Smartphone usage time and related health conditions in older people during the COVID-19 pandemic

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Abstract

Objective: To evaluate smartphone usage time and related health conditions in older people during the COVID-19 pandemic. *Method*: This is a cross-sectional study of 237 older people (aged ≥60 years) Brazilians, carried out between June and August 2020. An online form was used to obtain the following variables: socio-economic profile, health status, and smartphone usage. Bivariate and multivariate analyzes were performed using the SPSS program with the outcome of smartphone usage time. *Results*: Of the study individuals, 69.2% (n=164) were females, 48.5% (n=115) complained of cervical pain, 57.4% (n=136) had a cervical disability and remained 6.2 hours a day in the sitting position per week. Approximately 54.4% (n=129) reported increased smartphone usage in the past few months, reporting 4.2 hours of usage/day. Younger senior individuals (p=0.038), who did not practice physical activities (p=0.001), with good health assessment (p=0.009) and who spent more extended periods in the sitting position (p=0.011) spent more time using the device. *Conclusion*: Considering the smartphone usage during the COVID-19 pandemic associated with more extended periods in the sitting position and a sedentary lifestyle, it is worth mentioning its adverse effects on the physical and mental health of older people.

Keywords: Smartphone; Aged; Covid-19; Health.

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INTRODUCTION

The first case of Corona Virus Disease-19 (COVID-19) was reported in Wuhan, China, on December 31, 2019 and was declared a World Pandemic on March 11, 2020, accounting for more than 13,673,507 confirmed cases and 361,884 deaths in Brazil as of April 14, 2021[1]. The uncontrolled spread of COVID-19 caused worldwide fear. For older people and people with some type of comorbidity, the risk of death is high[2].

With regard to combat measures, biologists, infectologists and other researchers have dedicated themselves to understanding COVID-19, seeking effective clinical treatments and the discovery of vaccines to control it. Meanwhile, measures to prevent infection of the disease were adopted, such as flexible or rigid social isolation (*lockdown*)[3].

The use of technologies was one of the strategies used to minimize/mitigate the effects of social isolation on the biopsychosocial aspects of the population in general[4]. In the older population, digital inclusion is part of social inclusion, contributing to active aging, since social relationships influence their social role and, consequently, their self-esteem. Socialization takes place beyond physical contact, incorporating interactive systems, such as information, communication and connectivity technologies, which expands the acquisition of information[5].

Since its inception at the beginning of the 21st century, the smartphone has become ubiquitous in everyday life, with approximately five billion users worldwide, due to the diversity of functions offered and the merger with the Internet[6]. In the world there are more than five billion mobile phone users and more than four billion internet users. In Brazil, 94% of the population has a smartphone, with a density of 108 devices/100 inhab. In the world ranking, the country ranks second in time spent on the internet and time spent on the smartphone using the internet[7].

According to the Brazilian Institute of Geography and Statistics (IBGE), 45% of people over 60 were connected to the Internet in 2019, highlighting the increase in the number of older people with access to the network compared to 2018, which was 38.7%, with the smartphone being the main means of access[8]. Furthermore, the view of old age and the way of living it has changed dramatically in the last 30 years. Currently, the figure of the older person as an outstanding character in the social scenario appears quite differently when compared to previous periods of history, which was characterized by experiences related to conditions of "abandonment, isolation and social neglect"[9].

There is a diversity of opportunities in the technological engagement of this older population, whether for video calls or online surveys, for searching for movies or even for virtual shopping. Resources are present in everyone's life, technological possibilities are increasingly within reach. However, it is important to know how to handle applications using languages that are not always accessible to this population[10]. The Statute for the Older Person[11], found in Art. 21, § 1st, states that special courses for older people include content related to communication techniques, computing and other technological advances, for their integration into modern life, making them an achievable challenge.

However, it is known that excessive smartphone use can have negative consequences for physical, mental health and interpersonal relationships, highlighting musculoskeletal changes, vision problems, increased levels of aggression, as well as a high risk for development of psychopathologies[12]. Monitoring smartphone usage time in the general population should be encouraged as it is a predictor of dependence on this mobile device[13].

Faced with isolation as a preventive measure of COVID-19, the population resorted to the use of the smartphone as a communication strategy, obtaining information, shopping and approaching their families. This change impacted the time of use of this device by this population. Therefore, research that assesses excessive use by monitoring time can contribute to the discussion on associated factors and health hazards. Despite the importance of the theme, existing research focuses on the young population, and it is important to deepen studies on smartphone use and possible negative repercussions on other groups and age groups, especially during and after the COVID-19 pandemic.

Thus, this study aimed to assess smartphone usage time and related health conditions in older people during the COVID-19 pandemic.

METHOD

This is a quantitative, cross-sectional and analytical study, arising from the umbrella project entitled "Relationship between musculoskeletal dysfunction of the cervical region and smartphone use by older people during the COVID-19 pandemic", carried out throughout the national territory.

The period of recruitment and data collection took place from June to August 2020. During this period, the Brazilian population was in social isolation for more than three months, adopted by the Ministry of Health as a measure to combat the pandemic through Ordinance No. 356/20 and Law 13,979/20, and by the specific decrees of each State.

A total of 237 healthy older people (≥ 60 years) participated in the study, regardless of demographic characteristics and who used the smartphone routinely. Such amount was estimated by sample calculation, based on the amount of the older population (n=28,000,000) in the country, prevalence of 18% of neck pain in mobile device users[14], sample precision of 5% and confidence interval of 95%. The exclusion criteria adopted were diagnoses of fractures in the spine region, head or neck surgeries, congenital deformities, advanced stage neuromuscular diseases, and self-reported senile dementia during recruitment. 22 questionnaires were removed due to duplicity of answers, from the verification by a specific tool of the statistical program.

The recruitment of participants was carried out using the *snowball* method and through an online message through the Whatsapp platform and social networks, promoting greater dynamism and speed of feedback. This method consists of a sampling technique performed with the objective of gaining access to hard-to-reach and/or hidden populations[15]. The starting point of this recruitment was a group of older professors from a higher education institution who received the link to access the consent form and the electronic form, passing the same link to other older people they knew. It is worth mentioning that the information about the inclusion and exclusion criteria were explained in the invitations and in the free and informed consent form (ICF).

After authorization, the participants were submitted to data collection by completing the Google Forms electronic form, with an average duration of 15 minutes to be answered, containing the following parts: 1st part - socioeconomic profile, 2nd part - health conditions during the pandemic, 3rd part - functional disability in the cervical region by the Neck Disability Index (NDI-BR) and 4th part - smartphone usage time by the Smartphone Addiction Inventory (SPAI-BR).

In this study, as it is a reduction, the following variables of the socioeconomic profile were used (age, sex, marital status, education and social class by minimum wage range), health conditions during the pandemic (physical activity, smoking, alcohol consumption in the last thirty days, good sleep/hours of sleep, diagnosis of COVID-19, symptoms related to COVID-19, complaint of neck pain/pain intensity, general health assessment, sitting time per weekday and weekend). This part of the form was prepared based on the National Health Survey, carried out by the Brazilian Institute of Geography and Statistics (IBGE).

Pain intensity was assessed using the Visual Analogue Scale (VAS) which consists of a 10 cm long horizontal line, with two descriptors referring to pain at its ends (0 being no pain and 10 being severe pain). A VAS figure was included in the form to guide them, and the participant was asked to mark the value of pain intensity in the last months. The classification adopted was mild (1-3), moderate (4-6) and severe (7-10)[16].

Functional disability in the cervical region was investigated by the NDI-BR. This instrument, adapted and validated for Portuguese, has 10 items to assess functional disability, with six response options ranging from zero (0) to five (5)[17]. To obtain the total score of the instrument, the sum of the responses of all items was made. In this study, a dichotomous classification was used: absence (≤4 points) and presence of functional disability in the cervical region (>4 points)[18].

The Smartphone Addiction Inventory (SPAI-BR), validated and adapted to Portuguese, is a questionnaire with 26 items with a yes (1) and no (0) answer that aims to assess smartphone addiction[19]. In the present study, only the questions regarding the time of use were analyzed: 1) I have been told more than once that I spend too much time on the smartphone; 2) I think I have been more and more time connected to the smartphone; 3) I have considerably increased the time spent using the smartphone in the last 3 months; and 4) I've been trying to spend less time using my smartphone, but I haven't been able to. In addition to these, two questions were added regarding the time of use in hours/day and use for work.

Data were analyzed using descriptive and inferential statistics. In the descriptive analysis, categorical variables were presented as absolute (n) and relative (%) frequencies, and numerical variables were presented as mean ± standard deviation (SD). In the inferential analysis, the time of smartphone use was established as an outcome variable. Variables were also created from the existing ones for better statistical understanding, as follows: 1) general health assessment in: good (very good and good) and bad/regular (very bad, bad and regular) and 2) alcohol consumption in the last thirty days: no and yes (yes, up to 3 doses and yes, four doses or more).

Pearson's correlation test was used to analyze the relationships between the outcome and numerical variables, and for categorical variables, t and ANOVA tests were used. These parametric tests were in agreement with the Kolmogorov-Smirnov (KS) normality test. Then, multiple linear regression was applied, using the stepwise method, initially selecting the analyzes with $p<0.020$ in the bivariate to enter the model, allowing the identification of confounding variables. For the final model, only the variables with a significance of 5% remained, and adjusted correlations (β) were calculated. Furthermore, the chi-square test was used followed by the calculation of the measure of association to verify the relationship between the variable pain and functional disability in the cervical region. For all analyses, SPSS Statistics version 23.0 was used.

This study was approved by the ethics committee of the University of Fortaleza, with opinion nº. 4,060,750, according to Resolutions 466/12 and 510/16 of the National Health Council. All participants marked the item "I have read and I want to participate in the research" at the end of the free and informed consent form (ICF) as a condition for, consequently, being referred to the electronic form.

RESULTS

Of the total number of participants, the mean age was 66 years (± 6.3), 164 (69.2%) were female, 145 (61.2%) were married, 177 (74.7%) had higher education and 85 (35.9%) belonged to social class B (Table 1). Regarding the regions of the country, 2 (0.8%) were from the North region, 209 (88.2%) from the Northeast region, 6 (2.5%) from the Midwest, 16 (6.8%) from the Southeast and 4 (1.7%) from the South region.

Regarding health conditions during the COVID-19 pandemic, 56.1% (n=133) did not practice physical activity, 48.9% (n=116) were former smokers, 38.8% (n=92) had consumed alcohol in the last thirty days, 32.5% (n=77) did not sleep well and had an average sleep time of 6.7 (±.5) hours. In continuity, 4.2% (n=10) were diagnosed with COVID-19, 16.9% (n=40) reported symptoms related to COVID-19 and 46.8% (n=111) rated their health as good (Table 2).

Regarding the cervical region, 48.5% (n=115) reported a complaint of pain in this region during the pandemic and in 57.4% (n=136) the presence of functional disability in the cervical region was found (Table 2). An association between these two variables was also observed, with pain complaints being five times more frequent in older people with the presence of functional disability (OR=5.94; $p<0.001$).

Regarding smartphone use, 42.2% (n=101) reported spending too much time on the device according to other people, 54.4% (n=129) declared a considerable increase in usage time in the last 3 months and 48.1% (n=114) were using it for work (Table 2). Regarding the self-reported time of smartphone use, they spent an average of 4.2 (± 2.8) hours/day, remained seated for 6.2 (±2.6) hours a day during the week and 6.4 (±2. 9) hours a day during the weekend.

Table 1. Distribution of the socioeconomic profile of older people during the Corona Virus Disease-19 (covid-19) pandemic. Brazil, 2020.

Variables	n (%)	Mean (DS)
Age		66.6 (6.3)
Sex		
Male	73 (30.8)	
Female	164 (69.2)	
Marital status		
Single	26 (11.0)	
Married	145 (61.2)	
Divorced	33 (13.9)	
Widowed	20 (8.4)	
Separated	13 (5.5)	
Education		
Elementary school	15 (6.3)	
High school	45 (19.0)	
College	177 (74.7)	
Social class by minimum wage range*		
A (> 20 MW)	35 (14.8)	
B (> 10 a ≤ 20 MW)	85 (35.9)	
C (> 4 a ≤ 10 MW)	60 (25.3)	
D (>2 a ≤ 4 MW)	37 (15.6)	
E (≤ 2 MW)	20 (8.4)	

n: absolute value; %: percentage; SD: standard deviation.

Table 2. Distribution of variables related to health conditions and time of smartphone use of older people during the Corona Virus Disease-19 (covid-19) pandemic. Brazil, 2020.

Variables	n (%)
Physical activity during the pandemic	
Yes	104 (43.9)
No	133 (56.1)
Smoking	
Smoker	7 (3.0)
Ex smoker	116 (48.9)
Never smoker	114 (48.1)
Alcohol consumption in the last thirty days*	
No	145 (61.2)
Yes	92 (38.8)
Good sleep during the pandemic	
Yes	160 (67.5)
No	77 (32.5)

to be continued

Continuation of Table 2

Variables	n (%)
Diagnosis of COVID-19	
No	227 (95.8)
Yes	10 (4.2)
Symptoms related to COVID-19	
No	197 (83.1)
Yes	40 (16.9)
General health assessment during the pandemic	
Very bad	4 (1.7)
Regular	54 (22.8)
Good	111 (46.8)
Very good	68 (28.7)
Complaint of neck pain	
No	122 (51.5)
Yes	115 (48.5)
Pain intensity (n=115)	
Mild	24 (20.9)
Moderate	59 (51.3)
Severe	32 (27.8)
Functional disability in the cervical region	
Absence	101 (42.6)
Presence	136 (57.4)
Smartphone use	
I have been told more than once that I spend too much time on the smartphone	100 (42.2)
I think I have been more and more time connected to the smartphone	129 (54.4)
I have considerably increased the time spent using the smartphone in the last 3 months	129 (54.4)
I've been trying to spend less time using my smartphone, but I haven't been able to	41 (17.3)
Smartphone use for work	114 (48.1)

n: absolute value; %: percentage. * number of doses on the same occasion.

In the bivariate analysis having the time of smartphone use as an outcome, an inversely proportional correlation was found between the time of use and age (r=-0.175; p=0.007). A directly proportional correlation was also identified between the time spent using the smartphone and the time sitting per day in the week (r=0.204; p=0.002) (Table 3).

In the follow-up, it was found that older people who did not practice physical activity (4.6±3.2) spent more time using the smartphone than those who did (3.7±2.1). On the other hand, those who rated their health as good (4.4±3.0 hours) spent an hour longer using the device compared to those who rated their health as bad (3.5±2.0 hours) (p=0.009) (Table 4). In the multivariate analysis, the younger seniors (p=0.038), non-practitioners of physical activity (p=0.001), with a good health assessment (p=0.009) and more time sitting per day in the week (p=0.011) remained using the smartphone for longer (Table 5).

Table 3. Correlation between the time of smartphone use by older people with related health conditions during the Corona Virus Disease-19 (covid-19) pandemic. Brazil, 2020.

Health conditions	Time of smartphone use	
	r	p-value
Age	-0.175	0.007*
Hours of sleep during the pandemic	0.041	0.535
Pain intensity (n=115)	0.066	0.482
Sitting time per weekday during the pandemic	0.204	0.002*
Sitting time per weekend during the pandemic	0.099	0.133

r= Pearson's correlation. *p<0.05.

Table 4. Bivariate analysis between the time of smartphone use by older people and health conditions during the Corona Virus Disease-19 pandemic (covid-19). Brazil, 2020.

Health conditions	Time of smartphone use	p-value
Sex		0.282
Male	4.5 ± 3.1	
Female	4.1 ± 2.7	
Marital status		0.560
Married	4.3 ± 2.9	
Divorced	4.6 ± 3.4	
Widowed	3.7 ± 2.3	
Single	3.5 ± 1.7	
Separated	4.4 ± 2.5	
Education		0.051
Elementary school	2.5 ± 1.1	
High scholl	4.0 ± 2.7	
College	4.4 ± 2.9	
Physical activity during the pandemic		0.011*
Yes	3.7 ± 2.1	
No	4.6 ± 3.2	
Smoking		0.133
Never smoker	4.3 ± 3.1	
Ex smoker	3.9 ± 2.2	
Smoker	6.0 ± 5.5	
Alcohol consumption in the last thirty days*		0.103
No	3.9 ± 2.7	
Yes	4.6 ± 2.9	
Good sleep duraing the pandemic		0.388
Yes	4.1 ± 2.9	
No	4.4 ± 2.7	
General health assessment during the pandemic		0.009*
Good	4.4 ± 3.0	
Very bad/regular	3.5 ± 2.0	

to be continued

Continuation of Table 4

Health conditions	Time of smartphone use	p-value
Complaint of neck pain during the pandemic		0.210
Yes	4.0 ± 2.5	
No	4.4 ± 3.1	
Functional disability in the cervical region		0.517
Ausence	4.3 ± 3.0	
Presence	4.1 ± 2.6	
Smartphone use for work		0.128
Yes	4.5 ± 2.9	
No	3.9 ± 2.8	

*p<0.05.

Table 5. Multivariate analysis between the time of smartphone use by older people and related health conditions during the Corona Virus Disease-19 pandemic (covid-19). Brazil, 2020.

Variables	β	95% IC	p-value
Age	-0.065	-0.126 - -0.004	0.038*
Education	0.340	-0.354 - 1.034	0.069
Physical activity during the pandemic	1.305	0.567 - 2.043	0.001*
Smoking	-0.226	-0.870 - 0.417	0.489
Alcohol consumption in the last thirty days	0.247	-0.516 - 1.010	0.525
General health assessment during the pandemic	-1.178	-2.055 - -0.302	0.009*
Smartphone use for work	0.043	-0.754 - 0.841	0.915
Sitting time per weekday during the pandemic	0.233	0.053 - 0.413	0.011*
Sitting time per weekend during the pandemic	-0.044	-0.201 - 0.113	0.580

95% IC=95% confidence interval. β: adjusted Pearson's correlation. *p<0.05, variables in the final model by multivariate linear regression.

DISCUSSION

During social isolation, the use of smartphones by older people was mainly caused by video calls, which helped them stay connected during the pandemic, expanding the social circle or intensifying the frequency of contact with their family and friends[20]. Various applications favored the maintenance of physical and mental health, consultations with specialists and household organization. However, some older people have difficulty using some of these tools, needing help in choosing and using them[4].

In recent years, the older portion of society needed to learn to deal with the internet, social networks, smartphones, tablets and computers to be socially inserted. Unlike generations X and Y, whose contact with technology occurs early, older people generally face obstacles to their digital insertion[21]. This fact may justify the scarcity of studies regarding the excessive use of smartphones by this age group.

Regarding the health conditions during the COVID-19 pandemic investigated in the present study, a significant portion of the sample did not practice physical activity, spent more than 6 hours sitting, did not consume alcohol recently and did not sleep well, with less than 8 hours/night. Despite this, older people rated their health as good. Regarding these findings, it is known that alcoholism, smoking, physical inactivity and impaired quality/hours of sleep would be responsible for numerous chronic diseases and negative repercussions on the physical and mental health of older people[22].

The COVID-19 pandemic has also caused changes in health behaviors, interfering with physical activity, alcohol intake and sleep. In particular for the practice of physical activity, since March 2020 social isolation has made the usual places for the practice of physical activities, such as gyms and outdoor recreation in various parts of the world, inaccessible. In this regard, a French study through an online survey involving different age groups showed a reduction in levels of physical activity, an increase in sitting and screen time by the older people in the sample[23]. These results together indicate that rigid or flexible social isolation caused changes in lifestyle, favoring a decrease in physical activity and an increase in sedentary lifestyle.

Regarding alcohol consumption, Stanton et al.[24] found an increase in alcohol intake among Australian adults and older people during the period of social isolation. According to the authors, stress, unemployment, and uncertainty about the future can lead to neuro-adaptations that exacerbate impulses for alcohol intake[24]. Another UK study of adults and older people found a 17% increase in alcohol consumption after strict social isolation or lockdown, in addition to an association with depression and compromised mental health and well-being[25].

Continuing with the findings on sleep, Barros et al.[26] showed an increase in the incidence and prevalence of sleep disorders among Brazilian adults and older people during the COVID-19 pandemic. According to the authors, poor sleep quality can affect mental health, leading to depression and anxiety in older people, potentiated in the period of social isolation[26]. Allied to this, it is known that excessive smartphone use also causes changes in the hours and quality of sleep in adults and older people[27].

Pain and functional disability in the cervical region were the musculoskeletal variables investigated, complementing the assessment of physical health in the present study. A high percentage of the sample reported complaints of neck pain during the pandemic and the presence of functional disability in the cervical region, detected by a specific instrument. In addition, pain complaints were five times more prevalent in older people with functional disability. Pain is a prevalent disorder worldwide, causing suffering, functional limitation and a deleterious effect on quality of life. Most chronic pain conditions occur in older people and are musculoskeletal in nature, such as pain in the lower back, neck, and joints. People with chronic pain more often have anxiety, depression, catastrophizing and suicidal ideation, which are likely to be exacerbated in times of stress such as the pandemic[28].

There are still few studies involving pain in this current context. Fallon et al.[29] verified in a study in the United Kingdom that participants with chronic pain reported increased pain severity, associated with reports of anxiety and depression; and reduced levels of physical activity. The presence of catastrophizing was also detected in the sample. Based on this, the authors suggest specific actions aimed at managing pain and encouraging the practice of physical activity, seeking to minimize the adverse effects in periods of social isolation[29].

In the present study, it was found that older people have been continuously using the smartphone for a long time. A high percentage of the sample stated an increase in the time of use in the last three months, self-declared an average of 4h12min per day. There was a perception on the part of other people that the older people were spending too much time using the smartphone. Insufficient amount of studies on the time of use of this device by older people before the pandemic makes it difficult to understand its influence on the increase in the time of use. However, recent international surveys placed Brazilians in 2nd place in time spent on the internet, spending more than 10h 8 min connected per day and in 2nd place in time spent on the internet using a cell phone, spending on average more than 5h 17 min connected per day. It is known that the world average is 3 hours and 39 minutes per day, with this, it was observed that Brazil uses 2 hours more[7].

The increase in hours of use constituted a potential risk factor for problematic smartphone use[30], with the possibility of having a negative impact on the physical and mental health of older people. Studies warn that this excess can resemble an addiction, being used for longer than intended or perceived by the user[31]. In addition, spending more than three hours a day can be considered a strong indicator of dependence[13]. This can also be associated with poor sleep quality[31]

and postural changes, such as text neck[14]. In this incorrect posture, the user moves the neck forward and down, with protrusion and internal rotation of the shoulders when using the smartphone. This can cause injuries to the osteoarticular structure of the cervical spine, upper limbs and, consequently, pain in the region[32].

Regarding related health conditions, younger seniors, who did not practice physical activity, had a good health assessment and spent more time seated, spent more time using their smartphone. These findings strengthen the evidence that sedentary behavior is related to screen time, involving the use of computers, tablets, smartphones and others. Meyer et al.[33] revealed a reduction in the practice of physical activity and an increase in sitting time associated with an increase in screen time during social isolation compared to the previous period in people aged 17 to 75 years or older[33].

Regarding the relationship between a general assessment of good health and the time of excessive smartphone use, a Chinese study with a population in different age groups showed a relationship between problematic smartphone use with symptoms of depression and anxiety generated during the COVID-19 pandemic[12]. Such divergence can be explained by the absence of a specific instrument in the present study to assess mental health and symptoms related to mood and anxiety disorders, focusing only on a self-perception of health.

In view of the findings of the present study, the importance of effective health promotion strategies aimed at the adoption or maintenance of healthy behaviors related to the health of older people and the conscious use of the smartphone, through a support network involving the health system, family and public bodies. Also noteworthy is the importance of ergonomics regarding the use of technological devices, such as smartphones, tablets and computers, in addition to body awareness and the maintenance of good posture as preventive measures for musculoskeletal disorders.

Some limitations can be considered in the present study, in addition to those pertinent to the cross-sectional study and information bias. The absence of a specific instrument to assess general health may have interfered with the analysis of this variable. The smartphone usage time may have been underestimated or overestimated by the participants, due to the impossibility of using some kind of measurement through the online survey.

Another limitation was the sample profile due to the voluntary respondent bias, which encompasses the possibility that people more interested in the topic have participated. As a result, snowball sampling methods and social networks were used, seeking to minimize self-selection bias and homily. Still on the sample, the number of participants was linked to the sample calculation of the umbrella project and there was no adjustment for possible differences between age, sex and education. About 1.1% of those who accessed the link indicated that they would not participate, representing a low non-response rate. However, this value was imprecise due to the absence of a measurement strategy.

These limitations may make it difficult to generalize the results to other populations, however, it is believed that the findings of this study contribute to the discussion about smartphone use by older people during the pandemic.

CONCLUSION

A high percentage of the sample stated an increase in the time of smartphone use in the last three months, with an average of 4h12min per day being self-declared, higher than the international average in the year 2020. Regarding related health conditions, the younger seniors, non-practitioners of physical activity and with more time sitting, spent more time using the smartphone.

With regard to health conditions during the COVID-19 pandemic, a relevant portion of the older people participants had unhealthy behaviors, such as lack of physical activity, long sitting time and changes in sleep. In addition, a high percentage reported complaints of neck pain with the presence of functional disability in the cervical region.

Due to the results obtained, the importance of health promotion strategies aimed at healthy behaviors and conscious use of the smartphone by

older people is highlighted, involving the triad of care for older people. The importance of ergonomic guidelines regarding the use of technological devices, the adoption of correct posture and the performance of stretching/relaxation techniques as preventive measures for musculoskeletal disorders is also highlighted. Continuous assessment of the impact of these pandemic-fighting measures on health behaviors is necessary to support these health promotion strategies.

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