

Lifestyle Changes among Adults Aged 65 Years and Older in the Czech Republic and Spain before, during and after the COVID-19 Pandemic: A Cross-Sectional Study

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Abstract

Background:

The COVID-19 pandemic and the associated public health restrictions substantially affected the daily lives of older adults. However, the extent to which individual lifestyle components changed and subsequently recovered remains insufficiently documented. This study aimed to compare selected lifestyle factors among adults aged 65 years and older in the Czech Republic and Spain before the COVID-19 pandemic, during the lockdown and at present.

Methods:

A cross-sectional study was conducted among 372 adults aged 65 years and older (212 from the Czech Republic and 160 from Spain). Data were collected between March and October 2022 using a non-standardized questionnaire assessing physical activity, quality of movement, eating habits, drinking regime, alcohol consumption, sedentary behaviour and self-reported body weight across three time periods. Statistical analyses included descriptive statistics, the Shapiro-Wilk test, independent-samples *t*-test, repeated-measures ANOVA with Scheffé's post hoc test, the Wilcoxon signed-rank test and the Mann-Whitney *U* test. Statistical significance was set at $p < 0.05$.

Results:

Physical activity and perceived quality of movement declined significantly during the COVID-19 lockdown in both countries, with more pronounced changes among Spanish respondents. Sedentary behaviour also increased markedly during the lockdown. In contrast, eating habits, drinking regime and self-reported body weight remained relatively stable throughout the study period. Following the lifting of restrictions, most lifestyle indicators gradually returned towards their pre-pandemic levels.

Conclusions:

The COVID-19 pandemic affected individual lifestyle components to different degrees. Movement-related behaviours were the most strongly affected, whereas established nutritional habits proved comparatively resilient. These findings highlight the importance of supporting regular physical activity and reducing sedentary behaviour during future public health emergencies while strengthening lifestyle resilience among older adults.

Keywords: older adults; COVID-19; lifestyle; physical activity; sedentary behaviour; healthy ageing;

Introduction

Population ageing is one of the major public health challenges in Europe. The COVID-19 pandemic had a profound impact on older adults, particularly during periods of social isolation, restricted mobility and limited access to usual daily activities. COVID-19, caused by the SARS-CoV-2 coronavirus, was first identified in Wuhan, China, in December 2019 and rapidly spread worldwide, resulting in a global pandemic [1,2].

In the Czech Republic, the first confirmed cases of COVID-19 were reported on 1 March 2020. Shortly afterwards, the government introduced several restrictive measures, including school closures, a state of emergency, restrictions on movement, closure of restaurants and non-essential services, and limitations on public gatherings. The first wave of the pandemic peaked in spring 2020, followed by a renewed increase in infections during autumn 2020. Further restrictions, including school closures, curfews and limits on social contacts, were introduced during the second wave [3].

In Spain, the first case of COVID-19 was diagnosed on 31 January 2020. Due to the rapid spread of the virus, a nationwide state of alarm was declared on 14 March 2020. Strict confinement measures were implemented, allowing citizens to leave their homes only for essential activities such as purchasing food and medicines, seeking medical care or travelling to work. These measures remained in force until the gradual transition to the “new normal” in June 2020. During the second wave of infections, a new state of alarm and further restrictions, including a nighttime curfew, were introduced [4].

These measures substantially changed everyday life, especially among older adults, who were considered one of the most vulnerable population groups. Restrictions related to the pandemic may have influenced their physical activity, sedentary behaviour, dietary habits, drinking regime, alcohol consumption, social contacts and overall quality of life.

This study was conducted within a research project investigating health conditions and lifestyle among adults aged 65 years and older.

The project aimed to examine health conditions and lifestyle among adults aged 65 years and older in relation to selected sociodemographic characteristics. Particular attention was paid to the impact of the COVID-19 pandemic and lockdown measures on eating habits, physical activity, sleep and tiredness, beverage consumption, psycho-affective status and informal care networks.

The aim of the present study was to compare selected lifestyle characteristics among adults aged 65 years and older in the Czech Republic and Spain before the COVID-19 pandemic, during the COVID-19 lockdown and at present.

Materials and Methods

Study design and participants

This comparative cross-sectional study was conducted among adults aged 65 years and older in the Czech Republic and Spain. The study included 372 participants, comprising 212 respondents from the Czech Republic and 160 respondents from Spain (Table 1).

Table 1 Research sample of men and women from the Czech Republic and Spain (n=372)

State	Men				Women				Total Sample	
	Sample		Age		Sample		Age			
	n	%	M (SD)	R	n	%	M (SD)	R	n	%
Czech Republic	49	44.55	73.79±5.98	65.00-90.00	163	44.55	71.67±5.53	65.00-92.00	212	56.99
Spain	61	55.45	73.36±5.47	65.00-92.00	99	55.45	73.59±5.18	65.00-87.00	160	43.01
Total	110	29.57	73.55±5.68	65.00-92.00	110	29.57	72.40±5.47	65.00-92.00	372	100.00

Abbreviations: n – number of participants, % – percentage of participants, M – arithmetic mean, R – variation range, SD – standard deviation.

Data collection was carried out simultaneously in both countries between March and October 2022. The study was approved by the institutional ethics committee (Approval No. UPOL-78408/1070-2022).

Questionnaire

A non-standardized questionnaire developed by the authors was used for data collection. The questionnaire consisted of 46 items covering demographic characteristics, history of SARS-CoV-2 infection, and selected aspects of lifestyle before the COVID-19 pandemic, during the COVID-19 lockdown and at present. The questionnaire focused on physical activity, quality of movement, sedentary behaviour, dietary habits, drinking regime, alcohol consumption, smoking, body weight, sleep and fatigue, and self-rated health. For the present study, only variables related to lifestyle changes were analysed.

Translation and pilot testing

The questionnaire was prepared in Czech and Spanish. Linguistic validation was performed by the research team in collaboration with native speakers from both countries. Prior to the main survey, pilot testing was conducted with 20 participants in the Czech Republic and 20 participants in Spain. Following evaluation of the pilot study, minor linguistic modifications were made, and the final version of the questionnaire was prepared for data collection.

Data collection

Participants were recruited using **convenience sampling** based on the availability and willingness of older adults to participate in the study.

In the Czech Republic, participants were recruited through senior clubs, a university of the third age and community organisations.

Paper questionnaires were personally distributed by members of the research team. Participants were informed about the purpose of the study before enrolment, participation was voluntary, and all respondents provided informed consent. Completed questionnaires were returned anonymously in sealed envelopes. The response rate was 100%.

In Spain, data collection was conducted primarily in Catalonia. Participants were recruited through senior day-care centres, community centres and public places frequently attended by older adults. The questionnaire was administered electronically using Microsoft Office 365 Forms by members of the Spanish research team. All participants provided informed consent before completing the questionnaire. Completion of the questionnaire required approximately 30 minutes, and all collected data were anonymous and processed in accordance with applicable data protection regulations.

Statistical analysis

Data were processed using Microsoft Excel and analysed using TIBCO Statistica version 13.3 (TIBCO Software Inc., Palo Alto, CA, USA). Descriptive statistics included the mean, median, standard deviation, minimum, maximum, range, and absolute and relative frequencies.

The normality of data distribution was assessed using the Shapiro-Wilk test. Differences between groups were analysed using the independent-samples *t*-test, repeated-measures analysis of variance (ANOVA) with Scheffé's post hoc test, the paired Wilcoxon signed-rank test, and the Mann-Whitney *U* test, as appropriate. Statistical significance was set at $p < 0.05$.

Results

Physical Activity and Quality of Movement

Before the COVID-19 pandemic, the highest proportion of respondents in the Czech Republic (40.57%) reported engaging in more than 4 hours of physical activity per week, whereas in Spain this category included 23.75% of respondents. Conversely, less than 30 minutes of weekly physical activity was reported by 3.77% of respondents in the Czech Republic and 8.75% in Spain.

During the COVID-19 lockdown, physical activity significantly decreased in both countries. The proportion of respondents reporting more than 4 hours of physical activity per week declined from 40.57% to 23.58% in the Czech Republic and from 23.75% to 5.63% in Spain. At the same time, the proportion of respondents performing less than 30 minutes of physical activity per week increased from 3.77% to 13.68% in the Czech Republic and from 8.75% to 34.38% in Spain.

At present, physical activity has largely returned to pre-pandemic levels. In the Czech Republic, 41.51% of respondents again reported more than 4 hours of physical activity per week, while in Spain this proportion reached 25.00%. Likewise, the proportion of respondents reporting less than 30 minutes of physical activity per week decreased to 3.80% in the Czech Republic and 9.38% in Spain.

Men and women in the Czech Republic reported a longer weekly duration of physical activity than respondents in Spain throughout all three observation periods (Table 2). Statistically significant differences between countries were found for men before the COVID-19 pandemic, during the lockdown and at present (all $p < 0.01$). Among women, a statistically significant difference was observed only during the lockdown ($p < 0.01$).

Table 2 Average time of physical activity (min) during the week in men and women (n=372)

Physical activities a week (min.)	Men (n = 110)					Women (n = 262)				
	Czech (n=49)		Spain (n=61)		diff	Czech (n=163)		Spain (n=99)		diff
	M	SD	M	SD		M	SD	M	SD	
Before the COVID-19 pandemic	206.94	87.46	158.11	88.04	48.83**	179.17	83.34	158.64	79.38	20.53 ns.
Lockdown	166.53	98.52	88.03	77.05	78.50**	133.99	87.24	79.09	59.30	54.90**
Present time	198.06	94.82	141.64	87.10	56.42**	178.71	85.50	157.58	87.21	21.13 ns.

Abbreviations: n – number of participants, M – arithmetic mean, SD – standard deviation, diff – difference in the average values between Czech and Spain groups men and women, * $p < 0.05$. ** $p < 0.01$, ns. – not significant.

Repeated-measures ANOVA (Table 2, Fig. 1) demonstrated significant differences in physical activity across the three observation periods in both countries ($p < 0.01$). Scheffé's post hoc test showed a significant reduction in physical activity during the lockdown compared with the

period before the COVID-19 pandemic. No significant differences were found between the pre-pandemic period and the present time ($p > 0.05$), indicating a return of physical activity to approximately pre-pandemic levels.

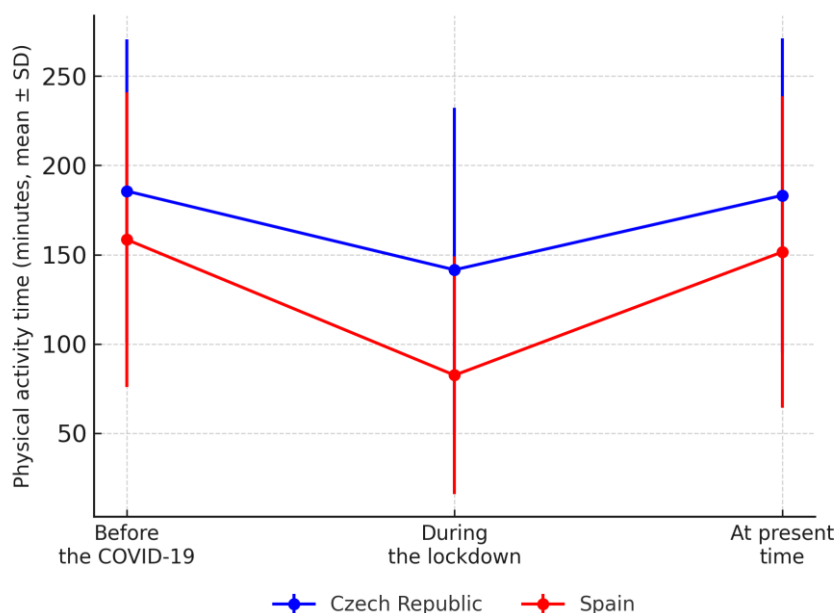


Fig. 1 Changes in physical activity among the monitored group of men and women in the Czech Republic and Spain in the period before the COVID-19 pandemic, during the lockdown and at present time

The COVID-19 pandemic also affected the perceived quality of movement among older adults in the Czech Republic and Spain. During the lockdown, 59.43% of Czech respondents and 51.25% of Spanish respondents reported no change in the quality of movement compared with the period before the COVID-19 pandemic. A deterioration in movement quality was reported by 39.15% of Czech respondents and 46.88% of Spanish respondents, while improvement was reported only rarely in both groups.

At present, 61.32% of Czech respondents reported no change in movement quality compared with the lockdown period, whereas in Spain this proportion was lower, at 39.38%. A subjective deterioration in movement quality at present was reported by 28.77% of Czech respondents and 50.00% of Spanish respondents. The difference between the Czech and Spanish groups at present was statistically significant ($p = 0.001$) (Fig. 2).

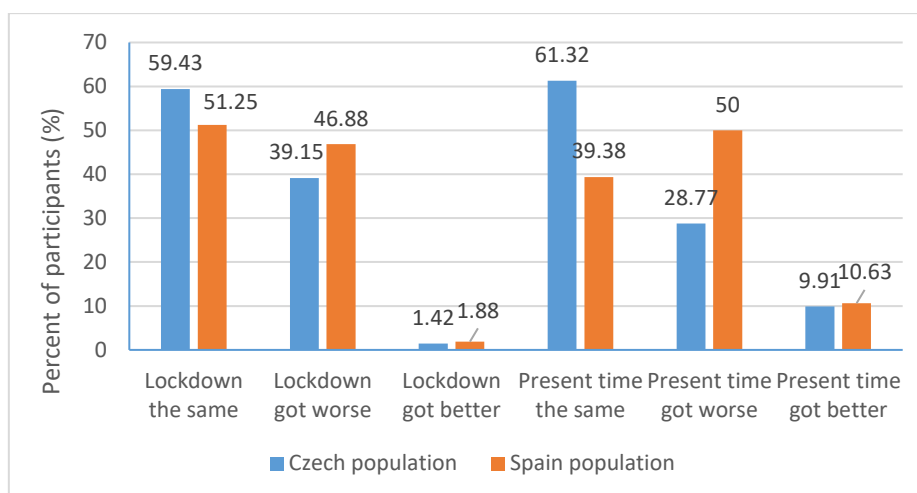


Fig. 2 Changes in the quality of movement in the monitored group of men and women in the Czech Republic and in Spain during the lockdown COVID -19 and at the present time

Eating and Drinking Habits

In the survey, respondents also evaluated changes in their eating habits before the COVID-19 pandemic, during the lockdown and at present (Table 3).

Table 3 Frequency of daily meals of the monitored group during the lockdown and the present time

State	Frequency daily meals	Lockdown		Present time		p
		n	%	n	%	
Czech Republic (n = 212)	It has decreased	17	8.02	16	7.55	0.267 ^{ns.}
	The same	166	78.30	181	85.38	
	It has increased	29	13.68	15	7.08	
Spain (n = 160)	It has decreased	8	5.00	11	6.88	0.026*
	The same	124	77.50	133	83.13	
	It has increased	28	17.50	16	10.00	

Abbreviations: n – number of participants, % – percentage of participants, * $p < 0.05$, ns. – not significant.

During the COVID-19 lockdown, no changes in eating habits were reported by 78.30% of respondents in the Czech Republic and 77.50% in Spain. A deterioration in eating habits was reported by 8.02% of Czech respondents and 5.00% of Spanish respondents, whereas improvements were reported by 13.68% and 17.50%, respectively.

At present, eating habits had largely returned to pre-pandemic levels. No changes were reported by 85.38% of respondents in the Czech Republic and 83.13% in Spain. Compared with the lockdown period, deterioration in eating habits was reported by 7.55% of Czech respondents and 6.88% of Spanish respondents, while improvements were reported by 7.08% and 10.00%, respectively.

The distribution of responses differed significantly between the Czech Republic and Spain both during the COVID-19 lockdown and at present ($p < 0.05$) (Table 3).

Changes in eating habits were observed in both countries during the COVID-19 lockdown, with more pronounced changes among Spanish respondents than among respondents from the Czech Republic. Most participants, however, reported no substantial changes in their eating habits throughout the study period (Table 4).

Table 4 Daily meals regime

State	Regime daily meals	Before the COVID-19 pandemic		Lockdown		Present time	
		n	%	n	%	n	%
Czech Republic (n = 212)	Breakfast	195	91.98	194	91.51	197	92.92
	Lunch	205	96.70	204	96.23	204	96.23
	Dinner	198	93.40	194	91.51	193	91.04
Spain (n = 160)	Breakfast	147	93.63	150	93.75	145	90.63
	Lunch	159	99.38	159	99.38	157	98.13
	Dinner	154	96.86	155	96.88	155	96.88

Abbreviations: n – number of participants, % – percentage of participants.

The regular drinking regime of older adults was only minimally affected by the COVID-19 pandemic (Table 5).

Table 5 Drinking regime of soft drinks

State	Frequency fluids	Lockdown		Present time		p
		n	%	n	%	
Czech Republic (n = 212)	It has decreased	8	3.77	4	1.89	0.298 ^{ns}
	The same	185	87.26	198	93.40	
	It has increased	19	8.96	10	4.72	
Spain (n = 160)	It has decreased	13	8.13	17	10.63	0.047*
	The same	138	86.25	119	74.38	
	It has increased	9	5.63	24	15.00	

Abbreviations: n – number of participants, % – percentage of participants, * $p < 0.05$. ns. – not significant.

During the COVID-19 lockdown, no changes in fluid intake were reported by 87.26% of respondents in the Czech Republic and 86.25% in Spain. A deterioration in drinking habits was reported by 8.96% of Czech respondents and 5.63% of Spanish respondents, whereas improvements were reported by 3.77% and 8.13%, respectively.

At present, no changes in drinking habits compared with the lockdown period were reported by 93.40% of respondents in the Czech Republic and 74.38% in Spain. Deterioration was reported by 4.72% of Czech respondents and 15.00% of Spanish respondents, while improvements were observed in 1.89% and 10.63% of respondents, respectively.

No statistically significant differences between the Czech Republic and Spain were found during the COVID-19 lockdown ($p > 0.05$). However, a significant difference was observed at present ($p = 0.047$) (Table 5).

Alcohol Consumption

Our findings indicate that alcohol consumption increased among Czech respondents during the lockdown. Specifically, the proportion of respondents reporting increased alcohol consumption was significantly higher during the lockdown than before the COVID-19 pandemic (Table 6).

In this context, we can confirm that among Czech respondents, during the lockdown, the number of people who started drinking alcoholic beverages increased by 17.45% compared to the time before the COVID-19 pandemic and by 8.49% to the current time ($p = 0.000$). In the Spanish group, changes in the number of people who consumed alcohol in the observed periods were also detected, but the mentioned changes are not statistically significant ($p = 0.828$) (Table 6).

Table 6 Number of respondents in relation to the use of alcoholic beverages

State	Consumption	Lockdown		Present time		<i>p</i>
		<i>n</i>	%	<i>n</i>	%	
Czech Republic (<i>n</i> = 212)	It has decreased	27	12.74	29	13.68	0.000**
	The same	148	69.81	165	77.83	
	It has increased	37	17.45	18	8.49	
Spain (<i>n</i> = 160)	It has decreased	16	10.00	19	11.88	0.828 ^{ns} .
	The same	132	82.50	125	78.13	
	It has increased	12	7.50	16	10.00	

Abbreviations: *n* – number of participants, % – percentage of participants, ***p* < 0.01. ^{ns}. – not significant.

Alcohol consumption increased during the COVID –19 lockdown in both countries (Table 7).

Table 7 Alcohol consumption in the study population

States	Amount of alcohol	Before the COVID-19 pandemic		Lockdown		Present time	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Czech Republic (<i>n</i> = 212)	ml/day	307.55	188.13	342.45**	203.03	327.36**	189.30
Spain (<i>n</i> = 160)	ml/day	323.75	166.16	340.00 ^{ns} .	190.07	357.50**	222.49

Abbreviations: *n* – number of participants, *ml* – milliliters, *M* – arithmetic mean, *SD* – standard deviation, ***p* < 0.01. ^{ns}. – not significant.

Czech respondents showed a significant increase in mean daily alcohol consumption from 307.55 ± 188.13 ml/day before the COVID-19 pandemic to 342.45 ± 203.03 ml/day during the lockdown (*p* < 0.01). Although alcohol consumption declined slightly after the restrictions had been lifted, it remained significantly higher than before the pandemic (327.36 ± 189.30 ml/day, *p* < 0.01).

Spanish respondents also reported an increase in alcohol consumption during the lockdown; however, this change was not statistically significant (*p* = 0.653). At present, mean daily alcohol consumption (357.50 ± 222.49 ml/day) was significantly higher than before the COVID-19 pandemic (*p* < 0.01).

No statistically significant differences in alcohol consumption were found between respondents from the Czech Republic and Spain before the COVID-19 pandemic (*p* = 0.388), during the lockdown (*p* = 0.905) or at present (*p* = 0.160) (Table 7).

Sedentary Behaviour and Body Weight

The COVID-19 pandemic was associated with an increase in sedentary behaviour among older adults in both the Czech Republic and Spain (Table 8).

Table 8 Activities during the day

Time	Activity	Czech Republic (<i>n</i> = 212)			Spain (<i>n</i> = 160)			<i>p</i>
		<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	
Before the COVID pandemic –19	TV	211	3.11	1.81	157	3.38	1.63	0.145 ^{ns} .
	Book	140	1.60	0.91	98	1.73	1.24	0.336 ^{ns} .
	Music	99	1.61	1.21	94	1.94	2.62	0.260 ^{ns} .
	Computer use	131	2.29	1.84	93	1.92	1.63	0.117 ^{ns} .

Lockdown	TV	211	4.25	2.04	160	5.12	2.67	0.000**
	Book	140	1.93	1.20	100	2.12	1.33	0.231 ^{ns.}
	Music	100	1.93	1.66	97	2.09	1.56	0.495 ^{ns.}
	Computer use	129	2.72	1.74	99	2.87	2.13	0.554 ^{ns.}
Present time	TV	212	3.58	1.88	160	3.63	1.88	0.765 ^{ns.}
	Book	148	1.69	0.96	99	1.67	1.17	0.883 ^{ns.}
	Music	102	1.75	1.24	91	1.83	1.55	0.696 ^{ns.}
	Computer use	132	2.28	1.61	96	2.18	1.70	0.646 ^{ns.}

Abbreviations: *n* – number of participants, *M* – arithmetic mean, *SD* – standard deviation, ***p* < 0.01, *ns.* – not significant.

During the COVID-19 lockdown, respondents in both countries reported spending more time watching television, using computers and engaging in other sedentary activities, with more pronounced changes observed among Spanish respondents. At present, sedentary behaviour had partially returned to pre-pandemic levels; however, a proportion of respondents in both countries continued to report longer daily sedentary time than before the COVID-19 pandemic. Self-assessed body weight showed only minimal changes between the period before the COVID-19 pandemic and the present time (Table 9). In Czech men, mean body weight increased slightly from 88.50 kg to 88.63 kg, whereas in Spanish men it decreased from 80.41 kg to 79.97 kg. Among women, mean body weight increased from 73.54 kg to 74.12 kg in the Czech Republic and remained virtually unchanged in Spain (68.63 kg vs. 68.59 kg).

No statistically significant changes in body weight were observed in any of the monitored groups (*p* > 0.05). Overall, despite temporary changes in physical activity and sedentary behaviour during the COVID-19 pandemic, mean body weight remained relatively stable in both countries (Table 9).

Table 9 Comparison of self-assessed body height and weight in men and women

State	Parameters of the body	COVID-19			Present time			diff	<i>p</i>
		Before pandemic							
		M	Me	SD	M	Me	SD		
Men									
Czech Republic (n = 49)	Height (cm)	176.53	178.00	5.91	-	-	-	-	-
	Weight (kg)	88.50	90.00	13.41	88.63	88.00	13.35	0.13	0.822 ^{ns.}
Men Spain (n = 61)	Height (cm)	168.85	170.00	6.26	-	-	-	-	-
	Weight (kg)	80.41	78.00	13.42	79.97	78.00	13.29	2.41	0.441 ^{ns.}
Women									
Czech Republic (n = 163)	Height (cm)	163.80	164.00	5.99	-	-	-	-	-
	Weight (kg)	73.54	74.00	10.89	74.12	73.00	11.90	0.58	0.601 ^{ns.}
Spain (n = 99)	Height (cm)	160.94	160.00	6.60	-	-	-	-	-
	Weight (kg)	68.63	67.00	9.99	68.59	66.00	9.80	0.04	0.933 ^{ns.}

Abbreviations: *n* – number of participants, *M* – arithmetic mean, *Me* – median, *SD* – standard deviation, *diff* – difference in the average values between before the pandemic and the present time. *ns.* – not significant.

Discussion

Active ageing has become a central concept in gerontology over the past three decades, emphasizing healthy ageing, social participation, independence and quality of life rather than viewing old age primarily as a period of illness and functional decline [5–10]. According to the World Health Organization, active ageing is defined as the process of optimizing opportunities for health, participation and security to enhance quality of life as people age [7,8]. This concept

extends beyond older adulthood itself and includes preparation for ageing throughout the life course [9,10].

The COVID-19 pandemic posed an unprecedented challenge to the principles of active ageing. Restrictions on mobility, social interaction and access to leisure and recreational activities substantially affected everyday lifestyles, particularly among older adults [11–15]. In this context, the present study compared changes in selected lifestyle factors among adults aged 65 years and older in the Czech Republic and Spain before the COVID-19 pandemic, during the lockdown and at present.

Our findings indicate that the impact of the pandemic varied across individual lifestyle domains. The most pronounced changes were observed in physical activity, quality of movement and sedentary behaviour, whereas eating habits were affected to a lesser extent, drinking habits remained largely unchanged and self-reported body weight showed only minimal variation. Encouragingly, many respondents reported a gradual return towards pre-pandemic lifestyle patterns after the restrictions had been lifted, suggesting a considerable capacity for recovery among older adults.

Physical Activity and Quality of Movement

The present study demonstrated a substantial decline in physical activity during the COVID-19 lockdown in both the Czech Republic and Spain, followed by a gradual return to pre-pandemic levels after the restrictions were lifted. The reduction was more pronounced among Spanish respondents, probably reflecting the stricter public health measures implemented during the lockdown. Similar decreases in physical activity among older adults have been consistently reported in previous studies conducted during the COVID-19 pandemic [16–21].

Our findings are in agreement with studies showing that restrictions on mobility, closure of sports and leisure facilities, and prolonged home confinement substantially reduced opportunities for regular physical activity among older adults [16–19]. Lopuszanska-Dawid et al. [22] also reported a marked decline in regular physical activity among Polish women during the pandemic, supporting the pattern observed in our study.

The perceived quality of movement showed a similar trend. During the lockdown, many respondents reported deterioration in movement quality, particularly in Spain, while gradual improvement was observed after the restrictions had been lifted. Nevertheless, a considerable proportion of respondents continued to perceive their quality of movement as worse than before the pandemic. These findings are consistent with reports indicating that prolonged inactivity and reduced mobility during the COVID-19 pandemic negatively affected physical function and overall health in older adults [11–15,17,20].

Regular physical activity is widely recognized as one of the main determinants of healthy ageing. Besides improving cardiovascular and musculoskeletal health, it contributes to better immune function, psychological well-being and quality of life [23–26]. Studies have also demonstrated that physically active older adults report lower levels of anxiety and depressive symptoms, greater self-efficacy and better cognitive function than inactive individuals [24–27]. Consequently, maintaining regular physical activity should remain one of the principal objectives of public health strategies during future pandemics or other situations requiring prolonged social restrictions.

The gradual recovery of physical activity observed in both countries after the COVID-19 pandemic represents an encouraging finding. Although many respondents returned to activity levels comparable to those reported before the pandemic, our results indicate that some aspects of physical function recovered more slowly, suggesting that restoration of habitual physical activity does not necessarily result in immediate recovery of perceived movement quality.

These findings emphasize the importance of long-term support for physical activity programmes specifically designed for older adults.

Eating and Drinking Habits

Compared with physical activity, eating habits were less affected by the COVID-19 pandemic. Most respondents in both countries reported no substantial changes in their dietary habits during the lockdown or after the restrictions had been lifted. Nevertheless, Spanish respondents more frequently reported deterioration in eating habits than Czech respondents, suggesting that the severity and duration of public health restrictions may also have influenced nutritional behaviour.

Our findings are generally consistent with previous studies investigating dietary behaviour during the COVID-19 pandemic. Sidor and Rzymiski [28] reported that many adults increased both food intake and snacking during the lockdown, particularly individuals who were overweight or obese. Similarly, Díaz-Méndez and Ramos-Truchero [29] described modest changes in dietary habits among the Spanish population, with emotional stress, disruption of daily routines and reduced physical activity identified as major contributing factors. In contrast, our study indicates that older adults maintained relatively stable eating habits despite the restrictions, suggesting greater resilience of established dietary patterns in this age group.

Comparable findings were also reported in the multicountry study by Molina et al. [30], who observed that dietary habits remained unchanged in the majority of participants from several Ibero-American countries, including Spain. Participants who reported dietary changes were more likely to modify meal frequency and snack consumption than their overall dietary pattern. Taken together, these findings suggest that older adults may be less susceptible to abrupt dietary changes than younger populations, although cultural and social differences should also be considered.

Maintaining healthy dietary habits is particularly important in older adults because nutrition, together with regular physical activity and other healthy lifestyle behaviours, contributes to the prevention of chronic diseases, preservation of functional independence and maintenance of cognitive health [31]. Our findings therefore suggest that, despite the considerable challenges associated with the COVID-19 pandemic, older adults in both countries were generally able to preserve stable dietary habits.

The drinking regime was affected only minimally during the study period. Most respondents reported no changes in daily fluid intake either during the COVID-19 lockdown or at present. These findings are encouraging, given that older adults are particularly vulnerable to dehydration because of age-related physiological changes, reduced thirst perception and chronic diseases [32,33]. Maintaining an adequate drinking regime during periods of prolonged social restrictions may therefore represent an important protective factor contributing to the preservation of health in older populations.

Overall, our findings indicate that nutritional habits were substantially more stable than physical activity during the COVID-19 pandemic. This observation highlights the relative resilience of established eating and drinking behaviours among older adults, even under prolonged public health restrictions.

Sedentary Behaviour, Alcohol Consumption and Body Weight

The COVID-19 pandemic substantially increased sedentary behaviour among older adults in both countries. During the lockdown, respondents reported spending more time watching television, using computers and engaging in other sedentary activities, while overall daily sedentary time increased considerably. Although sedentary behaviour decreased after the

restrictions had been lifted, it did not completely return to pre-pandemic levels. These findings are consistent with those reported by Harvey et al. [34], who demonstrated that older adults spend a large proportion of their waking day in sedentary activities, and with studies describing further increases in sedentary time during the COVID-19 pandemic [22,35].

Prolonged sedentary behaviour represents an important health risk for older adults because it contributes to reduced physical fitness, functional decline and the development of chronic diseases. Together with reduced physical activity, prolonged sitting may also negatively influence psychological well-being and quality of life [11–15,23]. Our findings therefore support current recommendations emphasizing the importance of maintaining regular movement and reducing sedentary time even during periods of social restrictions [36].

Unlike sedentary behaviour, alcohol consumption showed only modest changes during the study period. Most respondents reported no substantial changes in alcohol intake, although a temporary increase was observed among Czech respondents during the lockdown. Similar findings have been reported by Green et al. [37] and Acuff et al. [38], whereas Kilian et al. [39] concluded that changes in alcohol consumption during the pandemic varied considerably across populations and drinking patterns. Overall, our results suggest that alcohol consumption among older adults remained relatively stable despite the exceptional circumstances associated with the pandemic.

An interesting finding of the present study was the relative stability of self-reported body weight in both countries. Despite the reduction in physical activity and the increase in sedentary behaviour, no significant changes in mean body weight were observed. This observation may indicate that the duration of the restrictions was insufficient to induce substantial weight changes in this age group or that relatively stable dietary habits compensated for reduced physical activity. Similar findings have been described in studies evaluating lifestyle changes during the COVID-19 pandemic [28,30].

Taken together, these findings suggest that the COVID-19 pandemic affected different components of lifestyle to varying degrees. While physical activity and sedentary behaviour changed markedly, nutritional habits and body weight remained comparatively stable, indicating a relatively high level of behavioural resilience among older adults.

Strengths and Limitations

The present study has several strengths. It provides an international comparison of lifestyle changes among older adults in two European countries using the same questionnaire and identical methodology. Data were collected during the same period in both countries, allowing direct comparison of the impact of the COVID-19 pandemic on selected lifestyle factors. Furthermore, the study evaluated lifestyle before the COVID-19 pandemic, during the lockdown and at present, providing a comprehensive assessment of changes over time.

Nevertheless, several limitations should be acknowledged. First, the study was based on self-reported questionnaire data, which may be affected by reporting bias. Second, information regarding the period before the COVID-19 pandemic was collected retrospectively and may therefore be influenced by recall bias. Finally, participants were recruited using convenience sampling; consequently, the findings cannot be generalized to the entire older population of the Czech Republic or Spain. Despite these limitations, the study provides valuable information on lifestyle changes among older adults during and after the COVID-19 pandemic.

Conclusion

The COVID-19 pandemic, particularly the lockdown period, substantially affected the lifestyle of adults aged 65 years and older in both the Czech Republic and Spain. The most pronounced

changes were observed in physical activity, quality of movement and sedentary behaviour, whereas eating habits, drinking regime and self-reported body weight remained comparatively stable throughout the study period.

An important finding of the present study is that individual lifestyle components demonstrated different levels of resilience to the restrictions associated with the COVID-19 pandemic. While movement-related behaviours were the most strongly affected, established nutritional habits proved to be considerably more resistant to change. Following the lifting of restrictions, most lifestyle indicators gradually returned towards their pre-pandemic levels, suggesting a substantial capacity for recovery among older adults.

These findings emphasize the importance of maintaining opportunities for regular physical activity during future public health emergencies while supporting healthy ageing through interventions that preserve functional independence, mobility and overall quality of life. The results may contribute to the development of preventive public health and social strategies aimed at reducing the impact of future crisis situations on the lifestyle and well-being of older adults.

The present findings may help guide future public health and social policies aimed at promoting healthy ageing and strengthening lifestyle resilience among older adults during future pandemics or other public health emergencies.

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