







Motivations for smartphone use and time of use by adults during the COVID-19 pandemic

Motivações para o uso do smartphone e tempo de uso por adultos durante a pandemia COVID-19

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RESUMO

Introdução: Padrões e motivações para o uso de smartphones não são consistentes, variando assim com o uso da internet, que tem sido um aliado, ajudando pessoas com medidas de distanciamento social. **Objetivo:** Investigar motivações para o uso do smartphone e o tempo de uso por adultos durante a pandemia da COVID-19. **Métodos:** Estudo transversal, realizado entre maio e junho de 2020, com adultos que utilizaram smartphones durante a pandemia. As informações foram obtidas por meio de um questionário online, o *Google Forms*®, contendo as variáveis socioeconômicas, as motivações para o uso do smartphone e o tempo gasto com ele (em horas). Os dados categóricos foram analisados por meio do *software* SPSS, e foram expressos como frequências absolutas e relativas, por meio da análise bivariada, aplicadas para avaliar associações entre o “aumento do uso de smartphones” e variáveis socioeconômicas e motivações utilizando o qui-quadrado de Pearson, considerando o nível de significância de 5%. **Resultados:** 658 indivíduos participaram do estudo, dos quais (84,2%) disseram estar usando o celular por períodos mais longos devido a medidas de distanciamento social, enquanto parte da população utilizou o smartphone por motivos de lazer (27,3%); 30,7% utilizaram o dispositivo de 7 a 12 horas, com 77,0% relatando que o smartphone os ajudou com o distanciamento social; e 35,6% relataram que essa tecnologia os ajudou a manter seu bem-estar mental; esses valores apresentaram significância estatística, com $p < 0.001$. **Conclusão:** O tempo de uso do smartphone aumentou com a pandemia, que teve um efeito satisfatório na continuidade do distanciamento social, pois remotamente permite a interação social.

Palavras-chave: Isolamento social, Infecções por Coronavírus, Smartphone, Tempo de tela, Uso de celular.

ABSTRACT

Introduction: Patterns and motivations for smartphone use are not consistent, thus varying with internet use, which has been an ally in helping people with social distancing measures. **Objective:** Investigate motivations for smartphone use and time of use by adults during the COVID-19 pandemic. **Methods:** Cross-sectional study, performed between May and June 2020, with adults who used smartphones during the pandemic. The information was obtained through an online questionnaire, *Google Forms*®, containing the socioeconomic variables, the motivations for using the smartphone and the time spent using it (in hours). The categorical data were analyzed using the SPSS software and were expressed as absolute and relative frequencies, through bivariate analysis, applied to evaluate associations between the “increased smartphone use” and socioeconomic variables and motivations using Pearson’s chi-square, considering the significance level of 5%. **Results:** 658 individuals participated in this study, of which 84.2% said they were using the cell phone for longer periods due to social distancing measures, while part of the population used the smartphone for leisure reasons (27.3%); 30.7% used the device for 7 to 12 hours, with 77.0% reporting that the smartphone helped them with social distancing; and 35.6% reported this technology helped them to maintain their mental well-being; these values showed statistical significance, with $p < 0.001$. **Conclusion:** The time of smartphone use increased with the pandemic, which had a satisfactory effect on continuing social distancing, as it remotely allows social interaction.

Keywords: Social isolation, Coronavirus infections, Smartphone, Screen time, Cell phone use.

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INTRODUCTION

Since the record of the first cases of Severe Acute Respiratory Syndrome caused by the SARS-CoV-2 virus (COVID-19), the world has experienced an unprecedented social and health crisis for this generation¹. Considering the many questions and few assurances, social distancing emerged as one of the main sanitary control measures for the COVID-19 pandemic².

This measure, however, as necessary as it may be, is not an innocuous one, being associated with economic impacts, changes in the provision of health care and other services, in addition to the social impact³⁻⁴. Therefore, the social distancing recommendation has started to demand new connectivity strategies between individuals, given that the existing digital technologies are being increasingly used at present⁵⁻⁶.

In this scenario, the so-called smartphones stand out as a possibility to provide efficient and relatively accessible technology for connectivity. This fact is demonstrated by data obtained from the National Household Sample Survey (PNAD, *Pesquisa Nacional por Amostra de Domicílios*) of 2017, which showed that 93.2% of Brazilian households used smartphones, of which 97% were used to have access to the internet⁷.

Therefore, smartphone technology integrates the operating system and web browsing that allow running several connectivities, entertainment, information search and time management applications⁸. This device has already shown to be useful in several areas such as social life, source of information, education, business, and health, among others. This aforementioned potential has been magnified in the context of the COVID-19 pandemic⁹. Since this time is increased in a part of the population due to several situations, since the motivation of use seems to influence the involvement with smartphone applications, Brazilians make use an average of 10 hours/day during this pandemic moment¹⁰⁻¹².

It can be observed that the patterns of use and motivations for using the smartphone are not consistent. Younger individuals, for instance, spend more time on games and social networks, while older individuals make video calls to keep in touch with family and friends as a safety tool during the pandemic¹³⁻¹⁶.

Considering the abovementioned facts, identifying the motivations for smartphone use in

the context of the COVID-19 pandemic is important to understand the different social demands, as well as to obtain information to plan coping strategies. Thus, this study aimed to investigate the motivation for smartphone use and time of use by adults during the COVID-19 pandemic.

METHODS

This is a cross-sectional study, originated from a broader research entitled "Conceptions of the population about the new Coronavirus (SARS-CoV-2) and the COVID-19 pandemic in Brazil", after ethical approval by the Research Ethics Committee (Opinion No. 4,033,524). Data were collected between May and June of 2020.

A total of 658 adults (aged >18 years) living in the country during the collection period participated in the study, regardless of socioeconomic status. The number of participants was estimated by sample calculation based on the Brazilian population (n = 106,000,000), with a 50% prevalence (unknown), 95% confidence interval and 5% precision¹⁷.

Therefore, the participants were recruited using the 'snowball' method, from invitations on social networks and instant messaging groups and voice calls (WhatsApp), with a link to the consent form and the Google Forms[®] online questionnaire composed of closed questions.

It is noteworthy that the questionnaire was used to collect the socioeconomic variables (age group, gender, level of schooling and family income), motivations for using the smartphone (increased use, purpose, help with social distancing and help with mental health) and the time of smartphone use (in hours). All questions were structured by the researchers based on prior knowledge, and this instrument consisted of five questions (closed and open). The closed questions allowed to indicate only one option, and questioned about: i) Did you realize that from the measures of distancing/social isolation you have used more the mobile /smartphone; ii) The use of the mobile phone/smartphone in the pandemic has helped in social distancing; iii) Regarding your mental health in times of a pandemic, the use of cell phones/smartphones helps in maintaining or worsening mental well-being.. The open ones asked the participant to explain why he related the time of greater use of the cellular/smartphone and then was

asked if in this pandemic period you have used how many hours per day the mobile phone/smartphone?.

Subsequently, the data were stored and analyzed using the SPSS Statistics software, version 23.0. The categorical data were expressed as absolute (N) and relative (%) frequencies, and the bivariate analysis was applied to evaluate associations between the "increase in time of use" and socioeconomic, using Pearson's chi-square test, considering a significance level of 5%.

RESULTS

A total of 658 people participated in this study, of which 553(84.2%) stated their time of smartphone use increased due to the social distancing measures. Of those who confirmed this use, 409 (73.8%) were females, and 142 (25.7%) males, while 03 (0.5%) declared they belonged to other genders. The participants' age ranged from 29 to 39 years (36.6%), followed by 18 to 28 years (31.0%), 40 to 50 years (13.5%), 51 to 60 years (11.4 %), 61 to 71 years (6.2%) and 72 years or older (1.3%).

The predominant family income varied from R\$ 1,045.00 to R\$ 5,225.00, as reported by 261 respondents (47.1%) and followed by the following values: between R\$ 6,270.00 and R\$ 10,450.00 for 136 (24.6 %), income above R\$ 11,495.00 for 132 participants (23.8%), while 25 received less than R\$ 1,045.00 (4.5%).

Regarding the level of schooling, 234 (42.2%) had a postgraduate level of education (specialization, master's degree and doctorate degree), 157 (28.3%) had finished College/University, 96 had not finished College/University (17.3%), 55 (10%) had finished High School, 05 (0.9%) had not finished High School and the others had finished Elementary School (1.3%).

Regarding the motivations for using the smartphone, it was observed that the smartphone was used mainly for leisure purposes (27.3%), followed by communication (24.4%) and work (9.6%).

Educational activities showed a frequency of 2.9%, a fact that may have occurred because schools and universities have been using the distance education modality since the COVID-19 pandemic started (Table 1). According to the total numbers of each category

Table 2 shows that the time of smartphone use helped users to maintain social distancing in comparison to those who did not often use the device (83.4% vs. 43.3%, $p < 0.001$). Moreover, the users who

did not increase their time on smartphone use during the pandemic, reported they did not perceive whether cell phone use helped or worsened social distancing in comparison to those who increased the frequency of smartphone use (42.3% vs. 14, 5%, $p < 0.001$), and also that the device did not help at all (14.4% vs. 2.2%, $p < 0.001$).

Regarding the effects of smartphone use on mental health, it was frequently observed that its use was associated with mental well-being (39.9% vs. 13.3%, $p < 0.001$). However, there was a slightly higher frequency of anxiety in the group that used the device more frequently (21.3% vs. 19%, $p < 0.001$).

Table 1

Description of the motivations for smartphone use by adults during the COVID-19 pandemic. Brazil, 2020.

Motivations	N	%
Leisure	151	27.3
Communication	135	24.4
Work	53	9.6
Work and Communication	31	5.6
Information	24	4.3
Leisure and Communication	23	4.2
Information and Communication	20	3.6
Study	16	2.9
Leisure and Information	6	1.1
Leisure and Study	5	0.9
Study, Work and Communication	4	0.7
Leisure, Information and Communication	4	0.7
Study and Communication	4	0.7
Study and Information	4	0.7
Leisure and Work	3	0.5
Work and Information	3	0.5
Work, Information and Communication	3	0.5
Study, Information and Communication	2	0.4
Leisure, Work and Communication	2	0.4
Study and work	2	0.4
Leisure, Study and Work	1	0.2
Leisure, Work and Information	1	0.2
Not informed	56	10.1
Total	553	100.0

Table 2

Characterization of the relationship between smartphone use vs smartphone use hours, smartphone use in the pandemic, smartphone use for mental health. Brazil, 2020.

Variables	Total		Has used more often the cell phone/smartphone				OR (95%CI)	p-value
			Yes		No			
	N	%	n	%	N	%		
Hours of smartphone use:								
							<0.001¹	
1h to 6h	312	47.4	247	44.7	65	61.9	1	
7h to 12h	202	30.7	183	33.1	19	18.1	2.53 (1.47 - 4.37)	
More than 12h	86	13.1	82	14.8	4	3.8	5.39 (1.91 - 15.27)	
I do not know	58	8.8	41	7.4	17	16.2	0.63 (0.34 - 1.19)	
The use of smartphones in the pandemic has:								
							<0.001²	
Helped in social distancing	506	76.9	461	83.4	45	42.9	12.81 (5.65 - 29.03)	
I did not realize whether it helped or worsened	124	18.8	80	14.5	44	41.9	2.27 (0.98 - 5.28)	
It has not helped at all	27	4.1	12	2.2	15	14.3	1	
I do not use a smartphone	1	0.2	0	0.0	1	1.0	-	
About your mental health in times of the pandemic:								
							<0.001²	
I do not use a smartphone	1	0.2	1	0.2	0	0.0	-	
Smartphone use has increased my anxiety	138	21.0	118	21.3	20	19.0	1.96 (1.14 - 3.37)	
The smartphone has helped me to maintain my mental health	234	35.6	220	39.8	14	13.3	5.21 (2.85 - 9.53)	
The smartphone has neither helped nor hindered me	285	43.3	214	38.7	71	67.6	1	

¹ Chi-square test; ² Fisher's exact test

Finally, the group that least used the smartphone was the one that most often reported no association between its use and mental health (67.6% vs. 38.8%, $p < .001$).

DISCUSSION

The technology represented by smartphones, computers and internet access has been of great value during the pandemic period. An educational, professional and leisure restructuring has been necessary, which would have been unfeasible without this technology. Therefore, it is believed that the use of digital support with internet access and smartphones has been the most important support tool for individuals at this time. Hence, this study intends to assess the main motivations for

smartphone use and the time spent using it as a consequence of the new Coronavirus pandemic.

The results of this study showed that 27.3% of smartphone users have leisure as their main motivation for using it.. Smartphone use has promoted several benefits in the current context; therefore, entertainment strategies offered remotely, in addition to allowing donations to the vulnerable population, have shown to be a valid strategy to preserve the mental health of the overall population¹⁸⁻¹⁹. Social distancing measures, as important as they may be, can enhance the onset of mental and psychological diseases, such as anxiety, depression and stress²⁰⁻²². The result shows that communication is one of the main reasons for using the smartphone and during the pandemic, this functionality of the device was confirmed²³.

Therefore, the authors of this study point out, in view of information already consolidated on the

internet, that, as communication/interaction on the mobile device helps with signs of emotional and/or behavioral change, this same technology can cause negative damage to emotional health, and among others. the factors that may be causing these effects can be attributed to increased screen time.

The second most frequent motivation for using smartphone technology was communication. Regarding mental health, the World Health Organization²⁴ states that studies claim that fear of contagion, quarantine, changes in study and work routines and daily activities can have a negative impact on physical and mental health. Therefore, recommendations regarding physical, social and mental well-being predict that one of the measures used for interaction during the social distancing period is to promote safe communication channels to internet users, aiming at minimizing loneliness and psychological distancing²⁵.

However, it is understood that the expression communication, used by media vehicles, is understood as a vocal interaction tool or by gestures for interaction purposes, whether for leisure, information or the like.

As a result of the demands caused by social distancing measures, the average time of smartphone use increased according to most of the participants in this study (84%), who attributed this increase to leisure, work and communication needs.

Likewise, in times of pandemic, the discussion about screen time has gained new directions, as a result of the pandemic and due to social isolation²⁵. Although there are no publications on the subject yet, North American newspapers have mentioned an increase in the use of technologies, prompted by the need for social interaction, school and work activities²⁵⁻²⁷.

Regarding screen time, one-third of the participants declared that they used the smartphone between 7 and 12 hours a day. This finding confirms the hypothesis that people have increased their time of smartphone use over the years. It should be noted that, in 2016, a global survey carried out in China, the United States, Italy, Spain and Brazil indicated that people spent an average of 3h and 33min/day using this device. Years later, the internet management committee reported that Brazil is the third country regarding smartphone use in hours, spending a total of 9h14 a day online, on average²⁸⁻²⁹. It is noteworthy that the patterns and time of smartphone use among participants may change, due to the pandemic, due to the use of home office,

online classes and leisure. According to a survey of Internet service consumption during the COVID-19 pandemic, 70% of respondents (an increase) stated they use this device to access the internet²⁹. Therefore, it is not known the time spent on the cell phone before the pandemic of Covid-19, and even so, it is worth mentioning that this data is alarming because it is above the average use by Brazilians.

Also, regarding smartphone use, this study shows that, for 83.4% of individuals, the smartphone has helped with social distancing and, for 39.9%, it has helped with their mental health. It is known that changes in mental health can occur in one-third or even half of the population in a pandemic situation³⁰.

The authors of this study highlight that staying at home associated with social distancing, people present bad feelings about mental health. It is known that in women with families, anxiety is increased, especially during the pandemic moment³¹.

Additionally, the short time of data collection is the main limitation of this study, although it had no impact on the number of responses that were previously calculated for the sample. Another limitation was the diversity of respondents, with different age groups and different activity levels, which caused the dispersion of opinions, although it represented a more realistic view of the population.

Regarding the various population groups, women, compared to other people stand out; therefore, the amount of time/hour worked, through issues of non-flexibilization of the places to which they hold their positions³² and, perhaps, by socially condensing work to family issues women can present longer screen time than me, for instance.

However, we made it clear that we do not know if the population was fully complying with the decrees of social distancing as governments recommended, not least because this question could lead to a risk of high information bias because the question would be something that people would not be complying with social and legal rules, so they would answer what ethically was more recommended.

Therefore, the study showed that leisure was the main motivation for smartphone use; moreover, this device helped with social distancing and was associated with mental well-being. Thus, the time spent using smartphones increased with the pandemic, showing a favorable effect during social isolation, allowing remote interaction between family members, as well as providing information to the users.

It is emphasized that the work activity and the motivation of the use were not an analysis intended in this study, so it is declared here that studies subsequent to it address the theme in evidence.

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