The medium-term consequences of COVID-19 lockdown on lifestyle among Spanish older people with hypertension, pulmonary diseases, cardiovascular diseases, musculoskeletal diseases, depression, and cancer

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Abstract

Objectives: To assess the influence of different chronic diseases on lifestyle and health behaviours changes after COVID-19 lockdown in Spanish older people compared to people without these diseases and compare the differences in these changes between both periods.

Methods: 1092 participants (80.3±5.6y;66.5%women) from two Spanish cohorts were included. Telephone-based questionaries were used to evaluate health risk behaviours and lifestyle during lockdown and 7-months later. Self-reported physician-based diagnosis of chronic diseases was also reported. Cox-proportional models adjusted for main confounders were applied.

Results: Improvements concerning lifestyle were found in older people with chronic diseases, although they worsened the physical component (except cancer). When they were compared to those without these diseases, hypertension was associated with a lower frequency of increased alcohol consumption (Hazard ratio:0.73[95% confidence interval:0.55;0.99]). Pulmonary diseases were associated with a lower risk of both decreased sedentary time (0.58[0.39;0.86]) and worsening sleep quality (0.56[0.36;0.87]), while CVD was only associated with a lower frequency of decreased sedentary time (0.58[0.38;0.88]). Depression was linked to a higher risk of increasing diet quality (1.53[1.00;2.36]). Cancer was less likely to worsen sleep quality (0.44[0.22;0.89]), but more likely to worsen their social contact frequency (2.05[1.05;3.99]). No significant association related to musculoskeletal diseases. **Conclusions:** Beneficial changes in health risk behaviours and lifestyle after the COVID-19 lockdown in older people with chronic diseases were found. Particularly, older people with hypertension, pulmonary disease and cancer showed beneficial changes after lockdown compared to their

counterparts without diseases. Those with CVD and depression showed lifestyles that could involve a health risk.

Keywords: chronic diseases, ageing, sedentary time, anxiety, quality of life

Introduction

The coronavirus disease pandemic (COVID-19) has forced many national governments to implement social distancing measures. Consequently, on the 15th of March 2020, the Spanish Government approved a strict lockdown period to fight the spread of the virus, during which the population was instructed to stay at home, with the only permitted outings being those of basic necessity, such as shopping or going to the hospital [1]. From the 2nd of May, some restrictions were gradually lifted to return to the "new normality", starting with permission to leave the house to exercise or walk and continuing on the 23rd of June, with the lifting of the strong recommendation to avoid personal contact [2]. Nevertheless, since the lockdown period implies a radical change in the population's lifestyle that requires the interruption of normal daily activities [3], adverse health effects can also be expected. The later, resulting in an increased prevalence of health risk behaviours [4-6] and potentially increasing the long-term negative health impact on people with non-communicable diseases [7]. Therefore, this situation is of particular relevance and concern for people with comorbidities, for whom physical activity, nutrition, cognitive training, and management of metabolic and vascular risk factors are essential to control symptoms and reduce the incidence of chronic diseases [8, 9]. Similarly, considering that most older people have multimorbidity, this population has also been considered as a vulnerable group to lockdown measures [10, 11]. Nonetheless, to our knowledge, no studies have yet examined the effect of this lockdown on health risk behaviours during the return to the "new normality" in older people with different chronic diseases; even though it could further jeopardize the sustainability of healthcare systems by worsening the condition of this specific population [7].

Thus, the main aim of this study was to assess the influence of having hypertension, musculoskeletal disease, pulmonary disease, cardiovascular disease (CVD), depression, or cancer compared to people without that pathology on lifestyle and health behaviours changes after emerging from a strict 2-month lockdown in Spanish older people. Likewise, the secondary aim was to evaluate the differences in these changes between the lockdown and the return to the "new normality".

Methods

Study design and cohorts

A new COVID-19 sub-cohort from two different Spanish prospective cohorts was included in this study. 1) The Toledo Study for Healthy Ageing (TSHA) is a prospective study involving community-dwelling older adults aged ≥65 years from the province of Toledo, which includes three waves established between 2006-2009, 2011-2013 and 2016-2017. 2) The elderly-Exernet multi-center study (EXERNET) comprises non-institutionalized individuals aged ≥65 years recruited in Aragón, Castilla-La Mancha, Cádiz, and Madrid. This study also includes three waves conducted in similar moments: 2008-2009, 2011-2012 and 2016-2017.

For this prospective study, baseline data were collected between April 28th and June 30th of 2020, while the follow-up was conducted in December 2020. Firstly, a total of 2982 participants were recruited from both cohorts (TSHA and EXERNET). Of these, 589 individuals could not be contacted, 605 declined to participate, and 1788 agreed to participate (938 from TSHA and 850 from EXERNET, 63% response rate in total). After follow-up, 217 individuals could not be contacted, 324 refused to participate, and 1247 agreed to participate (688 from TSHA and 559 from EXERNET, 70% response rate in

total). Finally, 1092 participants completed the second assessment (66.5 % of women) and were included in the analyses after excluding those infected with COVID-19. Thus, this sub-cohort included subjects who had been assessed during the COVID-19 lockdown in Spain and 8-months later. The Clinical Research Ethics Committee of the Toledo Hospital Complex (Protocol #2203/30/2005) and the Clinical Research Ethics Committee of Aragón (#18/2008) approved the study for the TSHA, and EXERNET, respectively. In addition, all participants gave verbal informed consent.

Outcomes and exposure variables

Participants completed a telephone-based structured interview to obtain data on health behaviours, mental and physical health, and their potential determinants, including demographic and social variables during the at baseline and follow-up. Outcomes were health risk factors and lifestyle changes that may have been affected by lockdown. In particular, in the current study the outcomes were: changes in alcohol consumption, diet quality (14-point Mediterranean Diet Adherence Screener Questionnaire [MEDAS]) [12], weight, total minutes of daily sedentary time (watching TV, using electronic devices, reading, listening to music, napping and sunbathing), physical activity (Physical Activity Scale for the Elderly [PASE]) [13], hours of night-time sleep, sleep quality (determined as "excellent", "good", "fair", "poor" and "very poor"), anxiety (the 12-item General Health Questionary [GHQ-12]) [14], social contact frequency (daily socialisation with family or friends), living alone and quality of life (the 12-item Short Form [SF-12], distinguishing between the physical component summary [PCS] and the mental component summary [MCS]) [15]. All these variables were used as the rate of longitudinal changes to categorize participants according to their post-lockdown evolution from the cut-off points indicated in **Supplementary Table 1.**

Exposure variables were self-reported physician-diagnosis of chronic conditions during lockdown: hypertension (n=727), musculoskeletal disease (n=665), pulmonary disease (n=217), CVD (n=243), depression (n=172), and cancer (n=111), considering that participants could have more than one condition.

Other variables

The following information was also recorded and treated as potential confounders: sex, age, educational level (illiterate, primary school, secondary school, university), individual income (≤600€/month, >600 and <900€/month, and ≥900€/month), civil status (single, married/living together, divorced/separated, widowed) and the different chronic diseases evaluated with the exception of the exposure disease (hypertension, musculoskeletal disease, pulmonary disease, CVD, depression and cancer).

Statistical analysis

The normal distribution of the variables was determined by the Kolmogorov–Smirnov test and normal probability plots. The characteristics of the study groups and the differences between baseline and follow-up were determined through basic descriptive tests (means and the respective standard deviations or prevalence (%) of participants in that category) and paired two-sample t-tests. The relationship between having chronic diseases and health risk behaviours and lifestyle changes was investigated using Cox-proportional hazard models, with follow-up time as a time-varying covariate. Moreover, main cofounders were also used as covariates. The results are reported as hazard ratios (HR) and their 95% confidence intervals (95% CI). In all analyses, the groups of subjects that remained unchanged between lockdown and post-lockdown period were used as

reference. In addition, posterior sensitivity analyses were conducted for anxiety, particularly in those with depression and cancer since their results were inconclusive. To better understand changes in anxiety within each of these chronic diseases, multivariable logistic regression was calculated to estimate odds ratios (OR) and their respective 95% CI, again using the main cofounders as covariates. Furthermore, the differences between participants with and without disease and between participants who completed the 2nd assessment and those lost to follow-up were also determined through basic descriptive tests (means and the respective standard deviations or prevalence (%) of participants in that group) and independent samples t-test and included as supplementary material (Supplementary Table 2 and 3). Statistical analyses were performed using the IBM SPSS Statistics package version 24 (SPSS, Inc., Chicago, IL). Statistical significance was set as $p \leq 0.05$.

Results

Table 1 summarises the main characteristics of the participants according to the presence of chronic diseases and the differences between the lockdown and the "new normality". In summary, those with hypertension, CVD, musculoskeletal disease, and depression significantly increased their diet quality during the follow-up. All participants with chronic diseases significantly increased their physical activity, and in addition, those with hypertension and CVD significantly decreased their sedentary time. Moreover, people with hypertension and cancer significantly reduced their weight. Finally, all participants with chronic diseases, except those with cancer, significantly declined the PCS.

Supplementary Table 2 includes the main characteristics and differences of participants with and without chronic disease during lockdown. Participants with hypertension had

significantly higher weight, PCS, and MCS compared with participants without that disease. People with pulmonary disease had worse GHQ scores than those without the disease. Participants without depression, CVD and Musculoskeletal disease had significantly better PCS, MCS and GHQ than their counterparts with the disease. Participants without cancer were significantly older and had significantly better PCS compared to those with the disease. Supplementary Table 3 summarises the main characteristics and differences between participants who had completed the 2nd assessment and those lost to follow-up, showing how participants who did not complete both assessments were significantly older, less sedentary and had worse PCS and MCS scores. Furthermore, the main reasons for declining the second interview were outright refusal without explanation (40%), lack of time (18%) and health-related conditions (11%).

The relationship between having chronic diseases and changes in health risk behaviours and lifestyle compared to those without the condition are shown in **Figure 1.** Increased frequency of alcohol consumption was 0.73-fold lower in participants with hypertension compared to participants without hypertension (shown in **Fig. 1.a**). In participants with pulmonary disease (shown in **Fig. 1.b**), the increase in sedentary time and the worsening of sleep quality were 0.58- and 0.56-fold lower when compared to their counterparts without it. Meanwhile, in those with CVD (shown in **Fig. 1.c**), the decrease in sedentary time was 0.58-fold less than in participants with this disease. For participants with depression (shown in **Fig. 1.d**), the increase in diet quality was 1.53-fold higher, and both worsening, and improvement of anxiety level were 0.27- and 0.29-fold lower compared to older people without the disease. Moreover, these participants also showed a tendency of worsening MCS that was 1.85-fold higher compared to those without this chronic disease. Similarly, worsening sleep quality, social contact frequency and both worsening,

193 and improvement of anxiety level were 0.44-, 2.05-, 0.16- and 0.25-fold lower,
194 respectively, in participants with cancer (shown in **Fig. 1.e**). No significant association
195 was found concerning musculoskeletal diseases (shown in **Fig. 1.f**). When sensitive
196 analyses were run to examine the changes in anxiety within participants with depression
197 and cancer, those with depression were more likely to have worsening anxiety (OR: 2.19
198 [95% CI: 1.02; 4.69]), although no significant results were found in older people with
199 cancer.
200
201
202 **Discussion**
203 This study examined the influence of having different chronic diseases on lifestyle and
204 health behaviours adaptations during the return to the "new normality" after a strict
205 lockdown resulting from the COVID-19 pandemic; as well as the differences in the
206 lifestyle between these two periods. In general, we observed improvements concerning
207 diet quality, physical activity, sedentary time, and weight in all groups of chronic diseases,
208 although all of them also worsened the PCS (except those with cancer). Regarding the
209 differences found between completed and lost to follow-up subjects, Wagner et al. [16]
210 reported that low levels of physical (e.g., hearing, or visual impairments) and mental (e.g.,
211 memory, cognitive ability) health often prevent older people from participating in surveys.
212 Nonetheless, although lifestyle is enhanced during the return to the "new normality",
213 lockdown has had different medium-term health effects depending on the various chronic
214 diseases when older people is compared with their counterparts without these diseases.
215 Our findings showed that hypertension, pulmonary disease, and cancer were associated
216 with healthy changes compared to those without these diseases, while CVD and
217 depression showed lifestyle and behavioural changes that imply an increase in health risk.

218 However, having musculoskeletal disease did not seem to have any influence compared
219 to not having this disease. Overall, it seems logical that health risk behaviours decreased,
220 and lifestyles improved after 2-months of strict lockdown in Spain, which resulted in
221 drastic lifestyle changes in this population.
222
223 Hypertension has been associated with a lower risk of increased alcohol consumption,
224 indicating a reduction of adverse health behaviours compared to those without the disease.
225 A decrease in the frequency of alcohol consumption could lead to a considerable
226 depletion in the risk of all-cause and cardiovascular death for older people with
227 hypertension [17, 18]. Moreover, this would be more important after lockdown, given
228 that Browne et al. [19] reported that older people with hypertension would be more
229 vulnerable to a cardiometabolic disturbance cascade during the COVID-19 pandemic,
230 which may potentially increase their risk of cardiovascular and metabolic diseases.
231 Therefore, these participants appear to have shown a greater concern for their health by
232 improving this risk factor after lockdown than their non-hypertensive counterparts. In
233 addition, older people with hypertension also reported a significant improvement in diet
234 quality, which is closely related to alcohol consumption, along with the other two main
235 health-related lifestyle components (physical activity and sedentary time). Likewise,
236 older people with pulmonary diseases also showed a reduction in adverse health
237 behaviours due to their associations with a lower risk of increased sedentary time and
238 worse sleep quality. These health benefits are essential for this population because
239 COVID-19 causes respiratory problems, with pulmonary diseases being particularly
240 vulnerable to the increased risk of COVID-19 morbidity, over and above the risks
241 conferred by metabolic conditions alone [20]. Therefore, it is entirely reasonable that
242 older people with pulmonary disease are one of the most health-conscious populations in

terms of improving their lifestyle and behaviours after coming out of lockdown. In participants with cancer, we also found more health benefits than harms, showing a lower risk of worsening sleep quality versus a higher risk of declining social contact frequency. Although in people with chronic conditions, feelings of loneliness, lack of social support and isolation, due to COVID-19, have been associated with reductions in physical activity [21, 22], older people with cancer from our sample did not show significant changes in physical activity compared to participants without this chronic disease. Furthermore, the incidence rate of sleep disorders among cancer patients ranges from 30% to 93%, which is considerably higher than that of the general population (9% to 33%) [23]. Given that these sleep disorders are associated with detrimental effects on health outcomes that could cause a risk for this disease, such as psychological factors, functional status, increase the use of drugs or decrease of quality of life [24], the simple fact of not decreasing the sleep quality is highly positive. Finally, we also found inconclusive results related to anxiety, showing both a lower risk of increased and decreased anxiety compared with their counterparts without cancer. Probably given that it is necessary to study the characteristics and factors specific to each subject to better understand the level of affectation of anxiety and mental problems in this population [25]. Whereas it is true that although not statistically significant, older people with cancer showed an improvement in their MCS during follow-up.

Conversely, having CVD or depression was associated with worse health risk behaviours during the return to the "new normality". Despite the fact that older people with CVD spent less time in sedentary behaviours in the follow-up, when compared to those without the disease these showed a lower hazard of decreased sedentary time than their counterparts. Therefore, regarding sedentary time, participants with CVD have not come

to adapt their lifestyles in the healthiest way. Furthermore, failure to reduce sedentary time after lockdown could be particularly detrimental to them, as it is associated with an increase in CVD complications [26] and a high risk of all-cause and CVD mortality [27]. Similarly, regular exercise is associated with many health-related factors, including reduced risk of future cardiac dysfunction [28]. Older people with depression showed a tendency to have a higher risk of worsening the MCS than those without depression, although they were also at higher hazard of increasing the quality of their diet, which is widely known as a potential health-protective factor [29]. Nevertheless, considering this mental disorder, worsening their mental component after lockdown may exacerbate their condition to a great extent. Moreover, recent studies have investigated the relevance of pre-existing mental health comorbidities in coping with this exceptional situation [30], indicating that the COVID-19 pandemic as a stressful and uncontrollable life event may have worsened mental health among older adults [31]. Additionally, these participants also showed more chance to worsen their anxiety level, another negative factor for their chronic disease. Some of the reasons for this worsening of mental health may be the delays in delivery of psychotropic medications, lack of access to primary care or outpatient clinics, increased financial difficulty, the personal concern of contracting COVID-19, long duration of staying at home as well as more impoverished living conditions [32].

Finally, having musculoskeletal disease has not meant greater or lesser health risk after lockdown, probably, because the level of physical activity and strength training, determinants of this disease [33] changed during the return to the “new normality” in the same way as in those without musculoskeletal disorders. Therefore, understanding the determinants of health risk behaviours and lifestyle during the COVID-19 pandemic is

crucial for developing public health interventions [34], especially in people with CVD and cancer, as they seem to have been worst affected by the COVID-19 pandemic in the medium-term. Likewise, it is important to know that although people with chronic diseases may have improved their lifestyle during their return to the "new normality, this may not be sufficient compared to the changes made by those without these diseases. Hence, all this could help improve the sustainability of healthcare, which is a vital element of the care of people with chronic diseases, particularly patients with multimorbidity [35, 36, 7]. Likewise, helping develop solutions to avoid long-term effects that would be devastating for some people, especially those with multiple or more severe diseases that require periodic monitoring of symptoms and adjustment of complex drug regimens [7].

In line with the previously reported results, we also found that those with diseases have significantly worse scores in both the physical and mental components when compared to their counterparts without diseases.

Our study is not without limitations. The results may not be generalizable to the worldwide population due to the particularly strict lockdown implemented in Spain during the COVID-19 pandemic. Furthermore, the relatively small sample size of people with cancer means that results derived from this group should be interpreted with caution, and future research would need to examine the effects of a restrictive period on lifestyle and health risk behaviours in a larger-scale group of people with cancer, seeking to explain what underlies these results. Variables were collected using subjective information from a telephone-based structured interview, and chronic diseases were self-reported; thus, diseases could be underestimated. However, most of the questions were obtained from validated questionnaires [37, 15, 14, 12, 13] and older people are very heavy users of health services, and it is assumed that there will be no significant under-diagnosis for this reason. Similarly, before the COVID-19 pandemic and as a part of their

respective cohorts, participants had already completed this interview at home, assuming they already knew the questions and the process, thus reducing the risk of reporting bias. To our knowledge, this is the first study to investigate how strict lockdown affects lifestyle changes during the return to the "new normality" in a relatively large sample of older people depending on their chronic disease. In addition, institutionalized and COVID-19 infected participants were excluded to ensure homogenization of the sample.

Conclusion

In conclusion, our results show evidence of beneficial changes in health risk behaviours and lifestyle after the COVID-19 lockdown in older people with chronic diseases. However, when compared to older people without these diseases, those with hypertension, pulmonary diseases, and cancer demonstrated the higher benefits. Older people with CVD and depression seem to have worsened some of the health risk behaviours and lifestyle that could affect them more negatively, having musculoskeletal diseases did not appear to have any effect when compared to those who did not have these chronic conditions. Therefore, these findings suggest that the management of the COVID-19 pandemic or future similar situations, should develop public health interventions to prevent dangerous long-term effects on the health of older people, with a particular focus on CVD and depression.

Statement of Ethics

The Clinical Research Ethics Committee of the Toledo Hospital Complex (Protocol #2203/30/2005) and the Clinical Research Ethics Committee of Aragón (#18/2008)

approved the study for the TSHA, and EXERNET, respectively. In addition, all participants gave verbal informed consent.

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Author Contributions

Study concept and design: IRG, FJGG, GVR, MGG, NG, JLAM, FRA, LRM, IA. Acquisition of data: IRG, CSM, EGE, AM. Analysis and interpretation of data: IRG, CSM, IA. Preparation of manuscript: IRG, CSM. Critical revision of manuscript for important intellectual content: All authors. Statistical analysis: IRG, CSM. Obtained funding: FJGG, GVR, MGG, NG, JLAM, FRA, LRM, IA. Review and approval of the final version of the manuscript: All authors.

Key Message

No studies have analysed the effects of this lockdown on health risk behaviours and lifestyle throughout the return to the “new normality” in this population. Therefore, in our study, we found beneficial changes in health risk behaviours and lifestyle after the COVID-19 lockdown in older people with chronic diseases. Particularly, older people with hypertension, pulmonary disease and cancer showed beneficial changes after COVID-19 lockdown compared to their counterparts without diseases. Those with CVD and depression showed lifestyle and behavioural changes that could involve a health risk. Thus, it is essential to focus on strategies to avoid the long-term effects of lockdown or similar situations.

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506
507 **Figure legend**
508 **Figure 1.** Forest plot showing the relationship between different chronic diseases and
509 changes in health risk behaviours and lifestyle after the COVID-19 lockdown period.
510 Squares and bars represent the hazard ratios (HR) and the corresponding 95% Confidence
511 Intervals of changes, according to Fig. 1. a) Hypertension, Fig. 1. b) Pulmonary diseases,
512 Fig. 1. c) Cardiovascular diseases, Fig. 1. d) Depression, Fig. 1. e) Cancer, Fig. 1. f)
513 Musculoskeletal diseases. Data in bold show statistically significant associations (*p*-
514 value≤0.05) and data in cursive show a tendency. Abbreviations: ST, sedentary time; PCS,

Physical Component Score of the 12-Item Short-Form Health Survey; MCS, Mental Component Score of the 12-Item Short-Form Health Survey; HR; Hazard ratio; CI; Confidence interval. Hazard ratios were adjusted for baseline age, sex (men or women), educational level (illiterate, primary, secondary, or university), marital status (single, married, divorced, widowed), and income (≤600€, >600≤900€, >900€ per month).

Table 1. Socio-demographic, lifestyle, and health-related characteristics of the study population during and post COVID 19 lockdown stratified by chronic diseases (hypertension, depression, cancer, and pulmonary, cardiovascular, and musculoskeletal diseases).

	Whole group		Hypertension		Pulmonary disease		CVD	
	During (n=1092)	**Post** (n=1092)	**During** (n=727)	**Post** (n=727)	**During** (n=217)	**Post** (n=217)	**During** (n=243)	**Post** (n=243)
Socio-demographic variables								
Age, years; mean (SD)	80.3 (5.6)		80.6 (5.6)		81.0 (5.8)		81.5 (5.6)	
Female; %	66.5		68.1		70.5		63.0	
Education; %								
Illiterate	14.7		17.7		12.9		12.3	
Primary	55.9		56.4		59.0		58.0	
Secondary	13.3		11.3		12.9		13.6	
University	8.2		7.8		9.7		9.5	
Marital status; %								
Single	4.0		3.6		1.4		3.7	
Married	57.9		55.8		54.4		54.7	
Divorced	2.3		1.9		3.2		2.5	
Widowed	35.7		38.7		41.0		39.1	
Income; %								
≤600€ per month	22.6		22.6		24.9		22.2	
>600≤900€ per month	29.2		30.9		30.4		28.4	
>900€ per month	31.7		30.3		30.9		32.1	
Living alone; %	27.7	29.1	28.7	29.8	25.8	27.2	26.3	28.8
Daily socialization; %	90.8	74.6	91.2	74.1	89.9	73.3	91.8	77.8
Lifestyle-behaviours								
Smokers; %	2.7	3.2	2.2	2.5	2.3	4.1	2.5	3.3
Alcohol intake; %								
Daily	19.5	21.9	17.9	20.1	17.1	19.4	17.3	19.3
3-5 days per week	3.9	3.8	3.7	3.3	4.1	3.2	2.9	3.3
1-2 days per week	3.2	5.2	2.5	4.3	4.1	4.1	3.3	2.5
Less than 1 day per week	8.8	5.7	9.8	5.2	7.4	4.1	8.6	5.8
Non-drinker	59.0	61.7	60.7	65.2	59.9	66.8	62.1	67.9
Stopped recently	5.6	1.6	5.5	1.9	7.4	2.3	5.8	1.2
MEDAS index; mean (SD)	7.0 (1.8)	7.2 (1.7)*	7.0 (1.7)	7.2 (1.7)*	6.8 (1.7)	7.0 (1.7)	6.9 (1.7)	7.2 (1.7)*
PASE score; mean (SD)	72.2 (45.2)	82.8 (52.6)*	69.5 (43.9)	79.3 (50.7)*	66.5 (44.9)	78.1 (52.5)*	63.9 (44.9)	72.5 (50.4)*
Weight, kg; mean (SD)	70.6 (12.1)	70.5 (12.2)*	71.8 (12.6)	71.4 (12.3)*	71.7 (10.5)	70.5 (11.6)	69.4 (12.4)	70.3 (13.2)
Height, m; mean (SD)	1.6 (0.2)		1.6 (0.2)		1.6 (0.2)		1.6 (0.2)	
Total ST, min/d; mean (SD)	423.3 (182.7)	399.9 (202.1)*	425.6 (184.6)	400.0 (202.1)*	407.1 (176.9)	405.7 (209.8)	453.1 (186.7)	413.0 (198.0)*
Sleep characteristics								
Hours of night-time sleep; %								
Short sleep (≤6 h)	31.5	33.7	32.2	34.0	34.1	36.4	32.9	35.0
Normal sleep	50.6	42.5	50.1	40.6	48.8	38.2	48.6	40.3
Long sleep (≥9 h)	17.1	18.0	16.9	18.6	15.7	18.4	17.7	19.3
Overall sleep quality; %								
Very good	6.3	5.5	4.8	4.1	4.1	5.1	4.1	5.8
Good	54.0	50.1	52.4	48.6	47.9	41.9	49.8	41.6
Fair	20.1	21.6	21.5	22.4	21.2	24.0	20.6	20.6
Poor	4.0	4.9	4.3	5.5	5.1	5.1	4.5	5.8
Very poor	1.3	0.7	1.7	0.7	1.8	0.5	2.1	1.2
Health-related variables								
SF-12, PCS	47.1 (10.4)	44.0 (12.2)*	46.2 (10.9)	42.5 (12.7)*	45.7 (11.3)	41.9 (13.0)*	43.8 (12.9)	40.4 (13.1)*
SF-12, MCS	53.5 (9.3)	52.9 (9.9)	53.4 (9.8)	52.7 (10.5)	53.6 (10.3)	50.6 (11.3)	52.9 (10.6)	52.3 (11.2)
GHQ score	9.2 (3.8)	9.3 (4.0)	9.4 (3.9)	9.6 (4.2)	9.8 (4.7)	10.2 (4.5)	10.0 (4.6)	10.0 (4.7)
Days elapsed; mean (SD)	214.0 (9.1)		214.3 (8.9)		213.6 (9.0)		213.2 (9.1)	

Table 1. Continued.

	Musculoskeletal		Depression		Cancer	
	During (n=665)	**Post** (n=665)	**During** (n=172)	**Post** (n=172)	**During** (n=111)	**Post** (n=111)
Socio-demographic variables						
Age, years; mean (SD)	81.0 (5.6)		79.9 (5.6)		79.6 (4.8)	
Female; %	78.6		83.7		57.7	
Education; %						
Illiterate	17.3		22.7		11.7	
Primary	58.5		57.6		48.6	
Secondary	10.1		9.3		14.4	
University	5.1		3.5		12.6	
Marital status; %						
Single	2.7		2.9		1.8	
Married	52.3		51.7		58.6	
Divorced	2.1		1.2		1.8	
Widowed	42.7		44.2		37.8	
Income; %						
≤600€ per month	26.8		26.7		15.3	
>600≤900€ per month	30.2		34.3		27.0	
>900€ per month	23.6		24.4		35.1	
Living alone; %	31.6	32.8	31.4	29.1	24.3	27.9
Daily socialization; %	92.3	75.9	93.6	77.3	91.9	79.3
Lifestyle-behaviours						
Smokers; %	1.2	1.8	1.7	1.7	1.8	1.8
Alcohol intake; %						
Daily	15.2	17.0	11.0	16.3	23.4	27.9
3-5 days per week	3.0	2.9	2.9	2.9	3.6	4.5
1-2 days per week	3.2	3.9	4.1	3.5	7.2	3.6
Less than 1 day per week	10.2	5.6	12.2	4.7	9.0	6.3
Non-drinker	62.0	68.6	61.0	71.5	51.4	56.8
Stopped recently	6.5	2.0	8.7	1.2	5.4	0.9
MEDAS index; mean (SD)	6.9 (1.7)	7.1 (1.7)*	6.8 (1.8)	7.3 (1.7)*	7.1 (1.8)	7.2 (1.8)
PASE score; mean (SD)	67.9 (43.6)	77.6 (51.8)*	65.2 (39.7)	76.4 (53.7)*	66.4 (46.4)	79.0 (46.7)*
Weight, kg; mean (SD)	69.7 (12.0)	69.7 (12.2)*	68.1 (11.0)	68.7 (10.6)	73.4 (10.7)	72.6 (11.1)*
Height, m; mean (SD)	1.5 (0.2)		1.5 (0.1)		1.6 (0.9)	
Total ST, min/d; mean (SD)	413.0 (179.0)	399.6 (207.7)	409.5 (181.0)	378.5 (178.6)	445.4 (174.3)	424.5 (206.2)
Sleep characteristics						
Hours of night-time sleep; %						
Short sleep (≤6 h)	33.7	34.4	23.8	26.7	38.7	30.6
Normal sleep	48.3	40.3	52.3	41.9	42.3	42.3
Long sleep (≥9 h)	17.1	18.3	23.3	25.0	18.0	22.5
Overall sleep quality; %						
Very good	3.6	3.8	2.9	5.8	6.3	4.5
Good	50.4	43.2	46.5	36.6	48.6	41.4
Fair	22.3	25.1	23.8	26.7	20.7	19.8
Poor	5.1	6.5	4.7	6.4	4.5	9.0
Very poor	1.8	1.1	1.7	1.2	1.8	0.9
Health-related variables						
SF-12. PCS	44.5 (11.1)	40.7 (13.0)*	43.2 (11.5)	41.3 (13.9)*	44.2 (13.0)	41.6 (14.3)
SF-12. MCS	53.4 (9.7)	52.7 (10.4)	51.1 (11.3)	48.4 (12.9)	54.5 (10.1)	53.4 (10.4)
GHQ score	9.7 (4.1)	9.8 (4.3)	11.1 (5.2)	11.6 (5.4)	9.8 (4.4)	9.8 (4.2)
Days elapsed[§]; mean (SD)	214.3 (9.2)		214.1 (8.9)		213.4 (8.6)	

Variables are presented as mean (standard deviation) or as prevalence (%) of participants in that category. *Statistical significance (p-value<0.05) in the paired sample t-test for change values during-post lockdown. Abbreviations: SD, standard deviation; MEDAS, Mediterranean Diet Assessment Score; PASE, Physical Activity Scale for the Elderly; ST, sedentary time; SF-12, 12-Item Short-Form Health Survey; PCS, Physical Component Score of the SF-12; MCS, Mental Component Score of the SF-12; GHQ, General Health Questionnaire; CVD, Cardiovascular disease. Higher scores in the MCS and PCS of the SF-12, PASE, as well as on the MEDAS, and lower scores in the GHD are indicative of better health. § Data was collected at the end of the lockdown period and 7 months later.