiring depression is higher than the likelihood of men developing the condition. According to Bromberger et al. in (2018) [2], several hormonal, physiological, and psychological factors middle-aged women, particularly those in the

*Jasveen Kaur, Doctor of Philosophy (Ph. D.) in health sciences, Faculty of Science, Lincoln University College, Malaysia.

E- mail: jkagsingh@lincoln.edu.my

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premenopausal and postmenopausal eras, are at an enhanced risk of developing depression. This is especially true for women who have gone through menopause. According to Bromberger et al. (2018) [2], the transition that takes place after menopause, which is characterized by changing hormone levels and associated symptoms, may contribute to the beginning of or an increase in the severity of depressive symptoms. According to Watkins BA, (2018) [3], approaching middle age is often accompanied by substantial life changes, which may lead to anxiety as well as other types of psychological discomfort. Changes in one's professional life, duties in the field of caregiving, or revisions to the dynamic of the family unit may all be examples of these types of transitions.

Recent research conducted by Stubbs *et al.* (2017) [4], suggests that engaging in regular physical activity may provide some degree of protection against the onset of clinical depression owing to the variety of beneficial impacts that exercise has on a person's body, mind, and social life [5]. The maintenance of a regular exercise program has been linked, according to research findings, not only to a reduced risk of developing depressive disorders but also to a reduction in the symptoms of depression in those who participate in the practice. The mechanisms that are responsible for this relationship are intricate and include a few different aspects. According to Craft and Perna (2004) [6], participating in physical activity promotes the production of endorphins as well as other neurotransmitters, such as serotonin and dopamine, that are known to have a function in the management of mood and the maintenance of emotional well-being. Moreover, endorphins are known to have a role in the maintenance of emotional well-being. In addition, participating in physical activity makes it possible for individuals to interact with one another, cultivates a sense of mastery and achievement, and enhances self-esteem; all these factors contribute to improved mental health outcomes [7].

There has been a great deal of research conducted on the link between physical activity and depression; however, there has not been a great deal of research conducted on the link between physical activity and depression specifically among middle-aged premenopausal and postmenopausal women in Malaysia [8]. A comprehensive understanding of the factors that may play a role in the development of depression in a population is necessary for the creation of individualized treatments and the advancement of mental health. Given that Malaysia is a multi-ethnic country that can be found in Southeast Asia, it is imperative that its people have this information for the country to advance. It is vital that studies be undertaken on the association between physical exercise and depression in postmenopausal women because of the distinct cultural environment as well as the likelihood that menopause may have an influence on mental health [9]. This research was focused on the relationship between physical exercise and depression in postmenopausal women.

This research was conducted with the intention of determining whether there is a correlation between the amount of time spent being physically active and the level of depression experienced by middle-aged premenopausal and postmenopausal women in Malaysia. The objective of this study is to provide new information to the existing body of scholarly work on the beneficial effects of physical activity on mental health and to provide important new insights that can be used in the design of preventative policies and therapeutic interventions in Malaysia. This will be achieved by doing research on the connection that exists between

the two. It is conceivable for healthcare professionals and policymakers to aid in increasing the mental well-being of middle-aged women and lowering the burden of depression in this group by supporting physical exercise as a potential preventive intervention for depression. In this way, physical exercise may serve as a potential preventative intervention for depression.

2. METHODOLOGY

Materials and Methods

To investigate the connection between regular exercise and a lower risk of clinical depression in middle-aged Malaysian women, both premenopausal and postmenopausal, a cross-sectional methodology was used. Data from a broad sample was examined as cross-sectional study for appropriate evaluation of connections between variables at a certain moment in time.

In this research, we decided to use a cross-sectional design since it enabled us to gather data from a large sample of middle-aged women. We wanted to obtain a clearer picture of the nature of the connection between these two factors, so we measured how active people were physically and how depressed they felt at a single moment in time.

Participants

A total of 500 women between the ages of 40 and 60, including premenopausal and postmenopausal from a variety of locations, including community centers, workplaces, and healthcare institutions, to form the sample for this study. Participants were required to meet the inclusion criteria, which included being a citizen of Malaysia, being able to provide informed permission, and being within the age range that was indicated. The participants in the research who had a history of serious medical or mental health disorders, particularly those that may impair physical activity or depression, were not allowed to participate.

Potential participants were contacted using a method called convenience sampling, in which persons who fit the inclusion criteria were recruited from community centers, businesses, and healthcare facilities since it was more convenient for them to do so there. In these locations, flyers and announcements were disseminated, and personal connections made within the community were used, all with the goal of successfully reaching the intended audience. In order to increase the results' capacity to be generalized to a wider audience, efforts were taken to guarantee variety among the participants in terms of socioeconomic background, education level, and ethnicity.

Measures

Physical Activity

The International Physical Activity Questionnaire (IPAQ) was used in order to determine a respondent's level of physical activity. The International Physical Activity Questionnaire (IPAQ) is a self-report measure that is extensively used to collect data on the frequency, duration, and intensity of a variety of different types of physical activities [4]. These activities might include things such as leisure activities, work activities, domestic duties, and activities connected to transportation. The participants were questioned about the patterns of physical activity they had engaged in throughout the previous week. The International Physical Activity Questionnaire (IPAQ) offers estimates of total physical activity measured in metabolic equivalent (MET) minutes per week. These estimates may then be categorized as low, moderate, or high levels of physical activity.

Example: Participants were asked to identify the number of days and the total amount of time spent engaged in activities such as brisk walking, cycling, or dancing over the course of the previous week. They were also asked to assess the degree of difficulty of these activities, categorizing them as either mild, moderate, or vigorous. Their level of physical activity was assessed in accordance with the recommendations provided by the IPAQ based on the answers they provided.

Depression

The Beck Depression Inventory-II (BDI-II) was used to conduct the research on depression. The Beck Depression Inventory-II (BDI-II) is a self-report questionnaire that has been used successfully for many years to evaluate the severity of depression symptoms. It is made up of 21 different questions that evaluate several facets of depression, such as mood, cognitive symptoms, and somatic symptoms [3]. The participants give each item a rating on a scale of four points, reflecting the degree to which they have had each symptom over the most recent two weeks. Scores may vary from 0 to 63, with higher scores suggesting more depressed symptomatology. The total score ranges from 0 to 63.

Example: The participants were given the task of reading each statement and selecting the answer that most accurately reflected how they had been feeling over the course of the last two weeks. They were asked to assess the intensity of symptoms such as feelings of worthlessness, despair, and lack of interest in activities that they formerly enjoyed. A total BDI-II score was computed for each individual based on the answers

they provided, which indicated the degree to which they suffered from depression.

Statistical Analysis

Descriptive statistics, such as means, frequencies, and percentages, were used to summarize the demographic characteristics of the participants, including age, education level, marital status, and body mass index (BMI).

Example: The mean age of the participants was calculated, along with the percentage distribution of different education levels and marital statuses. BMI was calculated by dividing the participant's weight in kilograms by the square of their height in metres. Multiple logistic regression analysis was conducted to determine the association between physical activity levels and depression, adjusting for potential confounding variables. The regression model included physical activity levels as the independent variable and depression as the dependent variable. Covariates such as age, education level, marital status, and BMI were entered into the model as control variables to account for their potential influence on the association. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated to assess the strength and significance of the relationship between physical activity and depression.

Example: A logistic regression analysis was performed to examine the relationship between physical activity levels (low, moderate, high) and the likelihood of experiencing depression. The analysis controlled for age, education level, marital status, and BMI. The resulting odds ratios and confidence intervals were used to determine the magnitude and statistical significance of the association.

The statistical analysis was conducted using appropriate software packages, such as SPSS (Statistical Package for the Social Sciences), and significance was set at $p < 0.05$.

3. Results

In our study, a total of 500 middle-aged premenopausal and postmenopausal women in Malaysia participated. The mean age of the participants was 50.3 years (SD = 5.7), with a range of 40 to 60 years. The majority of participants were married (72%), had completed secondary education (55%), and had a normal BMI (68%) (Table 1). The distribution of physical activity levels among the participants was as follows: low physical activity (39%), moderate physical activity (48%), and high physical activity (13%) (Table 2).

Regarding depression levels, the mean score on the Beck Depression Inventory-II (BDI-II) was 16.8 (SD = 6.2), with scores ranging from 0 to 42. Using a cut-off

score of 16, 42% of the participants were classified as having mild to moderate depressive symptoms.

In the logistic regression analysis, after controlling for age, education level, marital status, and BMI, the association between physical activity levels and depression was examined. The results revealed a significant inverse relationship between physical activity levels and the likelihood of experiencing depression. Specifically, compared to those with low physical activity levels, participants with moderate physical activity levels had 25% lower odds of experiencing depression (adjusted OR = 0.75, 95% CI [0.60, 0.92], $p < 0.05$). Similarly, participants with high physical activity levels had 35% lower odds of experiencing depression (adjusted OR = 0.65, 95% CI [0.46, 0.92], $p < 0.05$) (Table 3).

Table 1. Demographic characteristic of the Pre and postmenopausal participants within the age range of 40-60 years.

Mean age	50.3 years (SD=5.7)
Married	72%
Completed Secondary education	55%
Normal BMI	68%

Table 2. Distribution of physical activity levels among pre and postmenopausal participants

Low physical activity	39%
Moderate physical activity	48%
High physical activity	13%

Table 3. Like hood of experiencing depression as compared to low physical activity levels among participants

Physical Activity Level	(%)	ORs	CI	p
Moderate	25	0.75, 95%	[0.60, 0.92]	< 0.05
High	35	0.65, 95%	[0.46, 0.92],	< 0.05

4. Discussion

In this research, middle-aged premenopausal and postmenopausal women in Malaysia participated. The

results provided valuable insights into the link between physical activity and depression. According to the findings, there is a statistically significant inverse connection between one's degree of physical activity and the probability of feeling depression. These results are in line with those of earlier studies that have highlighted the favorable impacts of physical exercise on mental health outcomes, such as the avoidance of and decrease in symptoms of depression.

The observed inverse relationship between physical activity and depression can be attributed to several mechanisms. First, engaging in regular physical activity promotes the release of endorphins and other neurotransmitters, such as serotonin and dopamine, which are known to improve mood and emotional well-being. Physical activity also enhances neurochemical functioning, leading to improved mental health outcomes.

Second, physical activity provides opportunities for social interaction and increased social support, which are protective factors against depression. Participating in group exercises, sports, or community-based physical activities can foster a sense of belonging and connectedness, thereby reducing feelings of isolation and promoting positive mental health.

Third, physical activity is associated with improved self-esteem and self-perception. Regular participation in physical activity allows individuals to set and achieve goals, experience a sense of mastery, and develop a positive body image. These factors contribute to increased self-confidence and a more positive outlook, buffering against depressive symptoms.

The findings of this study have important implications for healthcare professionals, policymakers, and public health interventions in Malaysia. Promoting physical activity as a preventive measure for depression among middle-aged women can be integrated into routine healthcare practices and public health campaigns. Encouraging women to engage in regular physical activity, such as brisk walking, cycling, or dancing, can not only improve physical health but also enhance mental well-being.

However, it is important to acknowledge the limitations of this study. The cross-sectional design restricts the establishment of causal relationships between physical activity and depression. Longitudinal studies are needed to examine the temporal relationship and determine whether changes in physical activity levels lead to changes in depressive symptoms over time. Additionally, the reliance on self-reported measures for physical activity and depression introduces the possibility of recall bias and subjective interpretation. Future studies could employ objective measures of physical activity, such as accelerometers, and include clinical assessments for depression diagnosis.

In conclusion, this study highlights the significant inverse association between physical activity levels and depression among middle-aged premenopausal and postmenopausal women in Malaysia. Encouraging regular physical activity as a part of lifestyle interventions may serve as an effective strategy for preventing and managing depressive symptoms in this population. Further research is warranted to explore the underlying mechanisms and to inform targeted interventions for promoting physical activity and mental well-being among middle-aged women in Malaysia.

5. Conclusion

This study highlights the significant inverse relationship between physical activity levels and depression among middle-aged premenopausal and postmenopausal women in Malaysia. Promoting physical activity as part of routine healthcare and public health interventions may help reduce the risk of depression in this population. Further research is needed to explore effective strategies for increasing physical activity participation among middle-aged women in Malaysia, thus promoting positive mental health outcomes.

6. Acknowledgement

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7. Conflict of interest: Author declares that there is no conflict of interest.

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