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smaku i wzroku**

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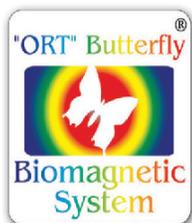
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Monitoring of functional ability, mobility and quality of life in seniors during the COVID-19 pandemic

Monitorowanie sprawności funkcjonalnej, mobilności i jakości życia seniorów w czasie pandemii COVID-19

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Abstract

Aim. The aim of the work is to map the functional fitness, level of mobility and quality of life of seniors at the time of the COVID-19 pandemic.

Methods. The study group consisted of 130 seniors from the Prešov Region, with an average age of 74.1 (max. 94, min. 65) years and an average Body Mass Index (BMI) of 27.13 (max. 41.09, min 16.00). There were 54 men (41.5%), with an average age of 74.3 years and an average BMI of 26.78, women with an average age of 74.0 years and an average BMI of 27.37. In all seniors we assessed physical fitness by Senior Fitness Test, level of mobility by the Up & go test and quality of life and mental health by the WHOQOL-BREF test during the lockdown in COVID-19 pandemic.

Results. Seniors living in rural areas ($t = -2,341$; $p = 0.020$) and living alone ($t = -2.05$; $p = 0.042$) had slightly higher rate of mild obesity (according to BMI). Seniors living alone had a lower quality of life compared with seniors living partner or family member ($t = 3.728$; $p < 0.001$). Finally, seniors living in rural areas had worse physical ($t = 3.113$; $p = 0.002$) and mental health status ($t = 2.601$; $p = 0.010$). Women had slightly worse mental health status than men ($t = 2.308$; $p = 0.022$).

Conclusions. Restrictions on movement due to the COVID-19 pandemic put seniors who live alone, at risk, especially women. Men show higher resistance to these measures, mostly in physical and psychological health area.

Key words:

COVID-19, movement activity, physical fitness, quality of life, seniors

Streszczenie

Cel. Celem pracy jest ocena sprawności funkcjonalnej, poziomu sprawności ruchowej oraz jakości życia seniorów w czasie pandemii COVID-19.

Metody. Grupę badaną stanowiło 130 seniorów z województwa preszowskiego o średniej wieku 74,1 (maks. 94, min. 65) lat i średnim wskaźniku masy ciała (BMI) 27,13 (maks. 41,09, min. 16,00). Wśród nich było 54 mężczyzn (41,5%): średnia wieku 74,3 lat i średnie BMI 26,78, oraz 76 kobiet: średnia wieku 74,0 lat i średnie BMI 27,37. U wszystkich seniorów oceniliśmy sprawność fizyczną za pomocą badania Senior Fitness Test, poziom sprawności ruchowej za pomocą testu Up&Go oraz jakość życia i zdrowie psychiczne za pomocą testu WHOQOL-BREF w okresie lockdownu podczas pandemii COVID-19.

Wyniki. Seniorzy mieszkający na wsi ($t = -2341$; $p = 0,020$) i mieszkający samotnie ($t = -2,05$; $p = 0,042$) charakteryzowali się nieco wyższym odsetkiem lekkiej otyłości (według BMI). Seniorzy mieszkający samotnie charakteryzowali się niższą jakością życia w porównaniu z seniorami mieszkającymi z partnerem lub członkiem rodziny ($t = 3,728$; $p < 0,001$). Wreszcie seniorzy mieszkający na wsi mieli gorszy stan zdrowia fizycznego ($t = 3,113$; $p = 0,002$) i psychicznego ($t = 2,601$; $p = 0,010$). Kobiety miały nieco gorszy stan zdrowia psychicznego niż mężczyźni ($t = 2,308$; $p = 0,022$).

Wnioski. Ograniczenia w przemieszczaniu się spowodowane pandemią COVID-19 narażają na niebezpieczeństwo seniorów mieszkających samotnie, zwłaszcza kobiety. Mężczyźni wykazują większą odporność na taką sytuację, głównie w zakresie zdrowia fizycznego i psychicznego.

Słowa kluczowe:

COVID-19, aktywność ruchowa, sprawność fizyczna, jakość życia, seniorzy

Introduction

The disease COVID-19 was discovered in December 2019 [1]. It is caused by a new coronavirus, which is structurally related to the virus that causes severe acute respiratory syndrome (SARS). Mostly symptoms such as a cold, sore throat and fever, cough, or loss of taste and smell are present during the outbreak of the disease. Older age is associated with a higher risk of a severe course of the disease [2].

To control the spread of the COVID-19 disease, most countries have imposed a lockdown. The area of life that is significantly affected by the lockdown is physical activity. Changing external circumstances can interrupt “automatic” patterns of behavior through “habit discontinuity” [3], leading to the formation of new health habits [4]. Due to these measures, seniors are at higher risk of insufficient physical activity, because especially older people are often afraid of their health status and health complications, hence they are more likely to exhibit adaptive behavior related to limited mobility [5]. This study is focused on the functional fitness, mobility, and quality of life in seniors during the COVID-19 pandemic.

Materials and methods

We included consecutive 130 seniors who reached age of > 65 years at the time of the monitoring were included in this study. All participants agreed to participate actively in the study monitoring and were able to adequately perform the specified tests. Respondents were informed that they could withdraw from the research at any time, without giving a reason and without any sanctions.

We did not include seniors who did not agree to participate actively, or were unable to perform the specified tests adequately. Also seniors suffering from health conditions such as psychiatric, cardiological, neurological or movement disorders, or other diseases potentially interfering with active participation in the study protocol were not included in the research.

In all the respondents, we determined the body mass index (BMI), physical fitness through the Senior Fitness Test (SFT) [6], the level of mobility through the Up & go test [7] and quality of life and mental health status through the WHOQOL-BREF test [8].

The SFT is an established set of body and movement elements that older patients must perform to determine their physical fitness. The examination consists of seven kinetic tests: Lower Extremity Strength and Endurance, Upper Extremity Strength and Endurance, Aerobic Endurance, Lower Body Flexibility, Shoulder Range of Motion, Motor Agility and Dynamic Balance, and Aerobic Endurance.

In the Up&go test, the examined person sits on a chair. When the command is given, person stands up, walks the three-meter distance marked on the floor at a normal pace, then turns around, walks back, and sits on the chair. The time is measured from the time when the person stands up until he sits down on the chair again after walking the distance.

WHOQOL-BREF consists of 24 questions grouped into fo-

ur domains and two separate questions assessing quality of life and health status. The individual questions of the questionnaire are rated on a scale from 1 to 5, with a higher score indicating a higher quality of life in the respective item, or area.

For monitoring of physical activity, participating seniors were divided into two groups according to three criteria, which we compared with each other. By gender (men / women), place of residence (lives in the city / in the countryside), by the number of household members (lives alone / lives with someone partner or family member).

Measured values, were normally distributed, therefore were statistically evaluated using a parametric, two-sample t-test, with a significance level of 95% (0.05).

Results

We included 130 seniors with a mean age of 74.1 years. (max. 94, min. 65) and a mean BMI of 27.13 (max. 41.1, min. 16.0). There were 54 men, with a mean age of 74.3 years. (max. 88, min. 65) and a mean BMI of 26.8, (max. 40.4, min. 18.0) and 76 women, with a mean age of 74.0 years. (max. 94, min. 65) and a mean BMI of 27.4 (max. 41.1, min. 16.0). Out of 130 seniors, 45 lived alone (16 men and 29 women) and 85 with a partner or family (38 men and 47 women). Of all the respondents, 78 lived in the city (33 men and 45 women) and 52 in the countryside (21 men and 31 women).

No differences were found between the groups of men and women in the monitored variables of physical fitness and level of mobility. But the men had slightly higher scores in the mental health domain of the WHOQOL BREF questionnaire (men 3.673 vs. women 3.669; $t = 2.3$; $p = 0.022$) (Tab. 1)

On average, we found a slightly higher rate of mild obesity in seniors living in the countryside than in seniors living in the city (27.74 vs. 26.72; $t = 2.34$; $p = 0.020$). We also found a difference in the domains of physical health and mental health in the WHOQOL BREF questionnaire. Seniors living in the city had an overall higher level of physical (3.30 vs. 3.17; $t = 3.113$; $p = 0.002$) and psychological health (3.71 vs. 3.52; $t = 2.601$; $p = 0.010$) than seniors living in countryside (Tab. 2).

Seniors living not alone (with partner, or family member), had on average a higher rate of mild obesity than respondents who lived alone (27,37 vs. 26,66, $t = -2.05$; $p = 0.042$).

Differences were found in the quality of life domain in the WHOQOL BREF questionnaire ($t = 3.73$; $p = 0.000$). In addition, seniors living not alone had higher level of quality of life than seniors living alone (3.86 vs. 3.36; $t = 3,728$; $p < 0.0001$) (Tab. 3).

Also, the seniors living in rural areas had worse physical health status than seniors from city, and psychological health status than seniors from city. Higher BMI was observed in seniors from rural areas.

Table 1. Average values, median and statistical evaluation of the researched variables between the groups of men (n = 54) and women (n = 76)

	men (min–max)	med.	women (min–max)	med.	t	p
BMI	26.78 (18–40.4)	24	27.37 (16–41.09)	25	–1.046	0.830
SFT	10.574 (4–30)	9.5	9.302 (1–30)	9	–1.667	1.391
Up & go	12.745 (5–50)	11	16.922 (4–74)	11	–1.341	0.182
WHOQOL						
quality of life	3.741 (1–5)	4	3.645 (2–5)	4	0.701	0.485
satisfaction	3.407 (2–5)	3	3.118 (1–5)	3	1.865	0.064
physical h.	3.278 (2.1–4.1)	4	3.246 (1.8–4.4)	3.143	1.375	0.170
psycholog. h.	3.673 (2.6–5)	4	3.669 (2.2–5)	4	2.308	0.022
social. relat.	3.500 (2.3–5)	4	3.586 (2–5)	4	0.684	0.495
enviromental	3.586 (2.5–4.5)	4	3.506 (2.1–4.6)	4	0.401	0.689

med.- median, t – t value, p – p value, BMI – body mass index, SFT – senior fitness test, up&go – mobility test, WHOQOL – WHOQOL BREF

Table 2. Average values, median and statistical evaluation of the researched variables between groups of respondents who live in the city (n = 78) and in the countryside (n = 52)

	city (min–max)	med.	countryside (min–max)	med.	t	p
BMI	26.72 (18–40.4)	24	27.74 (16–41.09)	25	–2.341	0.020
SFT	9.179 (1–30)	8	10.808 (3–30)	10	–1.779	0.078
Up & go	14.076 (4–52)	11	16.853 (5–74)	12	–1.133	0.259
WHOQOL						
quality of life	3.615 (1–5)	4	3.788 (3–5)	4	–1.262	0.209
satisfaction	3.192 (1–5)	3	3.308 (1–5)	3	–0.732	0.465
physical h.	3.297 (1.9–4.6)	4	3.173 (2.6–4.4)	3.5	3.113	0.002
psycholog. h.	3.707 (2.3–5)	4	3.520 (2.2–4.7)	4	2.601	0.010
social. relat.	3.585 (2–5)	4	3.577 (2–5)	4	1.635	0.103
enviromental	3.538 (2.1–4.5)	4	3.583 (2.6–4.7)	4	0.401	0.560

med.- median, t – t value, p – p value, BMI – body mass index, SFT – senior fitness test, up&go – mobility test, WHOQOL – WHOQOL BREF

Table 3. Average values, median and statistical evaluation of the researched variables between groups of respondents who live alone (n = 45) or with someone (n = 85)

	city (min–max)	med.	countryside (min–max)	med.	t	p
BMI	26.66 (18–39)	23	27.37 (16–41.09)	25	–2.047	0.042
SFT	8.778 (1–20)	8	10.388 (3–30)	10	–1.707	0.090
Up & go	15.846 (7–45)	11	14.839 (4–74)	11	–0.241	0.810
WHOQOL						
quality of life	3.356 (1–5)	3	3.859 (2–5)	4	3.728	< 0.001
satisfaction	3.289 (2–5)	3	3.212 (1–5)	3	0.475	0.636
physical h.	3.029 (2–3.9)	3	3.096 (2.1–4.1)	3	–1.481	1.140
psycholog. h.	3.385 (2.5–4.2)	4	3.535 (2.2–4.5)	4	0.455	0.649
social. relat.	3.474 (1.7–4.7)	4	3.663 (2–5)	4	1.985	0.326
enviromental	3.731 (2.2–4.9)	4	3.729 (2.1–4.7)	4	–1.476	0.141

med.- median, t – t value, p – p value, BMI – body mass index, SFT – senior fitness test, up&go – mobility test, WHOQOL – WHOQOL BREF

Discussion

This study monitored the functional fitness, level of mobility and quality of life of 130 seniors during the lockdown in COVID-19 pandemic. It was found that during the lockdown, seniors living in

the city had a higher level of physical and psychological health. Women had a significantly lower level of psychological health, and seniors living alone had a lower level of quality of life. Overall, the most vulnerable seniors were those who lived in rural areas and

alone. It appeared that, men showed higher psychological resilience, as they had slightly higher levels of psychological health.

Similar conclusions, compared to our study, were found by Urzeala et al. [9] who conducted an online survey during the lockdown in the first wave of COVID-19 pandemic in different regions of the world. This study investigated the main consequences of the lockdown on various parameters related to physical activity as part of an active lifestyle and found that older people, women, and obese participants are populations more affected by the COVID-19 restrictions, especially in terms of physical activity.

Similarly, Van Tilburg et al. [10] focused on the assessment of social and emotional loneliness and mental health, 2 months after the implementation of the lockdown, in 1679 community-dwelling participants between 65 and 102 years of age. This study found that loneliness increased in older people, but mental health remained roughly stable. Physical distancing did not cause much social isolation, but personal losses, fears about the pandemic and a decline in trust in social institutions were associated with increased mental health problems and emotional loneliness.

Aksay [11] investigated the effects of live online exercise programs on SFT during the lockdown period during the COVID-19 pandemic in 534 individuals between 60 and 89 years of age. This study found that the exercise program positively affected lower body strength, upper body strength, flexibility, and agility/dynamic balance skills. It was also observed that the physical performance decreased with aging, especially after 70 years of age. In addition, men were stronger, more durable, and faster than women, while women have been observed to be more flexible than men.

In this study, a lower level of quality of life was found in seniors living alone compared to those living with someone.

Similarly, Bidzan-Bluma et al. [12] studied predictors of quality of life, well-being, and life satisfaction during the pandemic in 494 people from different age groups. Older people rated their quality of life higher than young people. Middle-aged respondents rated satisfaction with their life higher than young individuals and middle-aged respondents. Older people also reported lower levels of anxiety about the threat of the coronavirus than younger age groups. Older people also reported higher sleep quality risk tolerance and optimism and had less difficulty relaxing during the pandemic than middle-aged respondents. The authors of this study concluded that

age, anxiety, and the threat of the coronavirus affect quality of life, life satisfaction, and well-being during the pandemic. Interestingly, older people reported higher risk tolerance, sleep quality, and optimism and had less difficulty relaxing than middle-aged respondents. Finally, Siette et al. [13] examined the impact of the COVID-19 pandemic on quality of life and online social networking usage among older adults (n = 21) using community-based care services. This study found that the quality of life of older adults decreased significantly during the pandemic compared to the previous year.

Although the results of our study correlate with the results of the previous research, we acknowledge some limitations. In senior age, reluctance, or limitations in the performance of physical activities may often appear, which result from the general state of health, the presence of various comorbidities, or various environmental elements [14]. Therefore, many respondents may not be motivated to participate in the study requiring performing of physical activity tests. This could be associated with the selection bias with inclusion of mostly motivated seniors who may not represent average senior population. Other limitations represent relatively small sample size of the study are the relatively low number of probands and in some cases unbalanced distribution of study subgroups. Although, we hypothesize that lockdown accelerated worsening of physical and psychological outcome measures in specific risk subgroups of seniors, further research is needed to confirm their causal relationship with lockdown and COVID-19 pandemic.

Conclusions

Based on the results of this research, it has been shown that seniors living alone, living in rural areas and, -females are most vulnerable seniors in terms of physical and psychological health worsening. These conclusions can be a basis for further research in this area, but also a reminder for the social and medical spheres to focus on the most vulnerable seniors.

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