Analysis of the sociodemographic profile of patients assisted by telemonitoring during the COVID-19 pandemic

RESUMO | Objetivo: caracterizar o perfil sociodemográfico de pacientes atendidos pelo telemonitoramento durante a pandemia por COVID-19. Método: Trata-se de um estudo transversal retrospectivo, março a dezembro de 2020, a partir da análise de banco de dados secundários de registros de pacientes atendidos por telemonitoramento durante a pandemia por COVID-19. Foi realizada estatística descritiva, teste t-student e qui-quadrado, para as associações entre as variáveis do perfil sociodemográfico. Resultados: Amostra de 1.368 usuários atendidos pelo telemonitoramento, 59,48% sexo feminino, média de idade 40,3 anos, tendo maior frequência de teleatendimentos no mês de novembro 237 (17,32%). Do total, 1.108 (91,12%) testaram negativo e 108 (8,88%) positivo; pacientes positivos apresentaram associação significativa (p<0,05) com sexo, doença crônica e contato com outro assintomático. Conclusão: O telemonitoramento planejado durante a pandemia apresentou-se como estratégia fundamental, na ausência do atendimento presencial, devido às recomendações de distanciamento e isolamento social.
Descritores: Telemonitoramento; COVID-19; Atenção Primária à Saúde; Dados Demográficos

ABSTRACT | Objective: to characterize the sociodemographic profile of patients treated by telemonitoring during the COVID-19 pandemic. Method: This is a retrospective cross-sectional study, from March to December 2020, based on the analysis of secondary databases of patient records assisted by telemonitoring during the COVID-19 pandemic. Descriptive statistics, t-student and chi-square tests were performed for the associations between the variables of the sociodemographic profile. Results: Sample of 1,368 users assisted by telemonitoring, 59.48% female, mean age 40.3 years, with a higher frequency of teleservices in November 237 (17.32%). Of the total, 1,108 (91.12%) tested negative and 108 (8.88%) tested positive; positive patients showed a significant association (p<0.05) with sex, chronic disease and contact with another asymptomatic patient. Conclusion: The telemonitoring planned during the pandemic was presented as a fundamental strategy, in the absence of face-to-face care, due to the recommendations of distancing and social isolation.
Keywords: Telemonitoring; COVID-19; Primary Health Care; Demographic Data

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Palabras claves: Telemonitoring; COVID-19; Primary Health Care; Demographic data

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INTRODUCTION

The year 2019 ended with an outbreak of a mysterious pneumonia caused by a strain of the coronavirus, reported in December 2019 in the city of Wuhan, China.[1] As of February 2020, in line with the World Health Organization (WHO) best practices for naming new human infectious diseases, the disease caused by the new coronavirus was named COVID-19, in reference to the type of virus (SARS-CoV-2) and the year the epidemic began. [2]

This disease has a high level of contamination, with high mortality, especially in elderly, immunocompromised, diabetic, heart disease and hypertensive individuals. Many infected are asymptomatic, and may be carriers or have mild to moderate symptoms, similar to the flu. The clinical picture of COVID-19 in its most severe form is characterized by an inflammatory cytokine condition with hematological and coagulation changes that can lead to tissue damage and death. [3]

SARS-CoV-2 is transmitted by inhalation or direct contact with virus-infected droplets, and the incubation period ranges from 1 to 14 days. The most frequent symptoms are: fever, cough, dyspnea, myalgia and fatigue. It is estimated that approximately 80% of individuals develop mild illness, 14% severe illness, and 5% critical illness. [4]

Due to its high transmissibility, in January 2020 the WHO Director determined the outbreak of the COVID-19 disease as a Public Health Emergency, and oriented quarantine to people who were exposed to the infectious agent, with the aim of monitoring symptoms and early detection of cases. [3,5]

Universal surveillance aimed at detecting new cases and contacts highlighted the important role of Primary Health Care (PHC) as the stage for the first access of the population in the search for care and health education about COVID-19. (6) PHC's performance in the face of the pandemic is systematized in four axes: (i) health surveillance in the territories; (ii) attention to users with COVID-19; (iii) social support to vulnerable groups; (iv) continuity of PHC's own actions. [7-10]

In order to avoid a collapse in the health system, we sought to reorganize the care practice in PHC where programs were developed to meet this emergency demand. One of these programs was the implementation of telemonitoring that took place in compliance with the Clinical Management Protocol for Coronavirus (COVID-19) in Primary Health Care of the Ministry of Health [3,7-10] and, in a short time, teleservices became an important tool favoring social distancing, especially for symptomatic individuals or those belonging to risk groups. [11]

> “This disease has a high level of contamination, with high mortality, especially in elderly, immunocompromised, diabetic, heart disease and hypertensive individuals.”

Thus, the objective of this study was to analyze and characterize the sociodemographic profile of patients treated by telemonitoring during the COVID-19 pandemic.

METHOD

This is a retrospective cross-sectional study (Opinion Embodied in 4,731,629), from March to December 2020, based on the analysis of secondary databases of records of patients treated by telemonitoring during the COVID-19 pandemic.

The study site was the School Health Center (CSE - Centro de Saúde Escola), currently called the Auxiliary Unit of the Universidade Estadual Paulista, according to Resolution No. 50, of 07/02/2019. This important unit serves approximately 25% (about 35,000 inhabitants) of primary care in the municipality of Botucatu, as defined by the Municipal Health Council, through PHC actions and activities in line with the agreement for this level of care between the municipality of Botucatu , the São Paulo State Health Department and the Ministry of Health.

Faced with the face of COVID-19, the CSE fulfilled its propositions and organized itself as resolute primary care and in compliance with the Clinical Management Protocol of the Coronavirus, the implementation of telemonitoring in the unit took place.

Patients who underwent the RT-PCR test from the third to the eighth day of the onset of symptoms were included in the study and, in positive cases, remained in social isolation for 14 days, or until they obtained a negative result, were telemonitored every 48 hours. The telemonitoring was recorded by volunteer students of the undergraduate courses in Medicine (fourth to sixth year) and Nursing (fourth year) of the Faculty of Medicine of Botucatu (UNESP) - under the coordination and guidance of a nurse. The information was collected and entered into spreadsheets in Excel format, and a secondary database was generated by the spreadsheets filled in according to the study variables.

The sociodemographic and clinical variables of the monitored users were:

date/month, sex, chronic disease, systemic arterial hypertension, diabetes mellitus, dyslipidemia, being a health professional, contact with a symptomatic individual, return to the unit for maintenance of symptoms, Sars-Cov 2 test result.

For data analysis, an Excel spreadsheet was prepared with quantitative and categorical variables, and descriptive statistical analysis was performed by a professor and statistician, using the SAS for Windows program, v.9.4.

The mean and standard deviation were analyzed and prepared for the quantitative variables, and the relative and absolute frequencies were calculated for the categorical variables.

Mean comparisons considering the diagnosis of COVID-19 were made using the Student's t test, and associations with the categorized variables were made using the chi-square test.

5% significance level or the corresponding p-value.

RESULTS

Data obtained from March to December 2020 consisted of a total of 1,368 cases. The mean age of the patients was 40.3 years (sd±17.2 years), a mean of 5.3 ± 1.9 days of quarantine for individuals with negative results, and 6.1 ± 3.1 days for positive results (p=0.0065). As for age, participants with a negative result in the RT-PCR test had a mean of 41.1 years (± 17.3), and for positive results, an average of 41.0 years (± 15.8) was obtained, not showing a statistically significant difference.

According to the results presented in table 1, there is a higher frequency of females (59.48%), without chronic disease (58.18%), without asthma (95.18%), without hypertension (84.87%), without diabetes (98.03%), and most were not health professionals (79.05%), and 65.58% of individuals had no contact with another symptomatic.

Considering only the positive and negative results, analyzes and associations were made with the variables described below (Table 2).

Table 2 shows a significant trend

Table 1. Descriptive analysis of demographic and clinical variables of patients treated at the CSE (n=1368). Botucatu-SP. Brazil, 2020.

Variables	Categories	n	%
Month	March	34	2,49
	April	62	4,53
	May	80	5,85
	June	116	8,48
	July	147	10,75
	August	167	12,21
	September	138	10,09
	October	173	12,65
	November	237	17,32
	December	214	15,64
Gender	F	811	59,48
	M	557	40,52
Chronic Disease	Yes	572	41,82
	No	796	58,18
Asthma	Yes	66	4,82
	No	1302	95,18
SAH*	Yes	207	15,13
	No	1161	84,87
DM**	Yes	68	4,97
	No	1300	95,03
Dyslipidemia	Yes	27	1,97
	No	1341	98,03
Health professional	Yes	287	20,95
	No	1081	79,05
Contact with symptomatic	Yes	471	34,42
	No	897	65,58
Test Result	Positive	108	7,89
	Negative	1108	81,00
	Inconclusive	6	0,43
	Not requested	4	0,29
	Did not perform	136	9,94
	Refused	6	0,43
Returned to unit	Yes	101	7,40
	No	1267	92,60

*SAH - Systemic arterial hypertension; **DM- Diabetes mellitus
Source: prepared by the authors, 2021.

towards an increase in cases when related to the month of collection. There was also a significant association between positive cases and male sex, chronic disease and contact with another symptomatic. In the other variables, no associations were obtained between those who tested positive or negative.

Among the positive patients, most did not belong to the category of health professionals. One factor identified is the non-return of users to the unit (97.65%) to verify the maintenance of symptoms and reassessment, which made it difficult to understand how the disease progressed and what the clinical outcomes were.

DISCUSSION

The sociodemographic assessment is essential in the process of designing, elaborating and implementing public policies of the Unified Health System (SUS). The incorporation of the analysis of the various sociodemographic profiles is of paramount importance in this context, as it is an instrument for characterizing the selected population, where the degree of detail in relation to the variables analyzed makes it possible to add knowledge about the population served. [12]

In the current context of the pandemic, the service provided by PHC along with teleservice and population characterization has a strategic role in combating COVID-19, fundamentally reducing the community transmission of the disease, making it possible to identify problems and demands of the assigned territory and, from this, it favors the proposition and implementation of effective interventions, in addition to facilitating the monitoring and performance of epidemiological surveillance. [13-14]

The telemonitoring planned and carried out by professionals and students constituted a fundamental stra-

Table 2. Associations between positive and negative tests with demographic and clinical variables. Botucatu – SP. Brazil, 2021.

Variables	Categories	Negative	%	Positive	%	p* (positive)
Mês	March	0	0,00	1	0,92	
	April	15	1,35	1	0,92	
	May	56	5,05	8	7,40	
	June	93	8,39	9	8,33	
	July	123	11,10	7	6,48	
	August	135	12,18	18	16,66	
	September	118	10,65	14	12,96	
	October	168	15,17	4	3,70	
	November	214	19,32	21	19,44	
	December	186	16,78	25	23,14	
	Total	**1108**	**100,00**	**108**	**100,00**	
Gender	F	653	59,85	34	34,69	
	M	438	40,14	64	65,31	0,004
	Total	**1091**	**100,00**	**98**	**100,00**	
Chronic Disease	No	604	59,68	30	29,70	
	Yes	408	40,32	71	70,30	0,037
	Total	**1012**	**100,00**	**101**	**100,00**	
Asthma	No	1058	95,58	104	96,29	0,696
	Yes	50	4,52	4	3,71	
	Total	**1108**	**100,00**	**108**	**100,00**	
SAH**	No	949	85,64	95	87,96	0,510
	Yes	159	14,36	13	12,04	
	Total	**1108**	**100,00**	**108**	**100,00**	
DM***	No	1055	95,21	102	94,44	0,712
	Yes	53	4,79	6	5,56	
	Total	**1108**	**100,00**	**108**	**100,00**	
Dyslipidemia	No	1090	98,37	104	96,29	0,121
	Yes	18	1,62	4	3,71	
	Total	**1108**	**100,00**	**108**	**100,00**	
Health Professional	No	744	85,51	86	87,75	0,548
	Yes	126	14,49	12	12,24	
	Total	**870**	**100,00**	**98**	**100,00**	
Contact with symptomatic	No	671	67,51	58	56,31	0,022
	Yes	323	32,49	45	43,68	
	Total	**994**	**100,00**	**103**	**100,00**	
Returned to unit	No	980	97,70	97	97,00	0,656
	Yes	23	2,30	3	3,00	
	Total	**1003**	**100,00**	**100**	**100,00**	

*p- chi-square test; **SAH- Systemic arterial hypertension; ***DM- Diabetes mellitus
Source: prepared by the authors, 2021.

tegy for PHC and the guidelines undertaken, according to the area of activity and competence, became essential for the population, which at that time could not be attended in person due to the recommendations of social distancing and isolation at the beginning of the pandemic in March 2020.

Teleservice is a tool that has benefits, such as easy access to information, quick resolution, comprehensive care, monitoring of patients with chronic diseases, ensuring social isolation, and also greater comfort for individuals who are physically restricted from attending the unit. This type of service during the pandemic proved to be effective, with specific advice and guidance according to user demand. [12-14]

It was not possible to compare the present data with data from the literature, due to the scarcity of publications on PHC. A study carried out in Brazil identified that patients positive for COVID-19 were aged between 51 and 70 years. When associations were made between variables in the profile of hospitalized patients with COVID-19, it was identified that there was a higher prevalence of comorbidities such as DM and chronic kidney disease, when compared to the general Brazilian population. [15]

The month of November 2020 was the one that accumulated the highest number of teleservices by the CSE, which had been increasing since March. This significant increase in epidemiological surveillance occurred after the relaxation of quarantine determinations authorized by the state and municipal government. This flexibility action for places with agglomeration of people such as: sectors of culture, religious temples, sectors of commerce and industry in general, academies, gave the population the false feeling that the pandemic was under control.

The study by Niquini et al. [15] described the Brazilian scenario as heterogeneous due to the continental proportions of the territory, where the southeast region showed 2/3 of hospitalizations for COVID-19 in Brazil in 2020.

> “Among the positive patients, most did not belong to the category of health professionals. One factor identified is the non-return of users to the unit (97.65%) to verify the maintenance of symptoms and reassessment, which made it difficult to understand how the disease progressed and what the clinical outcomes were.”

The COVID-19 pandemic devastatingly affected and weakened the SUS and, given the context, telemonitoring cooperated in a unique way, guaranteeing the maintenance of patient care guidelines,

facilitating appointments for exam collection procedures, not allowing the withdrawal of follow-up during the period of isolation of patients, in addition to preventing the user from feeling helpless by the service. [16]

Thus, it is necessary to develop more studies focused on the work provided by PHC and its fundamental role in the provision of health services, especially in times of a pandemic.

CONCLUSION

From a sample of 1,368 users assisted by telemonitoring, 59.48% were female, with a mean age of 40.3 years; 1108 (91.12%) tested negative for COVID-19 and 108 (8.88%) tested positive. A significant association was identified for the variables: sex, chronic disease and contact with another symptomatic patient.

Thus, the present study made it possible to identify the profile of patients treated with suspicion or positive for COVID-19, who underwent tests in primary health care. Planned telemonitoring was presented as a fundamental strategy for monitoring these patients in the absence of face-to-face care, due to the recommendations of distancing and social isolation.

The profile found in the region must be taken into account for decision-making, in order to create strategies that provide the integral monitoring of this population, as well as the execution of more research related to the theme.

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