

Investigating the Mediating Role of Anxiety and Loneliness in the Relationship between Sense of Coherence and Mental Health in the Elderly

Sahar Azari¹, Omid Torabi², Nazanin Rezazadeh³, Sajad Lotfi⁴, Gholam khalili^{5*}

1. Department of Psychology, Hamedan Branch, Islamic Azad University, Hamedan, Iran
2. Department of Psychology, Payame Noor University, Tehran, Iran
3. Department of Psychology, Sistan and Baluchestan, Sistan and Baluchestan, Iran
4. Department of Psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran
5. Department of Psychology, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran

* **Corresponding author:** Gholam Khalili, Department of Psychology, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran.; Email: hosseinkhalili37.hk@gmail.com

Received 2024 March 11; Accepted 2024 November 29.

Abstract

Background: The concept of sense of coherence (SOC) plays a crucial role in safeguarding the well-being of the elderly.

Objectives: The present study was conducted to investigate the mediating role of anxiety and loneliness in the relationship between SOC and mental health in the elderly.

Methods: This descriptive-correlational study was conducted based on a cross-sectional research methodology. The target population for this study consisted of all elderly individuals in Shiraz from July to October 2023, comprising 980 individuals. The selection of clinics was based on available methods, and a simple random sampling technique was used for data collection. The research utilized various tools, including the Beck Anxiety Scale, Riff Psychological Well-Being Questionnaire, Russell Loneliness Questionnaire, and Antonovsky's Sense of Coherence Questionnaire. To test the research hypotheses, the structural equation modeling method was employed using SPSS version 27 and Smart PLS 3 software. The Sobel test was conducted to assess the significance of mediating variables.

Results: The findings indicated that SOC had a significant direct impact on mental health ($\beta=0.415$, $P<0.01$). Anxiety was found to have a direct negative impact on mental health ($\beta=-0.207$, $P<0.01$). Loneliness was also discovered to have a direct negative impact on mental health ($\beta=-0.365$, $P<0.01$). Furthermore, the mediating variables in the study were deemed significant according to the Sobel test.

Conclusion: The research findings indicated a clear and significant correlation between SOC and mental health in the elderly. This suggests that enhancing SOC in older individuals can also improve and bolster their mental well-being. The study revealed that anxiety and loneliness could have an adverse impact on the relationship between SOC and mental health in elderly individuals. It was found that seniors experiencing anxiety and loneliness were more likely to develop mental health issues. In light of these results, it is recommended to focus more on enhancing SOC in the elderly.

Keywords: Anxiety, Elderly, Loneliness, Mental health, Sense of coherence

1. Background

Elderly individuals experience a period in their lives where their physical strength

weakens and becomes limited due to changes in cell health (1). There is a global trend of population aging, with the elderly

making up a larger portion of the total population (2). The number of elderly individuals worldwide is increasing rapidly (3), especially in low and middle-income countries (4). Population aging is a widespread issue that many countries are facing. The World Health Organization (WHO) predicts that by 2050, there will be 2 billion elderly individuals aged 60 and above, representing 22% of the total population (5). According to the WHO estimates, the percentage of the aging population is expected to reach 10% in 2025 and 25% in 2050 (6). In Iran, the elderly population is on the rise, with projections indicating that it will make up 10.5% of the total population by 2025 (7). Elderly individuals face unique challenges and obstacles. Research in Iran has shown that the most pressing health needs of the elderly in the country are related to income, cardiovascular issues, vision and hearing impairments, and the need for assistive devices, such as artificial teeth, glasses, and toilets (8). Today, older individuals encounter unique difficulties and issues, with many facing challenges related to physical and mental decline in their pursuit of a fulfilling life (9). The process of aging brings about a range of impacts on physical, social, economic, and psychological aspects of life (10). Furthermore, the elderly population is prone to mental health issues, which are significant contributors to disability and disease development throughout their lives and are becoming increasingly prevalent (11). Serious mental disorders, such as depression, anxiety, memory impairment, and feelings of isolation, affect approximately 15-25% of older adults (12).

Factors such as the death of a spouse, retirement, and prolonged loneliness contribute to the onset of mental disorders in the elderly (13). Many older individuals in various societies experience feelings of isolation (14). The increasing prevalence of loneliness among the elderly is a significant

issue in modern society (15). Loneliness is a major indicator of declining mental well-being, and individuals with preexisting mental health issues are more susceptible to feeling alone. Research from longitudinal studies suggests that lonely individuals are less likely to participate in social activities or exercise and more prone to unhealthy habits, such as smoking, excessive drinking, and sleep disturbances (16). Loneliness plays a significant role in determining the mental well-being and overall quality of life of the elderly. Studies have shown that approximately 20-40% of older adults admit to experiencing feelings of loneliness. Additionally, 5-7% have reported experiencing constant or severe loneliness (17). Loneliness has been identified as a key factor in predicting depression, decreased physical activity, cognitive decline (e.g., dementia), disrupted sleep patterns, increased vascular resistance, and elevated blood pressure (18). Research indicates that loneliness is a common issue affecting 25-50% of the elderly population over the age of 65, with prevalence rates varying based on age and gender (19).

Based on research carried out by multiple researchers, it has been found that loneliness is strongly linked to depression, overall health status, frailty, and functional limitations. In a separate study conducted by a group of researchers to examine the connection between physical health and loneliness, it was revealed that there was a significant and inverse relationship between the two factors. Furthermore, in another study based on specialized research by various researchers, an assessment was made on the connections between mental health, loneliness, and satisfaction with life, the results of which showed significant correlations among these variables (20). Anxiety is another common problem among the elderly. The elderly are more prone to develop anxiety due to reduced financial independence, physical problems, suffering from chronic diseases, reduced

activity and mobility, and loss of friends and relatives (21). Anxiety can lead to irregular heart rates caused by increased activity in the sympathetic nerves, elevated breathing rate, higher blood pressure, and increased reactivity of blood vessels, which can result in vascular endothelial disruption, tissue damage, platelet accumulation, and reduced immunity in the body (22). According to research, anxiety symptoms are prevalent in 15-52% of the elderly population, with anxiety disorders affecting 3-15% of adults, especially those with chronic illnesses in older age (23). Common signs and symptoms of anxiety include restlessness, sadness, loss of appetite, elevated blood pressure, lack of peace, worry, weakness, or panic. In the elderly, anxiety often presents itself through physical symptoms, such as insomnia, cognitive issues, sensory disturbances, and digestive problems (24). Negative outcomes associated with anxiety include a decline in the quality of life, increased disability, higher utilization of health services, and elevated mortality rates. Consequently, early detection and proper treatment of anxiety can help prevent these adverse effects (25,26). A research study conducted by several researchers found that anxiety had a negative impact on the quality of life of the elderly. Another study concluded that anxiety was a common and fundamental part of human existence that should be acknowledged and accepted. Additionally, research by a group of researchers indicated that anxiety in the elderly, who might have decreased adaptability, could result in severe and irreversible health complications in today's complex society.

Loneliness is a complex psychological concept that refers to the perception of lacking relationships with others. It includes such elements as the unpleasant feeling of losing a companion, negative aspects of lost relationships, and a decrease in the quality of life (27). Understanding the factors that predict and are associated with loneliness in elderly individuals is crucial, with mental well-being

being one of the significant factors (28). Research on human capabilities and positive psychology is expanding, where mental well-being is characterized by the ability to recognize one's talents and achieve a balance between positive and negative emotions as well as satisfaction with life (29). Old age is commonly linked with a decline in mental well-being, which involves comparing one's current state with the desired state and forming a positive self-perception based on cognitive evaluation. Generally, mental well-being consists of a positive outlook on life, finding joy in life, absence of feelings of depression, and overall satisfaction with life (30).

Several researchers have conducted extensive research and have found that loneliness can have a detrimental impact on mental well-being. Loneliness is often a result of deficiencies in social relationships and arises when there is a disconnection between actual social interactions and desired social interactions (31). Studies have also demonstrated that individuals who experience high levels of loneliness tend to have poorer well-being compared to those who experience lower levels of loneliness (32). Several researchers have found that psychological well-being in the elderly involves individuals striving to develop their talents and abilities, as well as assessing their overall quality of life (33). Another study indicated that psychological well-being is associated with higher life satisfaction, lower symptoms of depression and anxiety, feelings of vitality and competence, hope for the future, and better mental health (34). Researchers have determined through research that negative life events can impact psychological well-being, resulting in various issues, such as depression and anxiety, and a reduction in overall well-being (35).

A crucial aspect of coping with problems and tensions due to aging is having a sense of coherence (SOC). This concept refers to the ability to integrate past, present, and future experiences in order to adapt and enhance

oneself. It allows individuals to recognize and make use of the resources at their disposal. The better a person can comprehend and handle the significance of a stressful situation or illness, the higher their potential to effectively deal with it. Sense of coherence is a crucial concept for understanding how individuals differ in their ability to cope with stress. Other research findings also highlight the importance of SOC as a strong predictor of the quality of life of the elderly (36). Sense of coherence plays a significant role in forecasting the quality of life of the elderly (37). Therefore, possessing a sufficient SOC is essential for successfully confronting these challenges (38).

Based on research conducted by multiple researchers, it has been determined that there is an inverse correlation between the SOC and symptoms of stress, depression, and anxiety. Another study revealed that mental coherence can decrease mental turmoil, according to research by various researchers (39). It was

also found in a study conducted by multiple researchers that when older individuals felt more coherent, they would have a better understanding of the challenges and constraints associated with aging, leading to a more authentic way of coping with their problems (40,41).

2. Objectives

Therefore, we are exploring the correlation between anxiety and loneliness, as well as the connection between SOC and mental health in the elderly. Previous research has not delved into the relationships between all of these factors, largely due to a lack of prior studies in this area. This study represents one of the initial attempts to explore these connections. As such, given the significance of the topic, further in-depth research in this area is warranted (Figure 1).

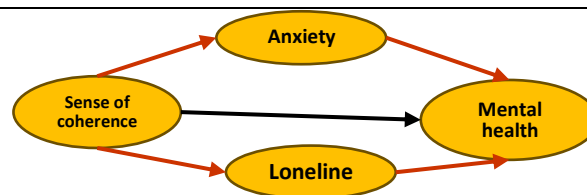


Figure 1. Conceptual framework of the research

3. Methods

This study was a part of descriptive-correlational research utilizing a cross-sectional research method. The target population of the study consisted of all elderly individuals in Shiraz from July to October 2023. Specifically, the target population included 10 elderly care centers in Shiraz (referred to as centers a, b, c, d, e, f, g, h, j, and k), with their names anonymized for confidentiality. The total size of the target population was 980 individuals. The selection of these centers was based on available resources, and a simple random sampling method was employed. The sampling process involved compiling a list of all elderly care

centers in Shiraz and then randomly selecting 10 centers from this list. The research sample was drawn from these 10 centers. The sample size of 276 individuals was determined using Cochran's formula for this research study. The researcher planned to use the structural equation modeling method, which requires a sample size of 300 or more, according to Gadagnoli and Veliser (1998). As a result, 300 individuals were selected for the study.

The next step involved identifying the research participants based on inclusion and exclusion criteria. All elderly individuals who were residents of these centers were chosen for the study, while others were not included.

Those elderly individuals who declined to participate were also excluded. The researcher then randomly picked subjects from the total population of elderly individuals. The sampling process began with obtaining permission from the university and then coordinating with the care centers for the elderly to proceed with the research. Subsequently, three individuals were excluded from the study as they failed to answer over 10 questions in the questionnaires.

A total of 297 participants took part in the research, and their data were analyzed. The study assessed four variables, namely anxiety, loneliness, SOC, and mental health, for each participant. Prior to the questionnaire administration, participants were required to sign a consent form as a precautionary measure to adhere to ethical standards. The participants were informed that their participation was voluntary and they had the right to withdraw from the study at any stage. Additionally, it was clarified that the tests were conducted anonymously without any personal identification information being collected.

Beck Anxiety Scale: This 21-item scale, developed by Aaron Beck et al. (1988), assesses an individual's severity of anxiety over the past week. Each item is rated on a four-point Likert scale ranging from 0=not at all to 3=severe. Scores range from 0 to 3, with a total sum falling between 0 and 63: minimal anxiety levels (0-7), mild anxiety (8-15), moderate anxiety (16-25), and severe anxiety (26-63). A higher score corresponds to higher levels of anxiety. The reliability of the scale has been verified with a Cronbach's alpha score of 0.76. In this study, the Cronbach's alpha for the questionnaire was obtained at 0.85.

Psychological Well-being Scale: This 18-item tool, designed by Rief in 1989, aims at measuring mental health in various dimensions, such as independence (items 9, 12, 18), mastery of the environment (items 1,

4, 6), personal growth (items 7, 15, 17), positive communication with others (items 3, 11, 13), purposefulness in life (items 5, 14, 16), self-acceptance (items 2, 8, 10). Responses are rated on a six-point Likert scale, with higher scores indicating better mental health and lower scores suggesting lower mental health. The total score should range between 18 and 108 to determine an individual's mental health level. The questionnaire's reliability was assessed using Cronbach's alpha test, resulting in a score of 0.86 (42). In this study, the Cronbach's alpha for the questionnaire was calculated at 0.78.

Russell Loneliness Questionnaire: This questionnaire, developed by Russell et al. (1980), aims to assess levels of loneliness in individuals. The replies to this 20-item instrument are scored on a four-point Likert scale. Higher scores on the scale indicate greater feelings of loneliness, while lower scores suggest lower levels of loneliness. The total score, ranging from 20 to 80, determines the degree of loneliness experienced by the individual. The reliability of the questionnaire was established with a Cronbach's alpha test yielding a coefficient of 0.81 (43). In the current study, the Cronbach's alpha value for this questionnaire was obtained at 0.88.

Sense of Coherence Questionnaire: This 29-item was developed by Antonovsky (1993) and assesses various aspects of life through three main components, namely being understood, being manageable, being meaningful. The responses are rated on a seven-point Likert scale ranging from 1 to 7. Higher scores on the questionnaire represent a stronger SOC in the individual, whereas lower scores suggest a weaker SOC. The total score, falling between 29 and 203, provides an indication of the individual's SOC. The reliability of the questionnaire was determined using Cronbach's alpha test, with a value of 0.89 reported in previous research (44). In the present study, Cronbach's alpha for this

questionnaire was found to be 0.91.

Descriptive statistics were conducted using SPSS-27 software, and data trends and standard coefficients were analyzed using SmartPLS 3 software. The Sobel test was also utilized to assess the significance of the mediator variable.

4. Results

The researcher initially examined the descriptive statistics of the research variables,

the results of which are provided in [Table 1](#). The participants were categorized into three age groups: 60-70 years old, 71-80 years old, and 81+ years old, with proportions of 26.3%, 31.0%, and 42.8%, respectively. The participants were also split into male (50.2%) and female (49.8%) groups.

[Table 2](#) presents the mean scores for SOC, mental health, loneliness, and anxiety, which were obtained at 103.53 ± 60.4 , 54.7 ± 26.07 , 50.4 ± 20.4 , and 38.38 ± 18.7 , respectively.

Table 1. Descriptive statistics of the variables

Variables		Frequency	Percent	Total	Median
Age	60-70	78	26.3	297	2
	71-80	92	31.0		
	81+	127	42.8		
Gender	Male	149	50.2	297	1
	Female	148	49.8		

Table 2. Descriptive statistics of the variables

Variables	n	Mean \pm SD	Min	Max
Sense of coherence	297	103.53 \pm 60.483	30	199
Mental health	297	54.73 \pm 26.076	22	102
Loneliness	297	50.47 \pm 20.432	21	77
Anxiety	297	38.38 \pm 18.756	9	61

The next stage involved the researcher examining the assumptions of the test. The Kolmogorov-Smirnov test was utilized to assess the normal distribution of the research variables ([Table 3](#)). The test yielded significant results for the research variables, indicating that they do not follow a normal distribution. Therefore, it was recommended that SmartPLS software be utilized to conduct the structural

equation modelling method. Random Sample: The assumption has been satisfied since the researcher used a random sampling method. Adequate Data: The sample size was adequate to conduct the structural equation modelling method using the partial least squares method, with 297 individuals included in the dataset. Next, the correlation matrix of the research variables was analyzed.

Table 3. Tests of normality

Variables	Kolmogorov-Smirnov	Shapiro-Wilk
	P-value	P-value
Sense of coherence	P<0.001	P<0.001
Mental health	P<0.001	P<0.001
Loneliness	P<0.001	P<0.001
Anxiety	P<0.001	P<0.001

[Table 4](#) shows a significant relationship among the research variables ($P < 0.01$). Similarly, Pearson's correlation coefficient indicated a strong correlation between the

research variables. The relationship of anxiety and loneliness with SOC and mental health was negative, meaning it was inverse. Conversely, the correlation between SOC and

mental health was positive, indicating an increase in one variable leading to a rise in the other. Following the model implementation, the researcher analyzed the path coefficients, significance levels, and T-values between the research variables within the model.

Based on the findings presented in [Table 5](#) and [Figure 2](#), all path coefficients in the final model are statistically significant. The standard coefficients in [Table 5](#) indicate that the direct impact of SOC on mental health is significant ($\beta=0.415$, $P<0.01$). Additionally, anxiety is shown to have a direct negative influence on mental health ($\beta=-0.207$, $P<0.01$). Furthermore, loneliness is found to have a direct negative impact on mental health ($\beta=-0.365$, $P<0.01$). These results confirm the structural model of the study. The researcher utilized the Sobel test to assess the significance of the mediating variable in the research. This test was performed using a specific formula. In the Sobel test, if the Z value surpasses 1.96, it indicates that the mediating effect of a variable is statistically significant at a 95% confidence level ([Figure 3](#)).

$$Z - value = \frac{a * b}{\sqrt{(b^2 * s_a^2) + (a^2 * s_b^2) + (s_a^2 * s_b^2)}}$$

The Z-value for the anxiety variable was 3.50826847, indicating significance as per the Sobel test results. The findings suggest that the mediating variable in the study plays a crucial role.

The Z-value for the loneliness variable was 7.44540918, suggesting a significant influence based on the Sobel test results. It can be inferred that the mediating variable

played an important role in the research. Following that, the researcher assessed the model fit to the data.

[Table 6](#) indicates that the model has been validated for reliability and validity. The variables have a Cronbach's alpha reliability higher than 0.7, as well as a composite reliability above 0.7. Convergent validity was assessed using the AVE index, with a minimum value of 0.5, indicating that the latent variable explains at least 50% of the variance of its observables. Since the average variance extracted values for the research variables are higher than 0.5, it confirms the validity of the model. The researcher also evaluated the model fit based on [Table 7](#), [Table 8](#) where all fit indices support the model fit. The SRMR index, which measures the difference between observed and structural model correlations, signifies a good fit when below 0.8.

In the same way, the researcher utilized blindfolding as a method to assess the model's capacity for predicting the research variable. When Q^2 or Goodness of Fit values are positive, it suggests that the observed values are accurately reconstructed and the model is effective in making predictions.

In the same way, the researcher checked the goodness of fit of the model using an index based on the following formula.

$$GOF = \sqrt{\text{average (AVE)} \times \text{average (R}^2\text{)}}$$

The anxiety variable yielded a value of 0.954, indicating a good fit for the model as it surpasses 0.36. Similarly, the loneliness variable yielded a value of 0.949, also suggesting a good fit for the model as it exceeds 0.36.

Table 4. Correlation matrix between research variables

Row	Variables	1	2	3	4	P-value
1	Sense of coherence	-	0.967**	-0.962**	-0.971**	P<0.001
2	Mental health	-	-	-0.964**	-0.963**	P<0.001
3	Loneliness	-	-	-	0.967**	P<0.001
4	Anxiety	-	-	-	-	P<0.001

** P<0.01

Table 5. Standard research coefficients in general

Relationship of variables	Path coefficient	P-value	T-value	Result of the hypothesis confirmation
Sense of coherence->Mental health	0.415	P<0.001	7.532	confirmation
Sense of coherence->Loneliness	-0.962	P<0.001	263.018	confirmation
Sense of coherence->Anxiety	-0.971	P<0.001	383.341	confirmation
Loneliness->Mental health	-0.365	P<0.001	3.51	confirmation
Anxiety->Mental health	-0.207	P<0.001	7.41	confirmation

In this research, the researcher set the bootstrap value to 500.

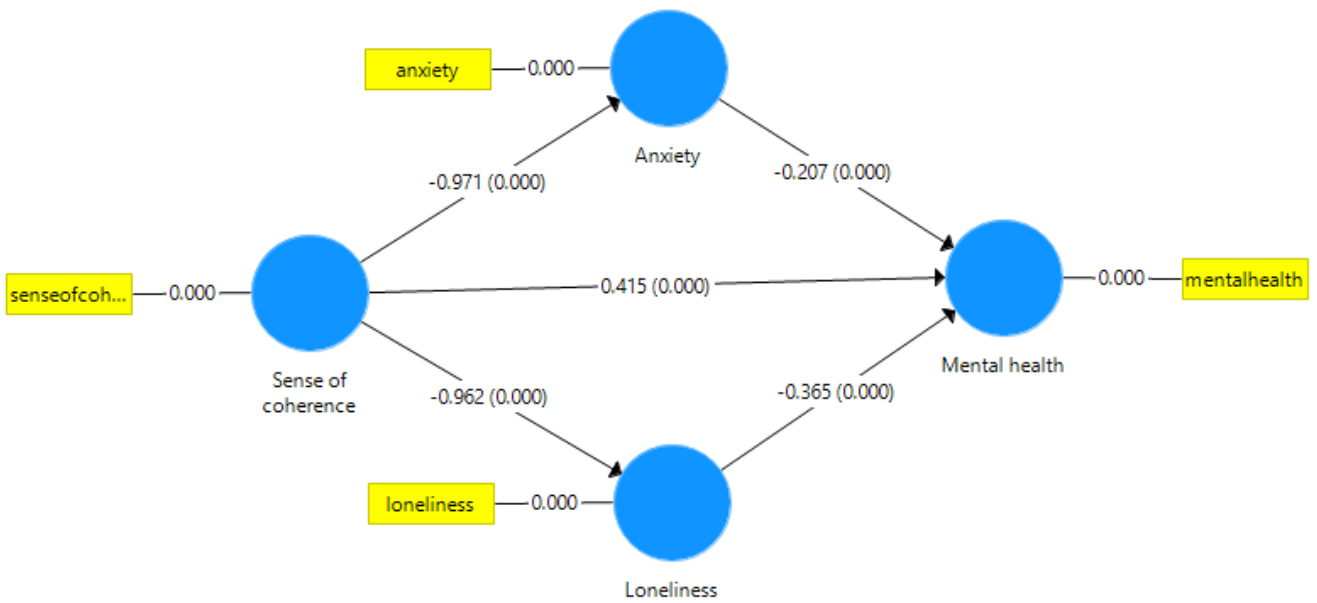


Figure. 2. Path coefficients between variables and significance level

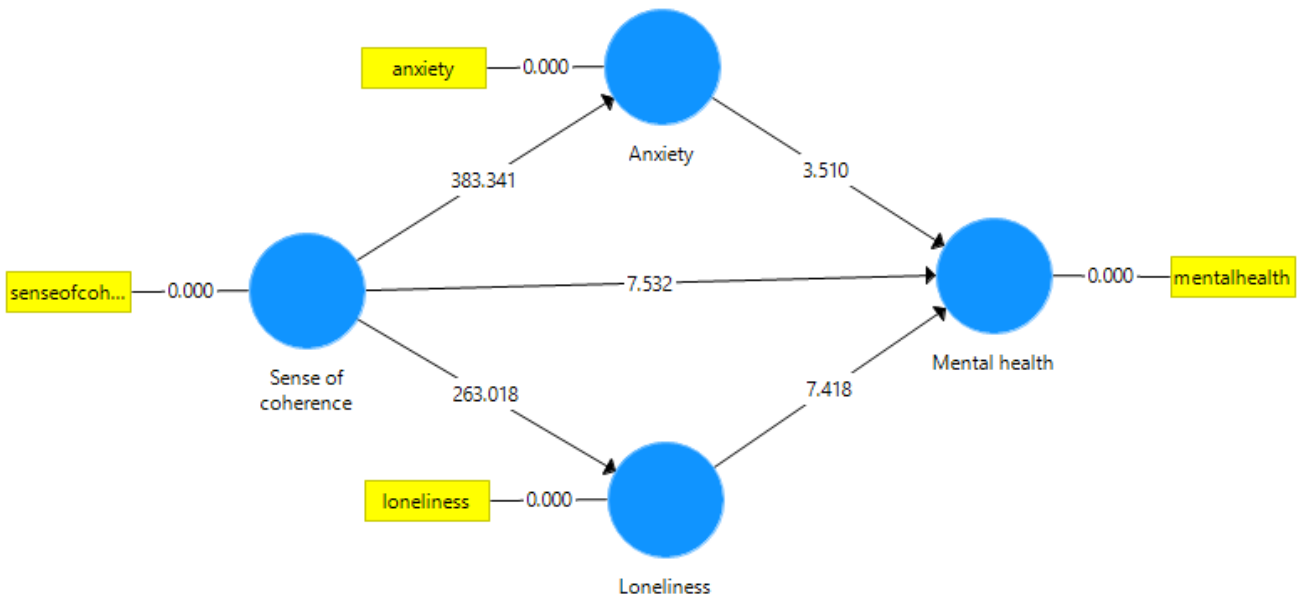


Figure. 3. T-value between variables and significance level

Table 6. Reliability and validity of the model

Variables	Cronbach's Alpha	Composite Reliability	Average variance extracted
Sense of coherence	0.917	0.928	0.97
Mental health	0.912	0.938	0.98
Loneliness	0.981	0.987	0.97
Anxiety	0.893	0.912	0.96

Table 7. Model fit

Fit indices	SRMR	NFI	Chi-squared
Research model	0.011	0.967	85.475

Table 8. Predictive communication Q²

Variables	SSO	SSE	Q ² (=1-SSE/SSO)
Sense of coherence	297.000	18.286	0.938
Mental health	297.000	23.719	0.920
Loneliness	297.000	17.009	0.943
Anxiety	297.000	297.000	

5. Discussion

In this study, the roles of anxiety and loneliness were examined as mediators in the relationship between SOC and mental health among elderly individuals. Aging is often associated with a decline in the mental health of the elderly. Mental health is a state in which individuals compare their current situation with the desired and ideal situation, leading to cognitive evaluation and positive perception of themselves (30). It has been identified that psychological well-being is more related to greater life satisfaction, fewer symptoms of depression and anxiety, happiness, feelings of competence, hope for life, and mental health (34). According to the findings of this study, SOC and mental health were directly and significantly related among the elderly. This finding was consistent with previous research in this area. Research indicates that SOC enables individuals to identify and utilize the resources available to them. The more an individual can perceive and manage the importance of a stressful situation or illness, the greater potential they have to cope with it (36). Consistent with previous studies, SOC was found to be an important factor in predicting the mental health of the elderly (37). Based on previous studies, having a sufficient SOC in the elderly is crucial for their successful coping with various life situations and is highly important

(38). Based on this, the impact of SOC on the mental health of the elderly can be confirmed. In this regard, it should be noted that when the elderly have a greater SOC, they better understand the problems and limitations arising from aging and are less likely to be affected by them, thereby coping better with the problems and feeling more genuine towards them, less prone to problems (40).

Another finding of the research was that anxiety and loneliness had a negative relationship with SOC in the elderly. This finding was also in agreement with previous research in this area. According to previous studies, researchers have concluded that there is a negative relationship between SOC and stress, depression, anxiety, and loneliness (38). In another study, in line with the results of this research, researchers found that SOC reduced mental unrest and anxiety (39).

Another finding of the research was that anxiety and loneliness played a significant mediating role in the relationship between SOC and mental health in the elderly, negatively impacting the relationship between coherence and mental health. Consistent with these results, in previous research, researchers concluded that negative life events, such as anxiety and loneliness, could affect the mental health of the elderly, disrupt it, lead to mental

problems, such as feelings of depression, and result in a decrease in mental health due to creating tension (35). Based on the results of the present study, loneliness has a negative impact on the mental health of the elderly. This finding was consistent with previous research. According to previous studies, one of the major problems in the elderly is loneliness, which weakens the mental health of the elderly (15). In addition, in line with these results, researchers have shown that lonely elderly individuals are less engaged in social interactions and physical activities and are more likely to smoke, drink alcohol, and have sleep problems (16). Loneliness is actually an important indicator of mental health and quality of life in the elderly (17). Moreover, based on previous research, loneliness in the elderly predicts depression, decreased physical activity, cognitive impairment (e.g., the onset of cognitive decline), sleep disturbances, increased vascular resistance, and high blood pressure (18). According to research conducted, researchers have concluded that the relationship between physical health and loneliness is significant and inverse (20). Overall, the impact of loneliness on the mental health of the elderly can be confirmed, and it can be stated that individuals with high levels of loneliness have weaker mental well-being compared to those with low levels of loneliness (32).

Another finding of the research was that anxiety negatively impacted the mental health of the elderly. This finding was in line with previous research. According to previous studies, the elderly are at a higher risk of experiencing anxiety due to a decrease in financial independence, physical problems, chronic diseases, decreased activity and mobility, and losing more friends and relatives (21). Based on previous research, the important and negative consequences of anxiety in the elderly include reduced quality of life, disability, increased need for health services, and elevated mortality rates. In a

study conducted by some researchers, it was found that anxiety decreased the quality of life of the elderly. Furthermore, in another study, some researchers stated that anxiety in life, especially in older adults whose adaptation is decreasing, could have serious and irreparable health consequences for them (26).

The present study, similar to other studies, faced with some limitations. One of the limitations was related to the fact that this research was conducted on a sample of elderly individuals in Shiraz who had files in elderly care centers; therefore, caution must be exercised in generalizing the results to other groups and clinical samples. It is recommended that future research be carried out on a larger sample and more diverse elderly groups, encompassing those not in elderly care centers as well. The other limitation of was associated with the self-report and quantitative scales used to collect information. Since there is a possibility of bias in such tools, participants might have mental bias in their responses. A large number of questionnaire items and some participants' tendency to exaggerate in response to some questionnaire items to create a desirable image of themselves were among the other limitations of this study. Therefore, it is suggested that other methods of information collection, such as observation and interviews (structured and semi-structured), be used in future research as well.

6. Conclusion

Research findings suggested that there was a significant correlation between SOC and mental well-being in the elderly. This indicates that an increase in SOC in the elderly led to a boost in their mental health. The study results revealed that anxiety and loneliness could negatively impact the connection between SOC and mental health in the elderly. It was found that older individuals who experienced anxiety and loneliness were more susceptible to mental health issues. The research emphasizes the importance of enhancing SOC

in the elderly. Therefore, it is recommended to focus on improving SOC during counseling sessions at elderly care centers and providing necessary support to this population.

Acknowledgments

The researchers would like to express gratitude to all the individuals who took part in the study, as their participation was essential for the completion of this research.

Availability of data and materials: The study's dataset can be accessed by contacting the author either during the submission process or after the publication of the study.

Conflicts of interests: The authors declare that there is no conflict of interest.

Consent for publication: The authors grant permission to publish the work by signing the Consent to Publish form and sending it to the Publisher.

Ethics approval and consent to participate: This research was approved by the Ethics Committee of the Islamic University of Hamedan branch with the Ethics Code IR.IAU.H.REC.1402. 216. Written informed consent was obtained from all participants. The present study was conducted in terms of the principles of the revised Declaration of Helsinki.

Financial disclosure: This study did not receive any financial backing.

Author contributions: S. A.: Contributed to the conception of the work, revising the draft; O.T.: Approving the final version of the manuscript, S. A.: Agreeing on all aspects of the work; S.L. and O. T.: Contributed to the data analysis and interpretation, critical revision, and approval of the final version of the manuscript; N. R. and GH. KH.: Contributed to acquiring data, drafting the manuscript, and approving the final version; S.L. and N. R.: Contributed to the conception and design of the study, critical revision, and approval of the manuscript's final version; GH.

KH.: Contributed to the conception and design of the study, data interpretation, drafting of the manuscript and critical revision, and approval of final version.

References

1. Jalali MT, Sarikhani Y, Askarian F, Marzaleh MA, Najibi SM, Delavari S. Factors facilitating and inhibiting the social participation of the elderly in health-oriented activities in Shiraz, Southern Iran. *BMC Geriatr.* 2023 Mar 27;23(1):175. <https://doi.org/10.1186/s12877-023-03892-4>PMid:36973677 PMCID:PMC10042408
2. Salehi N, Afrashteh MY, Majzoobi MR, Ziapour A, Janjani P, Karami S. Does coping with pain help the elderly with cardiovascular disease? The association of sense of coherence, spiritual well-being and self-compassion with quality of life through the mediating role of pain self-efficacy. *BMC Geriatr.* 2023 Jun 28;23(1):393 <https://doi.org/10.1186/s12877-023-04083-x>PMid:37380975 PMCID:PMC10304355
3. iang X, Liu G, Xu J, Li H, Wang J, Pang M, Li S, Xu L, Guo X, Kong F. The relationship between oral health status, loneliness, and sleep quality among the migrant elderly following children in Weifang, Shandong Province, China: A comparative analysis on different migration types. *Front Public Health.* 2023 Feb 8;10:1053690. <https://doi.org/10.3389/fpubh.2022.1053690>PMid:36845346 PMCID:PMC9945269
4. Banerjee A, Duflo E, Grela E, McKelway M, Schilbach F, Sharma G, Vaidyanathan G. Depression and Loneliness among the Elderly in low Low-and Middle-Income Countries. *JEP.* 2023 May 1;37(2):179-202. <https://doi.org/10.1257/jep.37.2.179>
5. Lobanov-Rostovsky S, He Q, Chen Y, Liu Y, Wu Y, Liu Y, Venkatraman T, French E, Curry N, Hemmings N, Bandosz P, Chan WK, Liao J, Brunner EJ. Growing old in China in socioeconomic and epidemiological context: systematic review of social care policy for older people. *BMC Public Health.* 2023 Jun 30;23(1):1272. <https://doi.org/10.1186/s12889-023-15583-1>PMid:37391766 PMCID:PMC10311713
6. Jazayeri Amitis, Kazemipour Shahla, Hosseini Seyedreza, Kafashi Majid. Investigating the major health indicators of the elderly in physical, mental, and social aspects of Mazandaran province. *Islamic lifestyle based on health (Internet).* 1400; 5 (special letter): 125-134.
7. Khalili Z, Taraghi Z, Ilali E, Mousavinasab N. Comparison of the effect of aromatherapy with essential of Damask Rose and Citrus aurantium on the sleep quality of the elderly people. *JNMS.* 2021

- Jan 1;8(1).
https://doi.org/10.4103/JNMS.JNMS_39_20
8. Balooch Rafsanjani E, Morowatisharifabad MA, Jambarsang S, Mirzaei M. Health-related needs of older adults in Rafsanjan County, Kerman, Iran. *Iranian Journal of Ageing*. 2022 Jul 10;17(2):232-45. <https://doi.org/10.32598/sija.2022.3183.1>
 9. Bruncker LB, Bonczyk CS, Rengel KF, Hughes CG. Elderly Patients and Management in Intensive Care Units (ICU): Clinical Challenges. *Clin Interv Aging*. 2023 Jan 22;18:93-112. <https://doi.org/10.2147/CIA.S365968> PMID:36714685 PMCID:PMC9879046
 10. Hossein Nazari N, Nejat H, Saffarian Tosi M. The Effectiveness of Well-being Therapy in Loneliness and Death Anxiety Among the Elderly in Mashhad Day Care Centers. *J Community Health*. 2023 Apr 21;17(1):21-31.
 11. Andreas S, Schulz H, Volkert J, Lüdemann J, Dehoust M, Sehner S, Suling A, Wegscheider K, Ausín B, Canuto A, Crawford MJ, Da Ronch C, Grassi L, Hershkovitz Y, Muñoz M, Quirk A, Rotenstein O, Belén Santos-Olmo A, Shalev A, Weber K, Wittchen HU, Härter M. Incidence and risk factors of mental disorders in the elderly: The European MentDis_ICF65+ study. *Aust N Z J Psychiatry*. 2022 May;56(5):551-559. <https://doi.org/10.1177/00048674211025711> PMID:34250828
 12. Nowrozi, Shahin, Moradi, Esmaili, Pourshams. Frequent disorders in type 2 elderly patients referred to the referring clinic in 2019. *Nursing Quarterly*. January 10, 2023; 11 (1): 2069-85
 13. Battaglia S, Nazi C, Thayer JF. Fear-induced bradycardia in mental disorders: Foundations, current advances, future perspectives. *Neurosci Biobehav Rev*. 2023 Jun;149:105163. <https://doi.org/10.1016/j.neubiorev.2023.105163> PMID:37028578
 14. Valencia-Contrera MA, Sanhueza-Alvarado OI. Diseases associated with loneliness in the elderly: a social challenge. *Enfermería Global*. 2023;22(1):656-68. <https://doi.org/10.6018/eglobal.514761>
 15. Polyakova EV. THE IMPACT OF LONELINESS ON THE MENTAL HEALTH OF THE ELDERLY. *Вестник науки*. 2023;5(4 (61)):332-4.
 16. Chang H, Ruan W, Chen Y, Cai L, Liu X. Gender differences in the relationship between loneliness and health-related behavioral risk factors among the Hakka elderly in Fujian, China. *Front Psychiatry*. 2023 Jun 2;14:1196092 <https://doi.org/10.3389/fpsy.2023.1196092> PMID:37333935 PMCID:PMC10272343
 17. Hosseini Ramaghani N, Mir Drikvand F, Panahi H. The role of communication skills, social support and daily spiritual experiences in predicting loneliness feeling of the elderly. *J Gerontol*. 2017 May 10;2(1):47-57. <https://doi.org/10.18869/acadpub.joge.1.4.47>
 18. Arifin MZ, Rohan HH. Meta-Analysis the Effects of Loneliness on Depression in Elderly. *IJGHR*. 2023 May 26;5(2):335-44. <https://jurnal.globalhealthsciencegroup.com/index.php/IJGHR/article/view/2769/2028>
 19. Beam CR, Kim AJ. Psychological sequelae of social isolation and loneliness might be a larger problem in young adults than older adults. *Psychol Trauma*. 2020 Aug;12(S1):S58-S60. <https://doi.org/10.1037/tra0000774> PMID:32525372
 20. Ebrahimi A, Taher M, Nouhi S. The Relationship Between Mental Health and Physical Health of Elderly Living in Nursing Homes: The Mediating Role of Feelings of Guilt and Loneliness. *Aging Psychology*. 2023 May 5;9(1):31-19.
 21. Arab S, Mohammadi A. The Effectiveness of Cognitive-Behavioral Therapy on Sleep Disorder and Death Anxiety in the Elderly. *Aging Psychology*. 2023 May 5;9(1):102-89.
 22. Hossein Nazari, Nejat, Safarian Toosi. The effectiveness of well-being therapy on feelings of loneliness and death satisfaction of the elderly in Mashhad day care centers. *community health*. 2023; 17 (1): 21-31.
 23. Kazeminia M, Salari N, Vaisi-Raygani A, Jalali R, Abdi A, Mohammadi M, Daneshkhah A, Hosseinian-Far M, Shohaimi S. The effect of exercise on anxiety in the elderly worldwide: a systematic review and meta-analysis. *Health Qual Life Outcomes*. 2020 Nov 11;18(1):363. <https://doi.org/10.1186/s12955-020-01609-4> PMID:33176811 PMCID:PMC7656765
 24. Karimi Farshi, Moheb, Naimeh, Abdi, Livarjani, Sholeh. Evaluating the effectiveness of psychological care in reducing the symptoms of problems in the elderly. *Nurse and doctor in battle*. June 10, 2022; 10 (34): 9-30
 25. Zhang P, Wang L, Zhou Q, Dong X, Guo Y, Wang P, He W, Wang R, Wu T, Yao Z, Hu B, Wang Y, Zhang Q, Sun C. A network analysis of anxiety and depression symptoms in Chinese disabled elderly. *J Affect Disord*. 2023 Jul 15;333:535-542. <https://doi.org/10.1016/j.jad.2023.04.065> PMID:37086797
 26. Abad Y, Haroon Rashidi H. The Effectiveness of Mindfulness-Based Cognitive Therapy on Rumination and Existential Anxiety in the Elderly Men. *Aging Psychology*. 2022 Apr 21;8(1):10-10.22126/JAP.2022.7147.1580
 27. Shayesteh Mehr S, Asgari Doost L, Torabi A, Sagheb Tabrizi M, Aria Faraz E. Predicting mental health based on feelings of loneliness and perceived social support with a mediating role of spirituality in infertile women. *Islamic Life Journal*. 2021 May 10;5(2):92-100

28. Benisi, Parinaz. The effectiveness of positivity training on mental well-being, positive excitement and self-management of elderly women. *Psychology of Aging*. December 16, 2019; 5 (3): 27-217
29. Rani K, Revanth R, Shanmughavadivu N, Flower FL. Economic soundness and Psychological Well-being among the Elderly. *SAJSSH*. 2023 Aug 5;4(2):1-1. <https://doi.org/10.48165/sajssh.2023.4201>
30. Nosrati P, Momeni K, Wahl HW. The Relationship Between Age Stereotypes with Psychological Well-being and Health-Promoting Lifestyle: The Mediating Role of Awareness of Age-Related Changes. *Aging Psychology*. 2023 Apr 25;9(1):59-45. 10.22126/jap.2023.9025.1697 <https://doi.org/10.21203/rs.3.rs-3785776/v1>
31. Hosni, Omid, Shahbazian Khonoig, Sheikh Alizadeh. The diagnostic role of loneliness in differentiating students with high and low mental well-being. *Scientific Journal of Roish Psychology*. 2020 Jan 10;8(11):169-76
32. Ghavami M, Shahbazei M. Comparing the Effectiveness of Compassion-Focused Therapy and Emotion Regulation Training on Cognitive Flexibility and the Feeling of Loneliness in Substance-Dependent Individuals Self-Referring to the Welfare Organization. research on addiction. 2023 May 10;17(67):153-80. 10.52547/etiadpajohi.17.67.153 <https://doi.org/10.52547/etiadpajohi.17.67.153>
33. Afshari, Rezaei. The relationship between social support and coping styles with the psychological well-being of the elderly: the mediating role of self-esteem. *Psychology of aging*. 2023 Jan 21;8(4):18-401.
34. Haghayeghi M, Moghadamzadeh A. The Mediating Model of Mindfulness in the Association between Loneliness and Psychological Well-Being: A Moderated Mediation Approach. *Positive Psychology Research*. 2022 Aug 23;8(2):15-32. 10.22108/ppls.2022.132903.2279
35. Kazemi, Salehi. The mediating role of job satisfaction in the relationship between personality strengths and mental well-being. *Industrial and organizational psychology studies*. 2023 Feb 20;9(2).
36. Salehi N, Afrashteh MY, Majzoobi MR, Ziapour A, Janjani P, Karami S. Does coping with pain help the elderly with cardiovascular disease? The association of sense of coherence, spiritual well-being and self-compassion with quality of life through the mediating role of pain self-efficacy. *BMC Geriatr*. 2023 Jun 28;23(1):393. <https://doi.org/10.1186/s12877-023-04083-x> PMID:37380975 PMCID:PMC10304355
37. Safara, Safadoost, Toubi, Mousavinejad, Mahmoud, Gholamnejad, Haniyeh. The relationship between spiritual health and psychological integrity in the elderly: the mediating role of psychological toughness. *Psychology of aging*. 2023 Jan 29;8(4):375-87
38. Adebusoye LA, Oyinlola O, Cadmus EO. Determinants of Sense of Coherence among older adults attending a Geriatric Centre in Nigeria A study Protocol. *medRxiv*. 2023:2023-06. <https://doi.org/10.1101/2023.06.20.23291667>
39. Tajari T, Javanneshan M, Bayani M. Concepts and Images of Aging From the Perspective of Psychological Components in the Curriculum of the Primary School of the Iranian Educational System: Qualitative Content Analysis. *Iranian Journal of Ageing*. 2023 Mar 10;18(1):2-13. <https://doi.org/10.32598/sija.2022.2910.3>
40. Moradi, Shahrzad, Gudari Mirkohi, Mehdi, Hayati, Mozghan. The effectiveness of the life review program on the feeling of loneliness, social adaptation and cohesion and integration in the elderly. *Psychology of Aging*, 2018; 5(3): 179-199.
41. Besharat M. The relationship between emotional failure and anxiety, depression, psychological helplessness and psychological well-being. *New psychological researches*. *Psychology of Tabriz University*. 2017;3(10):17-40. Available from:
42. Molaei Yasavoli H, Borjaalei A, Molaei Yasavoli M, Fadakar P. Predicting Quality of Life Based on Reef Psychological Well-Being Components: The mediating Role of Life Satisfaction. *J Couns Psychol*. 2016;4(13):7-20.
43. Zakizadeh R, Bahreini M, Farhadi A, Bagherzadeh R. Predictive role of loneliness in mental health of elderly people in Bushehr. *Iranian Journal of psychiatric nursing*. 2020 Jan 10;7(6):71-8. <http://ijpn.ir/article-1-1473-en.html>
44. Mosavi, M., Abolghasemi, A., Hajlu, N., Atadokht, A. (2022). Predicting Suicidal Thoughts in Depressed Patients Based on the Sense of Coherence, Brain-Behavioral Systems, and Attributional Styles, *J Clin. Psychol*.2022; 12(48), 109-135.