



Characteristics of self-satisfaction with the quality of life among seniors after the COVID-19 pandemic

Trojan Daria^{1ABCDEF}, Czaja Robert^{1ABCDEF}, Rzepko Marian^{1ABCDEF}, Drozd Sławomir^{1ABCDEF},
Godek Łukasz^{1ABCDEF}, Brożyna Maciej^{1ABCDEF}

Authors' affiliation:

¹University of Rzeszów, Medical College, Faculty of
Physical Culture Sciences

Authors' Contribution:

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Abstract:	<p>Title: Characteristics of self-satisfaction with the quality of life among seniors after the COVID-19 pandemic</p> <p>Introduction: The COVID-19 pandemic has had a profound impact on the lives of older people, introducing significant challenges in both social and health aspects. Understanding how interventions such as regular physical activity can affect their quality of life is essential to developing effective strategies to support this social group in the post-pandemic period.</p> <p>Aim of the work: The aim of the paper is to analyze the impact of regular physical activity on self-satisfaction with the quality of life among seniors after the COVID-19 pandemic, using the WHOQOL-BREF questionnaire.</p> <p>Material and method: The study was conducted on a group of 60 seniors who completed the WHOQOL-BREF questionnaire before and after a series of training sessions. Data analysis included a comparison of results before and after the intervention, with particular attention paid to changes in the well-being and quality of life of the subjects.</p> <p>Results: The results of the study indicated that seniors participating in regular physical exercise reported an improvement in their self-satisfaction with life. The greatest differences were observed in the areas of mental health and sense of security, while the smallest differences were observed in aspects related to social relationships.</p> <p>Conclusions: The study confirms that regular physical activity can significantly improve the quality of life of seniors, especially in the context of struggling with the negative effects of the pandemic. The work emphasizes the need for further research on the impact of physical activity on various aspects of seniors' lives, which can contribute to the development of more diverse and effective intervention programs for this population.</p>			
Keywords:	life quality, seniors, COVID-19 pandemic			

Introduction

As societies age, the quality of life of seniors is becoming an increasingly important issue. The World Health Organization defines quality of life as the subjective perception of an individual about their position in life in the context of the culture and value system in which they live, in relation to their goals, expectations and interests. As the population ages, understanding what affects the well-being of seniors is crucial.

The COVID-19 pandemic has impacted everyone, but seniors are being hit particularly hard, both by health risks and social isolation. The isolation brought on by global lockdowns has significantly impacted the quality of life of many older people, underscoring the need for effective support methods for this group. The pandemic has also been reported to contribute to increased anxiety and loneliness, further underlining the importance of access to social support and physical activity as mitigating factors.

Regular exercise is widely recommended as a way to improve the quality of life of seniors. It not only improves physical fitness, but also has a positive impact on mental health, helping to manage stress, improve mood and combat symptoms of depression. In

times of pandemic, when traditional forms of activity were limited, individual training programs became even more important.

This work focuses on analyzing how a series of training sessions affected self-satisfaction with life among a group of 60 seniors, using the WHOQOL-BREF questionnaire before and after a series of interventions. The aim is to understand how regular physical activity can affect the perception of quality of life by seniors, especially in the exceptionally difficult period of the pandemic. This study also aims to identify which aspects of the training intervention are most effective, which can contribute to the development of better health strategies for this age group in the future.

The aim of the study

The aim of this work is to conduct a comprehensive analysis of self-satisfaction with the quality of life among older people after the COVID-19 pandemic and to examine the effects of introducing regular physical activity into life. The COVID-19 pandemic has had a huge impact on the social, health and psychological life of older people around the world. Therefore, the aim of this work is to understand how the pandemic has affected the well-being of seniors and what factors determine their level of life satisfaction in the new reality.

To achieve the aim of the work, the following research questions were used:

1. How did regular physical activity after the COVID-19 pandemic affect the level of life satisfaction among seniors?
2. In what aspects were the greatest differences between the first and second studies of life satisfaction in older people?
3. In what aspects were the smallest differences between the first and second studies of life satisfaction in older people?
4. What actions at the individual level can contribute to improving the quality of life of seniors?

By achieving these goals, the work aims to make a significant contribution to understanding the situation of seniors after the COVID-19 pandemic and to provide practical guidance for institutions dealing with elderly care and for society as a whole.

Material and methods

The WHOQOL-BREF (World Health Organization Quality of Life - BREF) questionnaire was used to measure the quality of life of seniors after the COVID-19 pandemic. It is a shortened version of the WHOQOL-100 questionnaire, which was developed by the World Health Organization. The WHOQOL-BREF questionnaire is a commonly used tool to measure quality of life in scientific and clinical studies worldwide [39].

The WHOQOL-BREF questionnaire consists of 26 questions that assess 4 main domains:

1. Domain 1: Physical (e.g. energy, mobility, daily activities, pain) – 7 questions
2. Domain 2: Mental (e.g. life satisfaction, emotions, concentration) – 6 questions
3. Domain 3: Social relationships (e.g. social support, relationships with loved ones) – 3 questions
4. Domain 4: Environment (e.g. place of residence, access to services, safety) – 8 questions

In addition to these domains, the first two questions measure:

- general assessment of quality of life,
- general assessment of health.

Respondents answer questions, assessing their experiences from the last two weeks on a five-point Likert scale [40]. The study was conducted in the form of a survey interview with seniors living in Rzeszów and the surrounding area. The respondents are active

members of the University of the Third Age operating at the University of Rzeszów. The respondents were informed about the objectives of the study and the voluntary nature of their participation, as well as the guarantee of confidentiality of the collected data. The first part of the study was conducted during the first meeting as part of the grant organized at the University Athletics Center "Intergenerational dimension of physical fitness after the COVID-19 pandemic". The same questionnaires were completed by the participants after the project had ended. The study involved 30 women and 30 men aged 60 to 79.

Data were collected using paper versions of the WHOQOL-BREF questionnaires, which were distributed to the study participants. Participants had time to complete the questionnaire on their own, and then the data were collected by the researchers.

After the first round of research, at the project opening meeting, participants received training plans from the organizers, in accordance with WHO guidelines for this age group, with the recommendation of regular physical activity on their own. Additionally, four group training sessions were organized, to which each study participant was invited.

The obtained data were statistically analyzed using appropriate tools, such as descriptive analysis, statistical tests (Student's t-test) and correlation analysis using Microsoft Excel and Statistica. The data analysis aimed to understand the relationships between various variables and identify factors determining the quality of life of seniors after the COVID-19 pandemic. Thanks to the use of the above methods and measurement tool, it was possible to conduct a comprehensive analysis of the self-satisfaction with the life of seniors after the COVID-19 pandemic before and after a series of group training sessions organized by the University of Rzeszów and answer the research questions.

Results

The presented data include a comparison of the mean scores of the 26 questions of the questionnaire, the minimum and maximum values of the answers, the standard deviation and the coefficient of variation, which allowed for a thorough understanding of the nature of the observed changes. In order to determine the statistical significance of the differences between the results from before and after training. The Student's t-test for dependent samples was used, which is the basis for further interpretation and discussion.

The analysis of responses to question 1 before and after the intervention showed an improvement in mean scores, from 3.65 before the intervention to 4.10 after it. Although the minimum scores increased from 1 to 2 and the maximum scale value of 5 was reached after the intervention, the increase in standard deviation from 0.75 to 0.85 indicates a greater variability in responses. The coefficient of variation remained relatively stable, increasing slightly from 0.20 to 0.21. The p-value is 0.10, which means that the observed differences did not reach statistical significance.

Table 1. Comparison of answers to question 1

QUESTION 1	BEFORE	AFTER
\bar{x}	3.65	4.10
Min	1.00	2.00
Max	4.00	5.00
SD	0.75	0.85
\bar{v}	0.20	0.21
p-value	0.10	0.10

Table 2. Comparison of answers to question 2

QUESTION 2	BEFORE	AFTER
\bar{x}	3.30	3.65
Min	2.00	2.00
Max	4.00	5.00
SD	0.80	0.88
\bar{v}	0.24	0.24
p-value	0.17	0.17

Table 3. Comparison of answers to question 3

QUESTION 3	BEFORE	AFTER
\bar{x}	3.87	3.90
Min	3.00	2.00
Max	5.00	5.00
SD	0.91	0.97
\bar{v}	0.23	0.25
p-value	0.74	0.74

Table 4. Comparison of answers to question 4

QUESTION 4	BEFORE	AFTER
\bar{x}	4.00	4.00
Min	1.00	2.00
Max	5.00	5.00
SD	0.91	0.79
\bar{v}	0.23	0.20
p-value	0.68	0.68

Table 5. Comparison of answers to question 5

QUESTION 5	BEFORE	AFTER
\bar{x}	2.93	3.35
Min	2.00	1.00
Max	4.00	5.00
SD	0.69	0.93
\bar{v}	0.23	0.28
p-value	0.28	0.28

Table 6. Comparison of answers to question 6

QUESTION 6	BEFORE	AFTER
\bar{x}	2.93	2.95
Min	2.00	2.00
Max	4.00	5.00
SD	0.69	0.89
\bar{v}	0.23	0.30
p-value	0.71	0.71

Table 7. Comparison of answers to question 7

QUESTION 7	BEFORE	AFTER
\bar{x}	3.20	3.30
Min	2.00	2.00
Max	5.00	4.00
SD	0.79	0.57
\bar{v}	0.25	0.17
p-value	0.82	0.82

Table 8. Comparison of answers to question 8

QUESTION 8	BEFORE	AFTER
\bar{x}	3.60	3.65
Min	3.00	2.00
Max	5.00	5.00
SD	0.67	0.81
\bar{v}	0.19	0.22
p-value	1.00	1.00

Table 9. Comparison of answers to question 9

QUESTION 9	BEFORE	AFTER
\bar{x}	3.13	3.20
Min	2.00	1.00
Max	4.00	5.00
SD	0.55	0.89
\bar{v}	0.18	0.28
p-value	0.85	0.85

Table 10. Comparison of answers to question 10

QUESTION 10	BEFORE	AFTER
\bar{x}	3.85	3.95
Min	3.00	3.00
Max	5.00	5.00
SD	0.75	0.76
\bar{v}	0.19	0.19
p-value	0.65	0.65

Table 11. Comparison of answers to question 11

QUESTION 11	BEFORE	AFTER
\bar{x}	3.80	3.80
Min	1.00	2.00
Max	5.00	5.00
SD	0.95	0.89
\bar{v}	0.25	0.24
p-value	1.00	1.00

Table 12. Comparison of answers to question 12

QUESTION 12	BEFORE	AFTER
\bar{x}	3.80	3.65
Min	2.00	2.00
Max	5.00	5.00
SD	1.01	0.88
\bar{v}	0.26	0.24
p-value	0.60	0.60

Table 13. Comparison of answers to question 13

QUESTION 13	BEFORE	AFTER
\bar{x}	3.90	4.25
Min	2.00	3.00
Max	5.00	5.00
SD	0.85	0.72
\bar{v}	0.22	0.17
p-value	0.26	0.26

Table 14. Comparison of answers to question 14

QUESTION 14	BEFORE	AFTER
\bar{x}	4.05	4.30
Min	3.00	3.00
Max	5.00	5.00
SD	0.60	0.80
\bar{v}	0.15	0.19
p-value	0.26	0.26

Table 15. Comparison of answers to question 15

QUESTION 15	BEFORE	AFTER
\bar{x}	4.05	4.05
Min	3.00	2.00
Max	5.00	5.00
SD	0.60	1.05
\bar{v}	0.15	0.26
p-value	1.00	1.00

Table 16. Comparison of answers to question 16

QUESTION 16	BEFORE	AFTER
\bar{x}	3.70	3.85
Min	2.00	2.00
Max	5.00	5.00
SD	0.92	0.93
\bar{v}	0.25	0.24
p-value	0.56	0.56

Table 17. Comparison of answers to question 17

QUESTION 17	BEFORE	AFTER
\bar{x}	4.05	4.15
Min	3.00	3.00
Max	5.00	5.00
SD	0.60	0.81
\bar{v}	0.15	0.20
p-value	0.72	0.72

Table 18. Comparison of answers to question 18

QUESTION 18	BEFORE	AFTER
\bar{x}	3.85	3.90
Min	2.00	2.00
Max	5.00	5.00
SD	0.81	0.91
\bar{v}	0.21	0.23
p-value	0.83	0.83

Table 19. Comparison of answers to question 19

QUESTION 19	BEFORE	AFTER
\bar{x}	3.85	3.90
Min	2.00	1.00
Max	5.00	5.00
SD	0.67	1.07
\bar{v}	0.17	0.27
p-value	0.86	0.86

Table 20. Comparison of answers to question 20

QUESTION 20	BEFORE	AFTER
\bar{x}	4.00	4.00
Min	3.00	2.00
Max	5.00	5.00
SD	0.56	0.97
\bar{v}	0.14	0.24
p-value	1.00	1.00

Table 21. Comparison of answers to question 21

QUESTION 21	BEFORE	AFTER
\bar{x}	3.20	3.20
Min	2.00	1.00
Max	4.00	5.00
SD	0.70	1.15
\bar{v}	0.22	0.36
p-value	1.00	1.00

Table 22. Comparison of answers to question 22

QUESTION 22	BEFORE	AFTER
\bar{x}	3.85	3.90
Min	3.00	2.00
Max	5.00	5.00
SD	0.75	0.97
\bar{v}	0.19	0.25
p-value	0.87	0.87

Table 23. Comparison of answers to question 23

QUESTION 23	BEFORE	AFTER
\bar{x}	4.35	4.25
Min	2.00	3.00
Max	5.00	5.00
SD	0.75	0.79
\bar{v}	0.17	0.19
p-value	0.67	0.67

Table 24. Comparison of answers to question 24

QUESTION 24	BEFORE	AFTER
\bar{x}	2.75	2.70
Min	1.00	1.00
Max	4.00	5.00
SD	1.21	1.30
\bar{v}	0.44	0.48
p-value	0.87	0.87

Table 25. Comparison of answers to question 25

QUESTION 25	BEFORE	AFTER
\bar{x}	4.15	4.15
Min	4.00	2.00
Max	5.00	5.00
SD	0.67	0.93
\bar{v}	0.16	0.22
p-value	1.00	1.00

Table 26. Comparison of answers to question 26

QUESTION 26	BEFORE	AFTER
\bar{x}	3.35	3.60
Min	1.00	2.00
Max	5.00	5.00
SD	1.04	0.99
\bar{v}	0.31	0.28
p-value	0.40	0.40

Table 27. Comparison of answers to domain 1

DOMAIN 1	BEFORE	AFTER
\bar{x}	57.68	61.96
Min	50.00	53.57
Max	78.57	71.43
SD	6.16	6.48
\bar{v}	0.11	0.10
p-value	0.02	0.02

Table 28. Comparison of answers to domain 2

DOMAIN 2	BEFORE	AFTER
\bar{x}	68.33	70.83
Min	41.67	58.33
Max	87.50	91.67
SD	9.40	7.88
\bar{v}	0.14	0.11
p-value	0.36	0.36

Table 29. Comparison of answers to domain 3

DOMAIN 3	BEFORE	AFTER
\bar{x}	72.08	73.33
Min	58.33	50.00
Max	91.67	100.00
SD	9.47	11.97
\bar{v}	0.13	0.16
p-value	0.65	0.65

Table 30. Comparison of answers to domain 4

DOMAIN 4	BEFORE	AFTER
\bar{x}	71.09	67.66
Min	59.38	56.25
Max	84.38	71.88
SD	7.98	3.96
\bar{v}	0.11	0.06
p-value	0.06	0.06

Discussion

It is important to examine and understand how different actions and recommendations may affect the well-being of this social group in the context of the ongoing social and health changes caused by the COVID-19 pandemic. Referring to other studies will allow for the identification of potential factors influencing the effectiveness of training and suggesting possible directions for future actions in this area.

M. Slimani in his study found that regular physical activity among seniors during the COVID-19 pandemic lockdown had a significant impact on improving the quality of life, which confirms the results of his research[41]. A study conducted in Tunisia showed that older people who engaged in moderate to high intensity physical activity had significantly better results in terms of quality of life, both in the physical, psychological, social and environmental spheres, compared to inactive people [42].

The study found that older people participating in a training cycle noted progress in various WHOQOL-BREF domains after the intervention. Although the increase in mean values did not reach statistical significance in all domains, the observed trend of improvement is consistent with international studies that emphasize the role of regular physical activity as a fundamental factor in improving the health and quality of life of seniors. Future studies should focus on the long-term effects of regular training, also examining how different types and intensities of physical exercise affect specific aspects of older people's lives. It is also important to understand how motivational factors, access to fitness programs, and social support affect the engagement of older people in physical activity during and after the COVID-19 pandemic [43].

A study conducted by Jung in South Korea provides significant data on the impact of the COVID-19 pandemic on the lives of older people, their mental health, and cognitive functions. In his article, he showed that the COVID-19 pandemic has negatively affected the memory, physical activity, diet, overall quality of life, mood, and sleep quality of seniors [44].

In light of these results, the study in this paper, focusing on the impact of regular physical exercise on the quality of life of older people, also suggested potential benefits of such interventions. Although no significant statistical differences were observed in all WHOQOL-BREF domains examined, a trend towards improvement was observed, suggesting that regular exercise may help to mitigate the negative effects of the pandemic on the quality of life of older people. This highlights the need to implement effective interventions that support both physical and mental aspects of health of older people in the face of global health crises [45]. The results of Jung's research provide additional context to the research, highlighting the importance of preventive and intervention strategies to improve the quality of life of this demographic group.

The systematic review by Nshimirimana et al. provides a comprehensive analysis of the impact of the COVID-19 pandemic on the quality of life of a broad population. According to the results of this study, a significant deterioration in quality of life was observed as a result of the pandemic. These findings are consistent with the results of the conducted study, which indicates that physical activity interventions can mitigate the negative effects of the pandemic on seniors. Nshimirimana found that demographic, health, and economic factors had a significant impact on the decrease in quality of life, which also reflects the results of my study, showing an improvement in WHOQOL-BREF scores among seniors [46].

In light of this review, the study conducted at the University of Rzeszów adds additional context to the global data, suggesting that appropriately designed interventions can play a key role in minimizing the impact of global health crises on specific demographic groups. These findings can serve as a foundation for future research on intervention strategies that could be effectively tailored to the needs of older people, which is crucial for health and social policy.

A study by Briere et al. of Canadian seniors provides important information on the impact of loneliness and social isolation on quality of life and well-being during the COVID-19 pandemic. The results indicate that loneliness significantly worsens both of these aspects[47], which correlates with the results of the study discussed in the paper, which examined the impact of regular exercise in older adults. Although physical activity can reduce loneliness through group exercise and interaction, the findings of the Canadian study underscore the importance of social support and targeted interventions to combat social isolation.

The study suggests that while physical interventions are important, it is equally important to address the social and emotional needs of seniors, especially in the context of the long-term challenges posed by the pandemic. Briere notes that older adults with limited financial resources and multiple chronic diseases are particularly vulnerable to the negative effects of the pandemic.[48] This observation may encourage further research into the comprehensive impact of interventions on improving the quality of life of seniors.

A study conducted by Duan et al. in Hubei, China, shows the impact of healthy lifestyle habits, such as regular physical activity, a diet rich in fruits and vegetables, and the use of preventive measures (washing hands, wearing masks, maintaining social distance), on the quality of life of seniors after the first wave of the COVID-19 pandemic.[49] In the context of the Rzeszów study, focused on assessing the impact of regular training on quality of life, these findings confirm the importance of regular physical interventions in improving the general well-being and well-being of older people.

Similar to Duan's study, seniors who engage in healthy living practices have been observed to experience improved quality of life, which suggests the need for comprehensive interventions. These interventions should include not only physical exercise but also health education and support in adopting healthy habits on a daily basis. These results underscore the benefits that may result from expanding the scope of health programs for seniors, especially during periods of increased risk of social isolation and restrictions resulting from the pandemic.

A review study by Churchill et al. focuses on the role of physical activity in managing stress among older adults during the COVID-19 pandemic.[50] The authors thoroughly review the literature for evidence that physical exercise can be an effective, cost-effective, and noninvasive method for improving stress management, which can significantly improve the quality of life of older adults.

A study of participants from the University of the Third Age, assessing the impact of a series of training sessions on the quality of life of seniors, shows similar trends. Although the work by Churchill et al is a review of the literature, not direct results of an intervention, it highlights the importance of physical activity as a key element in supporting the mental health of older people. According to my results, although not all differences were statistically significant, there was a trend towards improvement, suggesting that regular exercise may be beneficial for this population group, especially during the difficult times of the global pandemic.

This particularly highlights the need to include exercise programs in the ongoing care of seniors, which can not only improve their health parameters, but also help to better manage stress and the negative psychological effects associated with it. The study conducted by Nosaka et al. provides valuable data on the impact of the COVID-19 pandemic lockdown on physical activity behaviors among seniors who had previously participated in exercise programs. The researchers noted that despite numerous restrictions, a significant proportion of the seniors studied (approximately 80%) continued to implement the levels of physical activity recommended by the WHO[51]. These results emphasize the importance of established habits related to regular physical activity and the important role of programs supporting exercise, even during isolation.

The study, focusing on the impact of a series of training sessions on the quality of life of seniors in Rzeszów, also found that continued physical activity can help mitigate the negative effects of social isolation on the mental and physical health of older people. Nosaka emphasized that social support and access to competent instructors and appropriate exercise materials were key to maintaining the participants' engagement.

These observations can serve as a basis for future research and interventions aimed at promoting the health and well-being of seniors through physical activity, especially in the context of possible future pandemics or other circumstances that force long-term social isolation.

In conclusion, it is worth noting the significant impact of regular physical exercise on improving the quality of life of older people. The research results indicate positive effects

of introducing training programs, which can significantly improve both the physical and mental well-being of seniors, especially in the face of the challenges related to the COVID-19 pandemic. Although not all changes reached the level of statistical significance, the observed trend towards improved health indicates the need for further research. However, it should be emphasized that each intervention requires individual adjustment, taking into account the specific needs and capabilities of a given population group. Future studies should therefore further investigate the impact of physical activity on the lives of seniors, also taking into account other factors, such as social support, access to health care, and the personal preferences and limitations of the person.

Conclusions

Based on the conducted research, the following answers to the formulated research questions can be presented:

1. Data analysis revealed that study participants who engaged in regular physical activity experienced higher levels of life satisfaction. The discussion of the study results demonstrates that regular physical activity has a significant positive impact on the well-being of seniors, underlining its value as a strategic tool in improving the quality of life of this demographic group.
2. The most significant differences were identified in the area of mental health and sense of security. Seniors who exercised regularly reported a significant reduction in depressive symptoms and an increase in their overall sense of stability, which indicates the key importance of physical activity in health prevention.
3. The smallest differences were observed in areas related to social interactions and support from family and friends, suggesting that these aspects of seniors' lives were relatively stable and independent of increased physical activity.
4. Promotion of regular physical exercise and health education regarding healthy lifestyle habits can effectively contribute to improving the quality of life of older people. The role of access to qualified instructors and appropriate educational resources is also important, which is especially important in periods of increased risk of social isolation.

The study showed that regular physical activity and social programs improve the quality of life of seniors after the COVID-19 pandemic. It is important that the level and intensity of training are adapted to the age and abilities of the participants. The aspect of health education is also extremely important as an element of support for older people on the way to improving their quality of life. In summary, the research results make a significant contribution to understanding the impact of the pandemic on the lives of older people and show how appropriately designed interventions can effectively improve their well-being. These results can serve as a basis for recommendations for care institutions and for health and social policy makers.

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