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RESEARCH PAPER

Association of Physical Activity with Loneliness among Middle Aged and Older Adults

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ABSTRACT

In order to investigate how physical activity impacts loneliness, the primary objective of the study was to examine the link between physical exercise and loneliness in middle-aged and older persons. 400 people from Lahore, both men and women took contribution to the cross-sectional study. The International Physical Activity Questionnaire (SV), the UCLA 3-item loneliness scale, and demographic questionnaires were used in order to collect the data. The results of the study indicated a significant negative relationship between exercise and loneliness. According to the data analysis, both age groups who engaged in more physical activity indicated lower feelings of loneliness. The results suggested that physical activity has a significant effect on reducing loneliness in later life. The results of this study have significant importance for the community's encouragement of physical activity

Keywords: Loneliness, Middle Aged Adults, Older Aged Adults, Physical Activity

Introduction

The definition of loneliness is a feeling of social isolation that is related to perceived deficiencies in the nature and number of one's social connections (Coyle & Dugan, 2012). Age-related life changes, such as retirement, the death of friends and relatives, and the relocation of social aspects, may result in a drop in social connections and an increased chance of feeling lonely (Holt-Lunstad, 2021). According to research, a high proportion of persons in their middle years and older experience loneliness. For instance, according to a study by Victor and Yang (2012), 30% of middle-aged and elderly people from the UK reported having chronic loneliness issues. In the previous literature, researchers have focused heavily on the detrimental effects of loneliness on psychological well-being and have highlighted its link to mental deterioration, tension, and depressive symptoms in middle aged and elderly people (Cacioppo et al., 2015; Victor & Yang, 2012).

One of the many options, physical activity is a viable solution to the loneliness problem affecting middle-aged and older adults. International recommendations suggested that older persons should engage in moderate physical exercise of about 150 minutes each week. (World Health Organization, 2010). Regular physical exercise, including a variety of exercises and activities, has been linked to a number of advantages for psychological well-being. According to current research, exercise has been shown to reduce stress and improve mood regulation, hence boosting mental health (Ekkekakis et al., 2016). Additionally, taking part in group-based physical activities like health classes

or group walking can help open doors to new social connections and increased social engagement (Chou et al., 2014; Pels & Kleinert, 2016). According to existing evidence, physical activity-induced endorphin release and changes in the brain, may contribute to a more developed mindset and reduce loneliness (Slavich & Irwin, 2014).

Physical exercise and loneliness are two essential components of middle-aged and older individuals' well-being that have different effects on their general health. Chronic loneliness increases your risk of developing mental health issues like depressive and anxiety disorders as well as cognitive decline in middle-aged and older persons (Cacioppo & Hawkley, 2009; Hawkley & Cacioppo, 2010). Additionally, loneliness can worsen pre-existing medical issues and lower a person's quality of life. Physical activity, on the other hand, has been acknowledged as one of the successful therapies to enhance the well-being of middle aged and older adults. According to studies by Stessman et al. (2009); (Warburton et al., 2006), regular physical activity is connected to a number of benefits for physical health, including improved cardiovascular health, reduced risk of developing chronic diseases and, and increased mobility. Physical activity is also known to improve mental health by lowering stress, anxiety, and depressive symptoms, which in turn promotes a general sense of well-being (Rosenbaum et al., 2014).

On the specific association between physical exercise and loneliness among this population, there is still a significant research gap. While earlier studies have shown the benefits of exercise for mental health and wellbeing (Rosenbaum et al., 2014; Stessman et al., 2009), comprehensive research on how physical activity specifically affects loneliness in elderly and middle-aged adults is lacking. The majority of the literature currently in research focuses on the connection between physical activity and specific physical health outcomes, such as cardiovascular function and the prevention of chronic diseases(Warburton et al., 2006), or on the connection between physical activity and general mental health outcomes, such as depression and anxiety (Rosenbaum et al., 2014). However, not much study has been conducted to determine if engaging in physical activity can prevent loneliness by increasing social interaction and lowering feelings of social isolation. In order to better understand how physical activity may help reduce loneliness and to create focused interventions to improve middle-aged and older adult's overall health and interaction with others, it is essential to fill this research gap.

Understanding factors that may lessen loneliness, such as physical activity, therefore becomes a crucial concern in promoting emotional well-being and prosperity elderly and middle-aged adults. This study aims to investigate the relationship between physical exercise and loneliness in older and middle-aged individuals, aiming to uncover potential links that could have implications for promoting healthier aging and improving the quality of life in this population.

Literature Review

Older and middle-aged people are especially vulnerable to loneliness, which negatively impacts their quality of life and general health. Researchers had done various researches on physical activity and loneliness in order to address this problem which we given below:

Research conducted by Pengpid and Peltzer (2021) on middle-aged and older adults, reported a relationship between physical activity and loneliness, indicating that those who experience loneliness are likely to be less physical active than those who don't. In extending this research to older persons, similar findings of the association between

routine exercise and loneliness were found by Newall et al. (2013). A longitudinal research conducted by Hawkley et al. (2009) provided more support for the beneficial effects of routine physical exercise on mitigating loneliness among older and middle-aged persons.

With a systematic analysis of the relationship between physical exercise and loneliness, Pels and Kleinert (2016) discovered that engaging in physical activity assisted older and middle-aged individuals feel less lonely. In a qualitative study, Hwang et al. (2019) highlighted the psychological advantages of physical exercise in reducing loneliness in elderly people.

Researchers also looked into the social implications of loneliness and physical activity. Sebastião and Mirda (2021) clarified way social connections established by exercise-related group activities for older adults reduced feelings of loneliness. According to a study by Vancampfort et al. (2019) that included participants from 6 countries, loneliness was more prevalent among those in all of the countries who did not engage in physical activity.

Additionally, studies have looked into the psychological factors that explain the association between exercise and loneliness. According to research by An et al. (2020), regular physical activity had a significant impact on happiness, which can lessen feelings of loneliness in older and middle-aged individuals.

The literature review concludes by highlighting consistent evidence to support positive relationship between higher levels of physical exercise to a reduction in loneliness among middle-aged and older persons. A viable approach to lessen loneliness and improve social interactions is regular exercise.

Material and Methods

Study design

This research design was quantitative cross-sectional study.

Population and Sample Size

This study was conducted among the older and middle-aged individuals population of Lahore. According to the Pakistan Census 2017, the middle-aged and elderly peoples' population in Lahore is Approximately 2400000 (including both males and females). The sample size was calculated using Yamane Formula (Yamanae, 1973), that was 400 participants including 343 males and 57 females. Age range of the sample was 45-75 years. Participants have participated voluntarily in this research. All the participants were given the questionnaire which was then completed by them.

Tools

The following tools were utilized for data collection:

Demographic Section

This section included 14 questions related to the age, gender, area and status of residency, marital status, children, smoker, number of days used to do exercise, job status, BMI and resting heart rate etc.

International Physical Activity Questionnaire (I-PAQ)

The International Physical Activity Questionnaire, developed by Craig et al. (2017) was used to measure a person's level of physical activity during the last week. It composed of seven items and open-ended questions on a person's recall of their last seven days of physical activity. This scale has high reliability ($\alpha <. 80$). Each activity must be completed for at least 10 minutes at a time in order to meet the assessment criteria for all of the activities. Multiplying the values for the minutes, days, and MET. The result is the score as MET minutes/week. It was classified in 3 categories as high, moderate and low physical activity level.

UCLA Loneliness Scale

The Revised UCLA Loneliness Scale developed by Hughes et al. (2004) was utilized to determine loneliness. The scale comprises of three questions using a condensed set of three response options in its short form. On a 3-point scale, respondents were asked to rate how often they felt (1) lonely, (2) were left out, or (3) were isolated from others. We calculated a mean score, with a higher total score (interval: 1-3) indicating greater loneliness.

Procedure

Respondents were told that taking part was entirely up to them and any data collected about them will be treated confidentially. Participants' life will not be impacted by their participation in the study because all of the data that was gathered was used for research purposes only. Participants are free to ask any question about the questionnaire, and they get clear instructions. The researcher collected data from the individuals in a face-to-face manner instead of distributing and collecting the questionnaires. It took roughly 15 minutes for each participant to deliver the research data. The questionnaires used in this research were freely available for research purpose.

Data Analysis

SPSS version (IBM Corp, 2017) was used for data analysis. Descriptive analysis and simple linear regression were applied for data analysis. P value less than five was considered to determine level of significance

Results and Discussion

In Middle aged adults, out of total sample size significant findings were found in term of physical exercise as reported in table 1. The majority of participants (51.5%, n = 103) reported a low physical activity level, indicating that the majority of the population leads a lack of exercise. A significant percentage (31.5%, n = 71) of middle-aged adults are moderately active. Surprisingly, only 13% of people (n = 26) reported having high levels of physical activity.

In Case of Loneliness, findings revealed a significant variance of responses among middle-aged adults. 46.5% of respondents (n = 93) in this age range have no feelings of loneliness, as indicated by the participants who said they felt Not Lonely. However, 53.5% of respondents (n = 107) said they felt Lonely, indicating a concerningly high prevalence of loneliness among middle-aged people.

Table 1
Descriptive Statistics frequency table of Physical Activity Level and Loneliness Category in Middle aged adults

Characteristics	N	%
Physical Activity		
Low Activity	103	51.5
Moderate Activity	71	35.5
High Activity	26	13
Loneliness Category		
Not Lonely	93	46.5
Lonely	107	53.5

In terms of physical activity, significant results from the entire sample size emerged in older persons as revealed in table 2. A majority of respondents (51%, n = 102) revealed low levels of physical activity, which suggested that most people do not exercise regularly. Older people who are moderately active represent a significant portion (46%, n = 71). Surprisingly, just 3% of respondents (n = 6) indicated they were highly active physically.

Findings in Case of Loneliness showed that older persons' responses varied significantly. 42% of respondents (n = 84) in this age range have no feelings of loneliness, as indicated by the participants who said they felt Not Lonely. However, significant percentage of respondents (58%, n = 116) said they felt Lonely, indicating a concerningly high prevalence of loneliness among older people.

Table 2
Descriptive Statistics frequency table of Physical Activity Level and Loneliness Category in Older adults

Characteristics	N	%
Physical Activity		
Low Activity	102	51
Moderate Activity	92	46
High Activity	06	3
Loneliness Category		
Not Lonely	84	42
Lonely	116	58

Simple linear Regression reported in table 3 revealed that the regression coefficients of the physical activity on loneliness among middle-aged adults. Physical exercise was the predictor variable and dependent variable was loneliness. According to the regression analysis, Physical Activity and Loneliness have a statistically significant inverse association *(β = -.432, SE = .181, $p < .05$)*. The regression model represented *18.7%* of the variance in loneliness as the value of R^2 is *(R^2 = .187)*. So, the findings revealed that middle-aged persons who engaged in more physical activity reported feeling less lonely.

Table 3
Regression Coefficients of IPAQ on Loneliness of Middle Age Adults

Dependent Variable	Predictor Variable	B	β	SE	R^2	P
Loneliness	IPAQ	-1.220	-.432	.181	.187	**.000**

Simple linear Regression reported in table 4 revealed that the regression coefficients of the physical activity on loneliness in elderly people. Physical activity was the predictor variable while loneliness was the dependent variable. The results of the regression analysis revealed a statistically significant inverse relationship between physical activity and loneliness *(β = -.533, SE = .224, p < .05)*. 28.5% of the variance in loneliness was represented by the regression model as the value of R^2 is *(R^2 = .285)*. So, The results indicated that elderly people who exercised more frequently reported feeling less lonely.

Table 4
Regression Coefficients of IPAQ on Loneliness of Older Age Adults

Dependent Variable	Predictor Variable	B	β	SE	R^2	P
Loneliness	IPAQ	-1.990	-.533	.224	.285	**.000**

In conclusion, these findings highlighted the fact that the majority of people in both age groups are associated with low levels of physical activity and that approximately half of people feel lonely. The findings, therefore, demonstrated how crucial physical activity is for adults in their middle and later years to combat loneliness. Furthermore, findings showed a link between higher levels of physical exercise and lower feelings of loneliness in elders and middle-aged adults. For this age group, physical activity can be a valuable and important technique for reducing loneliness and increasing relationships with others.

Discussion

The aim of the study was to investigate the link between exercise and loneliness in middle aged and elderly people.

- The findings of the study showed that more than half of the populations is associated with low levels of physical activity, which is a very serious concern. Finding of the research is similar to previous research that also showed a large prevalence of physical inactivity in middle aged and elderly persons as research conducted by Pengpid and Peltzer (2022) revealed that people having the age 45 or older had the physical inactivity rate of almost one third in their study. Moreover, Murtagh et al. (2015) showed that among the people of age 60 and older had the prevalence of the physical inactivity about more than half the population in their study and this increases as people aged more. Physical inactivity has significant impacts on general health and wellbeing, as Diaz et al. (2017) had reported in his study on middle aged and elderly people that sedentary behavior increases the risk of dying. Furthermore, sedentary lifestyle have also been linked to develop some major chronic illness, including obesity, diabetes, cardiovascular disorders and Musculoskeletal issues (Park et al., 2020).

- Research's findings revealed that loneliness affects more than 50% of middle-aged and older people. According to a meta-analysis by Surkalim et al. (2022), more than one-third of middle-aged people and more than two-thirds of the elderly expressed feeling lonely, which is consistent with earlier studies that also found this age group to be more likely to experience loneliness. Similarly, Yang and Victor (2011) found that around one-third of Eastern European nations experience loneliness. In middle-aged and older people, loneliness increases the likelihood of mental health issues like anxiety and depression as well as cognitive decline (Cacioppo & Hawkley, 2009; Hawkley & Cacioppo, 2010). Additionally, loneliness affects older person's quality of life negatively (Kang et al., 2018).
- Findings of this study yielded that among middle-aged and elderly people, physical activity and loneliness had an inverse relationship. This result was consistent with earlier studies that have repeatedly shown the importance of regular physical exercise on middle aged and older adult's mental health and social connectivity. For example, numerous studies have revealed that consistent exercise significantly improves both physical and psychological well-being in middle-aged and elderly people (An et al., 2020) and increased social involvement (Asiamah, 2017). In addition, it has been demonstrated that loneliness levels in middle-aged and older adults are influenced by social support, the quality of relationships with other people (Holt-Lunstad, 2021) and other variables like health status (Ong et al., 2016), socioeconomic considerations (Domènech-Abella et al., 2017), and life transitions (Evans et al., 2022). Another, longitudinal study conducted by Hawkley et al. (2009) and a cross-sectional study conducted by Mizuta et al. (2023) indicated that elderly and middle-aged adults who engaged in extra physical exercise and group based physical activities over time experienced less loneliness. Furthermore, meta-analysis conducted by Shvedko et al. (2018) which included research on older adults, showed a persistent and significant negative connection between physical activity levels and loneliness. However, while exercise is an important part of combating loneliness, other psychological, social, and environmental factors may also have a significant impact on this complex phenomenon among elderly and middle aged people (Lim et al., 2020; Sebastião & Mirda, 2021). But it's crucial to remember that loneliness in older adults is a complex issue affected by a number of variables. As a result, although physical exercise programs show promise in reducing loneliness in older persons, entire interventions that target each aspect of well-being need to be implemented.

Conclusion

In conclusion, this study investigated the complex association between physical exercise and loneliness in middle-aged and older persons and the results have yielded significant understanding. The findings of this study demonstrated a strong and significant association between engagement in physical activity and loneliness. It was revealed that there was an inverse association that both middle-aged and older persons showed higher levels of physical activity were associated with lower levels of loneliness. This finding adds to the increasing amount of research highlighting the positive effects of a physical activity on loneliness among these age groups.

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