

Correlation between Participation in Physical Activity and Psychological Well-being among Elderly Women: The Mediating Role of Resilience

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Received: April 02, 2024; Revised: May 14, 2024; Accepted: June 08, 2024

Abstract

Background: Physical activity (PA) and resilience may be effective in increasing the strength, vitality and productivity of the elderly. Therefore, in this study, we aimed to explore the correlation between participation in PA and psychological wellbeing among elderly women with considering the mediating role of resilience.

Methods: This descriptive-correlational study consisted of 320 elderly women in Tehran, Iran in 2023 who were selected through convenience sampling technique. Standard Questionnaires were used for data collection. Pearson correlation test and the path analysis were used for data analysis.

Results: The level of engagement in PA was below the average (256.47 out of 793). Also, PA had a significant correlation with psychological well-being ($r=0.589$, $P<0.001$). Additionally, PA had a significant correlation and resilience ($r=0.714$, $P<0.001$). Furthermore, resilience had a significant correlation with psychological well-being ($r=0.625$, $P<0.001$). Finally, resilience significantly mediated the correlation between PA and psychological well-being ($Z=5.967$, $P<0.001$).

Conclusion: The findings of the study clearly demonstrated that active participation in PA plays a significant role in enhancing the mental well-being of older women. Therefore, it is highly recommended to prioritize the promotion of PA as the primary strategy to improve the psychological well-being of elderly women.

Keywords: Exercise, Mental health, Resilience, Aged, Women

How to Cite: Najafzadeh F, Ranjbari S, Shafaei H, Ghorbani S. Correlation between Participation in Physical Activity and Psychological Well-being among Elderly Women: The Mediating Role of Resilience. Women. Health. Bull. 2024;11(3):188-194. doi: 10.30476/WHB.2024.102534.1291.

1. Introduction

The population of people over 65 years old will reach 22% of the total world population in 2050 (1, 2). It is projected that the percentage of individuals aged 65 and older will account for 19.7% of the total population by the year 2050 (3). The rising number of elderly individuals poses a significant economic, social, and health challenge for the 21st century (4). With the aging of the nations, the problems of the elderly are increasing day by day (5, 6). Psychological well-being can be considered as the most common and most important cause of damage to the psychosocial functioning of the elderly (7-9). Psychological well-being is one of the components of health, which is defined as a person's effort to realize his potential talents and abilities (10, 11). Increasing the level of well-being can lead people to healthier supportive social correlations, success in life, and higher overall health (12). But the decrease in the level of psychological well-being makes a person evaluate

the events of his life as unfavorable and experience more negative emotions. A sense of competence, autonomy and ability to manage the surrounding environment, creating positive correlations with others, personal growth, purposefulness in life and self-acceptance, and a positive feeling about oneself and the past life are components of psychological well-being and characteristics of a healthy person (10, 12). Given the importance of psychological well-being, it is necessary to know its antecedents. It seems that one of the important variables in relation to psychological well-being is participation in physical activity (PA).

Previous studies conducted on successful aging indicated that the habits and lifestyle of these people have a great impact on their overall health, and the health-enhancing lifestyle helps to improve their quality of life (13-15). An active lifestyle delays the aging process, and the elderly who are active have more health and vitality (14). Regular PA prevents the occurrence of cardiovascular diseases, diabetes

and other systemic diseases, and affects overall health and also regeneration in acute and chronic diseases (15, 16). PA maintains overall health by reducing the risk of contracting chronic diseases, it increases self-confidence and life expectancy, and by increasing the release of serotonin hormone, it creates enthusiasm to carry out daily activities and relieve depression (16-18). In addition, PA, due to its positive effects on overall health, have a valuable role in the rehabilitation and treatment management of mental patients (14, 16). Several studies have shown the positive effect of regular aerobic exercise in reducing symptoms related to mental disorders, such as anxiety and depression, and increasing self-confidence and improving mood (14, 15, 17, 18).

Research showed that PA can act as a protective mechanism against psychological problems and other psychological vulnerabilities (13, 15, 18). Moreover, resilience has a positive correlation with athletic success and psychological well-being (19-21). Psychological well-being is one of the variables closely related to resilience (22) so that resilient people are generally able to maintain their overall health and recover easily from stressful life events. It seems that psychological well-being and resilience should be sought in the first place in the components that play an essential role in its continuation including PA. Research indicated that yoga training can increase the psychological well-being and happiness of people about to retire (23, 24). Also, physical fitness is associated with improved psychological well-being in adults (20, 22). As a result, it can be stated that PA and resilience can be effective in increasing the strength, vitality and productivity of the elderly. Therefore, in this study, we aimed to explore the correlation between participation in PA and psychological wellbeing among elderly women with considering the mediating role of resilience.

2. Methods

The present descriptive-correlational study included women over 65 years of age who were members of the Center for the Elderly of the Municipal Health Department of Districts 5 and 22 districts of Tehran, Iran in 2023. A total number of 320 elderly women were selected through convenience sampling technique. The inclusion criteria were: 65+ years of age, membership in the Center for the Elderly in the Municipal Health

Department of Districts 5 and 22 of Tehran, Iran. Those who did not complete the research questionnaires were excluded from the study. The study adhered to ethical standards of obtaining informed consent, privacy, and maintaining confidentiality.

The elderly participants were asked to fill out the Physical Activity Scale for the Elderly (PASE) (25), which consists of 12 items. This scale evaluates how often, how long, and how intense a variety of activities commonly enjoyed by individuals over the age of 65 are. PASE scores can range from 0 to 793, with higher scores indicating a higher level of physical activity. The validity of the scale was confirmed by eight experts, with a CVI of 0.92 and a CVR of 0.90. Furthermore, the scale demonstrated good internal consistency with a Cronbach's alpha of $\alpha=0.89$.

Ryff's Psychological Well-Being Scale (RPWBS) short-form (26), consisting of 18 items, was used to assess psychological well-being. Responses were scored on a six-point Likert scale ranging from 1 (completely disagree) to 6 (completely agree). A higher score indicates greater psychological well-being. The validity of the scale was established by eight experts, yielding a CVI of 0.94 and a CVR of 0.96. Moreover, the scale demonstrated good internal consistency with a Cronbach's alpha of $\alpha=0.92$.

The measurement of resilience was conducted using the Davidson & Conner Resilience Questionnaire (27), which consists of 25 items scored on a Likert scale ranging from 0 (completely false) to 5 (always true). This results in a test score range of 0 to 100, where higher scores indicate greater resilience. The validity of the questionnaire was established through the assessment of eight experts, yielding a CVI of 0.88 and a CVR of 0.90. Furthermore, the scale demonstrated a high level of internal consistency with a Cronbach's alpha coefficient of $\alpha=0.90$.

The data were analyzed using SPSS version 26, where the variables were described using mean and standard deviation (SD). To determine normal distribution of the data, K-S test was performed. The correlations among the variables were assessed using the Pearson correlation test. Finally, the structural correlations among the variables were examined using the structural equation modeling

with Lisrel. The level of significance was set at 0.05.

3. Results

The study included 320 women who were classified as older adults, aged over 65 years with a mean age of 68.92 ± 3.74 . Also, 65% of the participants were married, and only 6% had completed a college education. The study participants had an average body mass index (BMI) of 26.55 ± 2.64 .

Table 1 illustrates descriptive data and correlations between the study variables. Level of engagement in PA was below the average (256.47 out of 793). Similarly, the average score for psychological well-being was relatively low (49.18 out of 108). Additionally, mean resilience score among the participants is at an average level (55.69 out of 100). Furthermore, all variables follow a normal distribution (all $P > 0.05$). The findings demonstrated a significant positive correlation between PA and psychological well-being ($P < 0.001$). Moreover, PA showed a direct and significant correlation with resilience ($P < 0.001$). According to results, resilience was directly and significantly linked to psychological well-being ($P < 0.001$).

Table 2 and Figure 1 show the results of structural equation modeling. The findings indicated that PA had a significant correlation with psychological well-being ($T=5.284$). Also, PA had a significant correlation with resilience ($T=7.254$). Furthermore, resilience had a significant correlation with psychological well-being ($T=6.958$). Finally, resilience significantly mediated the correlation between PA and psychological well-being ($P < 0.001$). The model fit results demonstrated a good fit of the model (RMSEA=0.07; $X^2/df=2.70$; RMR=0.04; NFI=0.96; CFI=0.96).

4. Discussion

The primary finding of this study revealed that older women in this study had a limited level of PA. Previous research also demonstrated the lack of PA among the elderly (28-30). Given the crucial impact of engaging in regular PA on the overall well-being (31-34), it is imperative to implement interventions and strategies aimed at enhancing their participation in PA. Our findings indicated that PA has a significant correlation with the psychological well-being of women older adults. This is in line with those of previous studies (14, 15, 17, 18).

Table 1: Descriptive data and bivariate correlations between variables

	Mean±SD	1	2	3
1. Physical Activity	256.47±63.94	-		
2. Psychological well-being	49.18±16.47	r=0.589 P<0.001	-	
3. Resilience	55.69±10.28	r=0.714 P<0.001	r=0.625 P<0.001	-

SD: Standard Deviation

Table 2: Results of structural equation modelling

		β	T value
1	Physical Activity => Psychological well-being	0.528	5.284
2	Physical Activity => Resilience	0.697	7.254
3	Resilience => Psychological well-being	0.607	6.958
		Z	P value
4	Physical Activity => Resilience => Psychological well-being	5.967	P<0.001

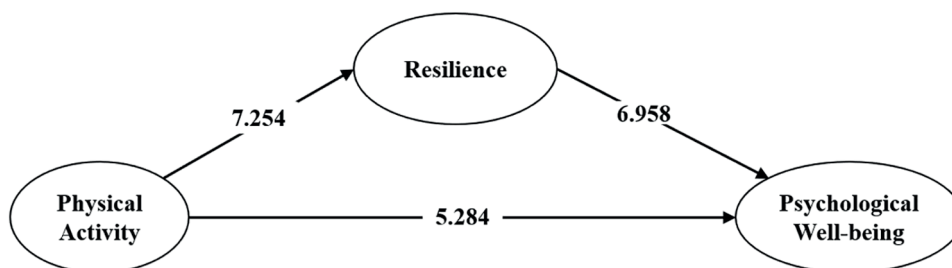


Figure 1: The figure shows the structural equation modelling in the form of T values.

Engaging in regular exercise appears to play a crucial role in maintaining overall health (13). By reducing the likelihood of developing chronic conditions, it contributes to an increased life expectancy and fosters a sense of enthusiasm for daily activities while alleviating symptoms of depression (15). Furthermore, PA triggers the release of serotonin, a chemical in the body associated with mood regulation. Low levels of serotonin are linked to depression, and antidepressants are often prescribed to boost serotonin levels (17). Consequently, older adults who engage in regular exercise are less likely to experience depression. Moreover, exercise leads to the production of endorphins, epinephrine, and cytokines, which naturally enhance alertness, mood, energy levels, and vitality in older individuals, enabling them to carry out daily tasks more effectively (16, 18). Additionally, the physiological benefits of exercise contribute to a heightened sense of inner satisfaction, fostering a sense of accomplishment and boosting self-confidence, thereby reducing feelings of depression. Depressed individuals often lack self-confidence or have low self-esteem (14, 16).

In this study, it was demonstrated that resilience serves as a mediator in the connection between spiritual activities and psychological well-being. Our findings suggested that the higher the resilience of older individuals, the more significant the effect of PA on their psychological well-being (19, 20). By fostering positive emotions, resilience aids in effectively dealing with adverse experiences. A decline in resilience levels in response to life events can result in feelings of mental strain, anxiety, or depression. Strengthening resilience enables individuals to confront and overcome stressors and other factors contributing to various psychological issues (22-24). Resilience plays a crucial role in maintaining mental well-being by managing and alleviating stress and depression. Given the growing elderly population and the challenges they encounter, it is essential to prioritize mental health, particularly resilience, in old age.

4.1. Limitations

The present study has some limitations, as it only focused on the community in the city of Tehran, Iran. Consequently, the generalization of the study results should be approached with caution. Furthermore, only a questionnaire was used to collect the data, serving as another limitation.

Moreover, this study is further limited by the fact that the study tool relies on self-reported data. Additionally, the results of this study were derived from a cross-sectional survey.

5. Conclusions

The study results unequivocally demonstrated that PA plays a crucial role in enhancing the mental health of older women. Additionally, it is important to highlight that the connection between PA and psychological well-being is strengthened by the resilience of the elderly population. It is important to highlight that the overall level of PA among the elderly participants in this study was low, which emphasizes the need for implementing policies and strategies to enhance their PA. Based on the findings of this study, it is recommended that health policymakers focus on promoting and enhancing the factors and components that contribute to the resilience of older individuals. Additionally, it is important to prioritize health literacy and provide education to the elderly population. Moreover, creating opportunities for increased social participation among the elderly is suggested to foster positive self-perception and enhance their capabilities.

Acknowledgement

Many thanks to all the students and parents who helped us in this study.

Authors' Contribution

Farrokhlegha Najafzadeh: Substantial contributions to the conception, design of the work, acquisition of data for the work, drafting the work. Sheida Ranjbari: Design of the work and drafting the work. Hassan Shafaei: Substantial contributions to the conception, design of the work, drafting the work and reviewing it critically for important intellectual content. Saeed Ghorbani: Design of the work, acquisition, analysis, and interpretation of data for the work, drafting the work. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such as the questions related to the accuracy or integrity of any part of the work.

Ethical Approval

The University Ethics Review Board approved

the present study with the code of IR.IAU.AK.REC.1398.002. Also, written informed consent were obtained from parents of children.

Funding Source: No funding.

Conflict of Interest: None declared.

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