Journal of Professional & Applied Psychology *Original Article*

Examining the Association between Sedentary Lifestyle, Social Cohesion, and Loneliness among Obese Adults: A Cross-Sectional Study

Lyba Iqbal[1*], Sitara Kanwal[2]

Abstract

The current study aimed to assess the relationship between the sedentary lifestyle, social cohesion, and loneliness among obese adults. The sample size was *N*=150 and the sample was recruited through purposive sampling from several fitness centers, hospitals, and the general population. Sedentary Behavior Questionnaire (Rosenberg et al., 2010), Social Cohesion Scale (Williams et al., 2020), and Loneliness Scale (Russell et al., 1978) were used to measure the sedentary lifestyle, social cohesion, and loneliness. The results showed that there was a positive correlation between sedentary behavior and loneliness, whereas, there was a significant negative correlation between social cohesion and loneliness. The finding also showed that a sedentary lifestyle and social cohesion significantly negatively predicted loneliness among obese adults. The study concluded that a sedentary lifestyle and poor social cohesion play a significant role in predicting loneliness in obese adults. The study implied that it could help obese people improve their lifestyle and biopsychosocial functioning by understanding the importance of an active lifestyle and social cohesion, and it may also help researchers and practitioners carry out interventions for loneliness by considering the predictors.

Keywords: Loneliness, Obese Adults, Sedentary Lifestyle, Social Cohesion

Received: 05 August 2024; Revised Received: 28 September 2024; Accepted: 29 September 2024

[1*]BS (Hons) Scholar, Department of Applied Psychology, School of Professional Psychology, University of Management & Technology, Lahore, Pakistan.

[2]Lecturer, Department of Applied Psychology, School of Professional Psychology, University of Management & Technology, Lahore, Pakistan.

***Corresponding Author Email:** lybaiqbal001@gmail.com

Introduction

Obesity, classified by the World Health Organization (WHO) as an accumulation of excess body fat to the extent that it may impede health, has emerged as a global public health concern. Defined by Body Mass Index (BMI) of 30 kg/m^2 or higher, obesity is often associated to severe health risks and a multitude of comorbidities, which not only diminish the quality of life but also present considerable societal and economic burdens (Kawachi, 2010). Sedentary behavior has been recognized as a significant independent risk factor for obesity. It refers to activities involving minimal or no physical movement, causing low energy activities, such as prolonged sitting or reclining. A growing body of literature suggests that a sedentary lifestyle can result not only in physical health issues but also in psychological distress, including feelings of loneliness (Bray, 2004). Social cohesion, defined as the quality of social relationships and the existence of shared values within a group, plays a crucial role in shaping an individual's health and well-being. In the context of obesity, social cohesion, or the lack thereof, may significantly impact an individual's feelings of loneliness. Research has demonstrated that social isolation or low levels of social cohesion can exacerbate feelings of loneliness and psychological distress among obese individuals (Ware, 2023). Loneliness, a common psychological complaint among obese individuals, is a

complex and distressing emotional state defined as a poor experience brought on by a mismatch between ideal and real social ties. It is closely associated with reduced social contact, poor-quality relationships, and a lack of belongingness. Despite a growing body of research on obesity and its associated psychosocial aspects, a comprehensive understanding of how sedentary lifestyle, and social cohesion intersect to influence feelings of loneliness among obese adults is still lacking (Kim et al., 2020).

The WHO has recognized overweight as one of the top ten risk conditions worldwide and as one of the top five in industrialized nations (Hill et al., 2003). Obesity is now so common among the world's population that it is beginning to overtake malnutrition and infectious diseases as the primary cause of ill health (Tanzil & Jamali, 2016). According to a survey, in Pakistan, 25.0% of individuals were either overweight or obese. The threshold for an unhealthy BMI in this research, however, was 23.0 kg/m2. Among Pakistani adults, there were some geographical differences in the prevalence of overweight (29.0%-46%) and obesity (20.8%-27.85%). According to the data, overweight and obesity were most prevalent in middle-aged people and least prevalent among young Pakistani adults (Asif et al., 2020). Historically, adolescents and young adults were not identified as high-risk demographic for obesity. The focus was primarily on adults who demonstrated the most immediate health implications associated with the condition. However, contemporary research demonstrates that obesity is increasingly becoming an issue for the younger population, with a specific emphasis on college and university students (Poobalan & Aucott, 2016). The findings of this research could provide valuable insights into potential avenues for interventions to alleviate loneliness and enhance the overall well-being of obese adults.

Literature Review

The present literature is an investigation led by researcher Brown and Flint (2013) into the intertwined concepts of obesity, sedentary lifestyle, social cohesion, and feelings of loneliness. The literature review revealed an intense correlation between obesity, sedentary lifestyle, and feelings of loneliness. More precisely, there is a significant presence of loneliness among obese adults, which could potentially be tied to inactive lifestyle patterns and lack of social cohesion. This comprehensive research underscores the need to understand and address not only the physical dimensions of obesity but also its social and psychological implications (Brown & Flint, 2013). Roughly a decade and a half ago, Cohen et al. (2006) conducted an initial investigation into the connections between social cohesion, obesity, and loneliness. In their population-based study, they examined varying degrees of social cohesion in different communities, associating them with respective obesity and loneliness rates. Published in 2006, their findings demonstrated a negative correlation between social cohesion and obesity, with potential mitigation of loneliness among obese individuals (Cohen et al., 2006). A study was also conducted by Chopik (2016). The research aimed to assess the impact of technology use on the physical and psychological health of older adults. The study collected data from the 2012 wave of the Health and Retirement Study, involving 591 older adults with an average age of 68.18 years. The results of the study indicated that older adults generally had positive attitudes towards technology. According to the study, decreased loneliness acted as a mediating factor in each relationship between social technology use and physical and mental health. The findings highlight the importance of technology in cultivating successful relationships among older adults, which are a significant determinant

of physical health and well-being (Chopik, 2016). The longitudinal study by Hajek and König (2021), explored the correlation between the onset of obesity and changes in loneliness among adults aged 40 years and older in Germany. Their findings revealed that the onset of obesity led to an increase in loneliness, but this association was predominantly observed among men (Hajek & König, 2021). Another study conducted by Stickley et al. in 2015 investigated the association between obesity and feelings of loneliness in older adults. They found a significant correlation between obesity and heightened feelings of loneliness, with social stigmatization and internalized weight stigma identified as key contributing factors. The researchers concluded that strategies to alleviate loneliness in obese adults are needed, including combating social stigma and fostering a positive body image. However, they also noted the need for further research to develop effective multi-dimensional interventions (Stickley et al., 2013).

Although studies have evaluated the relationship between sedentary lifestyles and obesity (Biddle et al., 2017), few have delved into the specific pathways through which sedentary behaviors influence obesity in adults. This presents a gap in the literature, as understanding these mechanisms could provide new insights into the management and prevention of obesity. The literature lacks a detailed exploration of how social cohesion interacts with obesity and loneliness in adults. These gaps highlight the need for a study to delve deeper into the complexities of obesity, particularly the interplay of sedentary lifestyles, social cohesion, coping strategies, and loneliness among obese adults.

Objectives

- To investigate the relationship between sedentary lifestyle and loneliness among the adults suffering from obesity.
- To investigate the relationship between social cohesion and loneliness among the adults suffering from obesity.

Hypotheses

- Sedentary Lifestyle is expected to have significant positive correlation with Loneliness among adults with Obesity.
- Social Cohesion is expected to have a significant negative correlation with Loneliness among adults with Obesity.

Method

Research Design

The current research study involves the "cross-sectional correlational research method" aimed to study the relationship between sedentary lifestyle, social cohesion, and loneliness.

Participants & Sampling

The study used the "purposive sampling technique" for the purpose of data collection as the targeted population is unable to be found at a specific geographical location. The sample size was 150 calculated by G-Power's formula with 95% confidence interval. The sample was recruited from multiple fitness centers, hospitals, and general population in Lahore.

Inclusion/Exclusion Criteria

Both males and females were included. The participants aged between 18 and 40 years were included. Only participants proficient in English were chosen. The participants below 30 kg/m^2 were excluded from the study. The participants with serious medical illnesses causing obesity were also excluded.

Table 1
Descriptive Statistics of Demographic Variables (N=150)

Variables	*n*	%
Age		
18-24	94	62.7
25-32	37	24.7
33-40	19	12.7
Gender		
Male	62	41.3
Female	88	58.7
BMI		
31-35	94	56.7
36-40	41	20.0
41-45	15	6.0

Note: f=frequency, %=percentage

Assessment Tools

Demographic Sheet

The demographic sheet contains all the relevant biodata of the participants that need to be taken for the study such as age, weight, height, and gender.

Sedentary Behavior Questionnaire (Rosenberg et al., 2010)

Sedentary behavior questionnaire for adults was developed by Rosenberg et al. (2010) to measure the sedentary behaviors of adults. The questionnaire is divided into two parts i.e., sedentary behaviors on weekdays and weekend days and each part contains 9 items and there are a total of 2 subscales of the scale. The reliability of the scale is .85 for weekdays and .77 for weekend days.

Social Cohesion Scale (Williams et al., 2020)

The social cohesion scale was developed by White et al. to measure an individual's relationship with his/her society. The scale is a self-report questionnaire containing 8 items. The reliability of the scale is .81.

Loneliness Scale (Russell et al., 1978)

The Loneliness Scale was developed by Dan Russell and colleagues (1978). It is a self-report questionnaire consisting of 20 items. The purpose of the scale is to measure the feeling of loneliness as well as the social isolation experienced by a person. The reliability of the scale is .73.

Procedure

The study initiated by finalizing the topic, variables, population and tools for the study. Permission to use the scales was taken from the authors and the study continued by taking data from the targeted sample while considering all the ethical regulations. After data collection, the data was analyzed by using SPSS-25 and the required exclusions were made. The research ended by concluding and reporting the analyzed data.

Ethical Considerations

The study involved the voluntary participation of the participants. The informed consent of the participants was taken. The participants who participated in the study were kept anonymous. The personal information of the participants was kept confidential. Participants can withdraw from the study at any time before publication. The participants were not deceived about the study. The chances of the harm to the participants were reduced to the possible lowest.

Results

The current study was conducted to explore the relationship between sedentary lifestyle, social cohesion, and loneliness among obese adults. To determine the relationship among the pre-mentioned variables, different statistical analyses were run to drive out the quantitative output to

see the relationship and the differences among those variables. Firstly, it was assessed whether any of the values were missing across the data sheet. After that, data was deduced through inclusion and exclusion criteria. Before running the analyses to figure out the relationships among the variables, the average values of each scale were taken down so that analyses could be run smoothly. After taking down the average, the Cronbach's α for each scale was carried out to determine the reliability of the scales. In the second step, the correlation analysis was run to assess the relationship among the independent, dependent, mediating and demographic variables. In the next step, the one-way ANOVA analysis was run to assess the differences among those demographic variables with multiple categories. In the last step, the independent sample t-test was used to assess the differences of demographic variables with two categories i.e., gender.

Table 2

Psychometric Properties of Scales and Subscales (N=150)

Scales	*M*	*SD*	Range	Cronbach's α
Sum of SBQ	73.45	26.91	9.5-152.75	0.64
Sum of SCS	24.32	30.10	13-40	0.73
Sum of LS	52.51	11.76	29-75	0.90

Note: SBQ=sedentary behavior questionnaire, SCS=social cohesion scale, LS=loneliness scale

Results in Table 2 show that the sedentary behavior questionnaire has moderate reliability i.e., .64. The social cohesion scale also has moderate to satisfactory reliability as .73. On the other hand, loneliness scale showed high reliability that is .90.

Table 3

Correlation between Sedentary Lifestyle, Social Cohesion, and Loneliness (N=150)

Variables	*M*	*SD*	1	2	3
1- Total SBQ	73.45	26.91	--	-.09	.09
2- Total SCS	24.32	30.10		--	-.56**
3- Total LS	52.51	11.76			--

***p<.01*

Note. SBQ=sedentary behavior questionnaire, SCS=social cohesion scale, LS=loneliness scale

The results of Table 3 show that there is a positive correlation between sedentary lifestyle and loneliness, whereas, social cohesion has significant negative correlation with loneliness. Moreover, sedentary lifestyle has negative correlation with social cohesion.

Table 4

Mean Differences in Sedentary Lifestyle, Social Cohesion, and Loneliness between Males and Females (N=150)

Variables	Males (n=62)		Females (n=88)				
	M	*SD*	*M*	*SD*	*t(148)*	*p*	Cohen's *d*
SBQ	75.29	26.21	72.16	27.47	.86	.91	.12
SCS	24.69	4.91	24.06	5.87	.70	.53	.12
LS	53.50	11.78	51.81	11.77	.16	.15	.14

Note. SBQ=sedentary behavior questionnaire, SCS=social cohesion scale, LS=loneliness scale

Table 4 shows that there are non-significant differences in sedentary lifestyle, social cohesion, and loneliness among the male and the female participants as p= .91, .53, and .16 respectively. Likewise, the results show that there are small effect sizes of sedentary lifestyle, social cohesion, and loneliness among males and females depicting Cohen's d= .12, .12, and .14 respectively. Moreover, the mean and standard deviation across the both age groups are approximately the same.

Table 5

Mean Differences in Sedentary Lifestyle, Social Cohesion, and Loneliness between Three Categories of Age (N=150)

	18-24 (n=94)		25-34 (n=34)		35-40 (n=17)			
Variables	*M*	*SD*	*M*	*SD*	*M*	*SD*	F	η^2
SBQ	70.81	28.74	77.61	23.74	78.37	23.08	1.21	.02
SCS	25.23	5.25	23.68	6.21	21.04	3.61	5.21**	.07
LS	50.20	10.77	55.19	13.43	58.74	10.08	5.78**	.07

*p < .05, **p < .01

Note. SBQ=sedentary behavior questionnaire, SCS=social cohesion scale, LS=loneliness scale

Table 5 was showed to measure the significant differences in sedentary behavior, social cohesion and loneliness among different age groups. The results show that there are no significant differences in sedentary behavior among the three age groups whereas there are significant differences in social cohesion and loneliness among those age groups as p<.01 in both variables. Likewise, the sedentary behavior showed small effect size across the three age groups as η^2=.02, .00 respectively. Whereas the social cohesion scale and the loneliness scale depicted the same medium effect size across the three age groups as η^2=.07. However, mean and standard deviation are almost same across all the age groups.

Table 6

Mean Differences in Sedentary Lifestyle, Social Cohesion, and Loneliness between Three Categories of BMI (N=150)

	31-35 (*n*=94)		36-40 (*n*=41)		41-45 (*n*=15)			
Variables	***M***	***SD***	***M***	***SD***	***M***	**SD**	**F**	**η^2**
SBQ	73.55	23.51	81.51	32.24	65.81	28.31	.16	.03
SCS	24.80	5.69	22.13	4.11	25.33	5.87	.11	.04
LS	51.59	12.70	54.20	9.93	56.56	13.78	.53	.01

Note. SBQ=sedentary behavior questionnaire, SCS=social cohesion scale, LS=loneliness scale

Table 6 shows the findings of one-way ANOVA test used to determine the significant differences in the four scales (sedentary behavior questionnaire, social cohesion scale, and loneliness scale) among the three groups of BMI. The results show that there are no significant differences in the scales across the groups. In addition, the results showed that there is small effect size of sedentary behavior, social cohesion, and loneliness among the BMI groups as η^2=.03, .04, .05, and .01 respectively. However, mean and standard deviation of the scales used do not depict major differences across the groups.

Discussion

It was hypothesized that there is likely to be a significant positive correlation among sedentary lifestyle and loneliness which is supported by this study as the findings reported that there is a positive correlation among sedentary lifestyle and loneliness but the correlation is non-significant. The findings of our study showing the positive correlation among sedentary lifestyle and loneliness explains that the higher the sedentary lifestyle adults adapt, the more they likely to experience loneliness. Obesity is a crucial condition that directly or indirectly influences multiple aspects of life. It negatively influences all three domains of life i.e., physical, social and psychological.

Similar results were shown in a study done by Tully and his team in 2019 exploring the relationship of sedentary behavior and loneliness. The results of the study depicted that there is a positive correlation among sedentary lifestyle and the loneliness, however, unlikely to the current study, the correlation was significantly positive (Tully et al., 2019).

Another hypothesis of the current study explains that there is likely to be a significant negative relationship among social cohesion and loneliness as more the social cohesion, the lesser the loneliness experiences. This hypothesis was also supported by the findings of this study. The findings depicted that there is a significant negative correlation among social cohesion and loneliness. When people engage more in social relationships, this eventually increases the social cohesion for them and hence, as explained by our findings too, they are more likely to experience less loneliness.

As explained in the literature review, social cohesion is also influenced by sedentary lifestyle as sedentary lifestyle is likely to decrease the social cohesion and it influences the social functioning of the people. Social functioning being malfunctioned also leads to the loneliness as explained by the study.

A study conducted by Yu and his team (2021) was aimed to determine the relationship of neighborhood social cohesion and loneliness. The study was conducted to seek if social cohesion plays any role in causing or inhibiting loneliness among the participants. The results of the study showed that there was a negative correlation among social cohesion and loneliness and like our study, the correlation was significant. The study concluded that social cohesion plays a role as a protective factor in causing loneliness, however, it acts differently in individuals depicting that there are other factors that play role in the relationship among the two variables (Yu et al., 2021). On the contrary, the present clearly depicts that there is significant correlation among the two variables.

Conclusion

The current study concluded that the sedentary lifestyle and social cohesion are positively and significantly negaively correlated to the loneliness respectively among obese adults fulfilling the first hypothesis partially, wheras, the second one completely. The results indicate that the higher the sendentry behaviors, the more the loneliness is experienced and the lower the social cohesion is, the more the loneliness is experienced. However, the results show that there are no significant differences among the demographic categories of the participants.

Limitations & Suggestions

The data was only gathered from the fitness centers, hospital, and general population located in Lahore. Hence, the results cannot be generalized to overall population. Due to the unavailability of required sample, equal number of males and females were not included in the study. However, the equal number of males and females could report more accurate differences. The sample size was small due to the unavailability of participants and cannot be generalized.

Implications

The findings of the current study may help researchers and practitioners in carrying out interventions for loneliness by considering the predictors. The study may provide a pathway to the future studies considering the current variables. Moreover, the study can help people understand the importance of staying active and have better social relations as it lessens the loneliness.

Contribution of Authors

Lyba Iqbal: Conceptualization, Investigation, Methodology, Data Curation, Formal Analysis, Writing – Original Draft

Sitara Kanwal: Methodology, Writing - Reviewing & Editing, Supervision

Conflict of Interest

There is no conflict of interest declared by the authors.

Source of Funding

The authors declared no source of funding.

Data Availability Statement

The datasets of the current study are not available publicly due to ethical reasons but are available from the corresponding author [L.I.] upon the reasonable request.

References

Asif, M., Aslam, M., Altaf, S., Atif, S., & Majid, A. (2020). Prevalence and sociodemographic factors of overweight and obesity among Pakistani adults. *Journal of Obesity & Metabolic Syndrome*, *29*(1), 58. https://doi.org/10.7570/jomes19039

Biddle, S. J., García Bengoechea, E., & Wiesner, G. (2017). Sedentary behavior and adiposity in youth: a systematic review of reviews and analysis of causality. *International Journal of Behavioral Nutrition and Physical Activity*, *14*(1), 1-21. https://doi.org/10.1186/s12966-017-0497-8

Bray, G. A. (2004). Medical consequences of obesity. *The Journal of Clinical*

Endocrinology & Metabolism, *89*(6), 2583-2589. https://doi.org/10.1210/jc.2004-0535

Brown, I., & Flint, S. W. (2013). Weight bias and the training of health professionals to better manage obesity: what do we know and what should we do? *Current Obesity Reports*, *2*, 333-340. https://doi.org/10.1007/s13679-013-0070-y

Chopik, W. J. (2016). The benefits of social technology use among older adults are mediated by reduced loneliness. *Cyberpsychology, Behavior, and Social Networking*, *19*(9), 551-556. https://doi.org/10.1089/cyber.2016.0151

Cohen, D. A., Finch, B. K., Bower, A., & Sastry, N. (2006). Collective efficacy and obesity: the potential influence of social factors on health. *Social Science & Medicine*, *62*(3), 769-778. https://doi.org/10.1016/j.socscimed.2005.06.033

Hajek, A., & König, H. H. (2021). Asymmetric effects of obesity on loneliness among older Germans. Longitudinal findings from the Survey of Health, Ageing and Retirement in Europe. *Aging & Mental Health*, *25*(12), 2293-2297. https://doi.org/10.1080/13607863.2020.1822285

Hill, J. O., Wyatt, H. R., Reed, G. W., & Peters, J. C. (2003). Obesity and the environment: where do we go from here? *Science*, *299*(5608), 853-855. https://doi.org/10.1126/science.1079857

Kawachi, I. (2010). Social capital and health. In C. E. Bird, P. Conrad, A. M. Fremont, & S. Timmermans (Eds.), *Handbook of medical sociology* (6th ed., pp. 18–32). Vanderbilt University Press. https://doi.org/10.2307/j.ctv16h2n9s.5

Kim, E. S., Chen, Y., Kawachi, I., & VanderWeele, T. J. (2020). Perceived neighborhood social cohesion and subsequent health and well-being in older adults: An outcome-wide longitudinal approach. *Health & Place*, *66*, 102420. https://doi.org/10.1016/j.healthplace.2020.102420

Poobalan, A., & Aucott, L. (2016). Obesity among young adults in developing countries: a systematic overview. *Current Obesity Reports*, *5*(1), 2-13. https://doi.org/10.1007/s13679-016-0187-x

Rosenberg, D. E., Norman, G. J., Wagner, N., Patrick, K., Calfas, K. J., & Sallis, J. F. (2010). Reliability and validity of the Sedentary Behavior Questionnaire (SBQ) for adults. *Journal of Physical Activity and Health*, *7*(6), 697-705. https://doi.org/10.1123/jpah.7.6.697

Russell, D., Peplau, L. A., & Ferguson, M. L. (1978). Developing a measure of loneliness. *Journal of Personality Assessment*, *42*(3), 290-294. https://doi.org/10.1207/s15327752jpa4203_11

Stickley, A., Koyanagi, A., Roberts, B., Richardson, E., Abbott, P., Tumanov, S., & McKee, M. (2013). Loneliness: its correlates and association with health behaviors and outcomes in nine countries of the former Soviet Union. *PloS One*, *8*(7), e67978. https://doi.org/10.1371/journal.pone.0067978

Tanzil, S., & Jamali, T. (2016). Obesity, an emerging epidemic in Pakistan-a review of evidence. *Journal of Ayub Medical College Abbottabad*, *28*(3), 597-600.

Tully, M. A., McMullan, I. I., Blackburn, N. E., Wilson, J. J., Coll-Planas, L., Deidda, M., Caserotti, P., & Rothenbacher, D. (2019). Is sedentary behavior or physical activity associated with loneliness in older adults? Results of the European-wide SITLESS study. *Journal of aging and physical activity*, *28*(4), 549-555. https://doi.org/10.1123/japa.2019-0311

Ware, P. (2023). Social Cohesion and COVID-19: an integrative review. *medRxiv*. https://doi.org/10.1101/2023.07.19.23292904

Williams, A. J., Maguire, K., Morrissey, K., Taylor, T., & Wyatt, K. (2020). Social cohesion, mental wellbeing and health-related quality of life among a cohort of social housing residents in Cornwall: A cross sectional study. *BMC Public Health*, *20*(1), 985. https://doi.org/10.1186/s12889-020-09078-6

Yu, R., Leung, G., Chan, J., Yip, B. H. K., Wong, S., Kwok, T., & Woo, J. (2021). Neighborhood social cohesion associates with loneliness differently among older people according to subjective social status. *The Journal of Nutrition, Health and Aging*, *25*(1), 41-47. https://doi.org/10.1007/s12603-020-1496-z