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Sociodemographic and clinical characterization of elderly people with sequelae of COVID-19

Caracterização sociodemográfica e clínica de pessoas idosas com sequelas da COVID-19

Caracterización sociodemográfica y clínica de personas mayores con secuelas de COVID-19

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ABSTRACT

Objective: to describe the sociodemographic and clinical characteristics of elderly people with sequelae of COVID-19. **Method:** quantitative, observational, descriptive documentary study, the sample consisted of 204 medical records of elderly people with records of COVID-19 sequelae. Pearson and Fisher Chi-square tests were performed. **Results:** women prevailed, between 60 and 69 years old (66.7%), married (50.5%), with children (92.9%), retired (47.6%), with income of two to four salaries- minimum (50.7%). Comorbidities were arterial hypertension (65.2%), obesity (40%), diabetes mellitus (23.5%), heart disease (13.7%) and respiratory diseases (7.8%) and as health behaviors. risk of sedentary lifestyle (59.4%) and overweight (52.2%). Hospitalization was more prevalent among patients with diabetes mellitus (56.3%), obesity (68.8%) and cancer (83.3%). **Conclusion:** aging, the presence of comorbidities and hospitalization are conditions associated with mortality from COVID-19. The importance of individualized and multidimensional assistance is highlighted.

Descriptors: Pandemics; COVID-19; Post-Acute COVID-19 Syndrome; Health Profile; Aged.

RESUMO

Objetivo: descrever as características sociodemográficas e clínicas de pessoas idosas com sequelas da COVID-19. **Método**: estudo documental quantitativo, observacional, descritivo, compôs-se a amostra 204 prontuários de pessoas idosas com registros de sequelas da COVID-19. Realizados testes de Qui-quadrado de Pearson e Fisher. **Resultados:** prevaleceram mulheres, entre 60 a 69 anos (66,7%), casadas (50,5%), com filhos (92,9%), aposentadas (47,6%), com renda de dois a quatro salários-mínimos (50,7%). Verificou-se como comorbidades a hipertensão arterial (65,2%), obesidade (40%), diabetes mellitus (23,5%), doenças cardíacas (13,7%) e respiratórias (7,8%) e como comportamentos de risco o sedentarismo (59,4%) e sobrepeso (52,2%). A hospitalização foi mais prevalente entre portadores de diabetes mellitus (56,3%), obesidade (68,8%) e câncer (83,3%). **Conclusão:** o envelhecimento, a presença de comorbidades e hospitalização são condições associadas a mortalidade por COVID-19. Ressalta-se a importância de uma assistência individualizada e multidimensional.

Descritores: Pandemias; COVID-19; Afecções Pós-COVID; Perfil de Saúde; Pessoa Idosa.

RESUMEN

Objetivo: describir las características sociodemográficas y clínicas de personas mayores con secuelas de COVID-19. **Método:** estudio documental cuantitativo, observacional, descriptivo, la muestra estuvo compuesta por 204 historias clínicas de personas mayores con antecedentes de secuelas de COVID-19. Se realizaron pruebas de Chi-cuadrado de Pearson y Fisher. **Resultados:** predominaron las mujeres, entre 60 y 69 años (66,7%), casadas (50,5%), con hijos (92,9%), jubiladas (47,6%), con ingresos de dos a cuatro salarios mínimos (50,7%). Las comorbilidades fueron hipertensión arterial (65,2%), obesidad (40%), diabetes mellitus (23,5%), enfermedades cardíacas (13,7%) y enfermedades respiratorias (7,8%) y, en cuanto a conductas de riesgo, el sedentarismo (59,4%) y el sobrepeso (52,2%). La hospitalización fue más prevalente entre los pacientes con diabetes mellitus (56,3%), obesos (68,8%) y con cáncer (83,3%). **Conclusión:** el envejecimiento, la presencia de comorbilidades y la hospitalización son condiciones asociadas a la mortalidad por COVID-19. Destacan la importancia de la asistencia individualizada y multidimensional.

Descriptores: Pandemias; COVID-19; Síndrome Post Agudo de COVID-19; Perfil de Salud; Anciano.

INTRODUCTION

Post-COVID-19 syndrome (disease caused by the coronavirus type 2, or SARS-CoV-2) is a frequent condition that directly impacts the individual's quality of life. It is characterized by the presence of persistent symptoms four weeks after SARS-CoV-2 infection, regardless of the severity of the disease[1-4]. It can be subdivided into two categories: subacute, in which symptoms and dysfunctions are present between the 4th and 12th week, and chronic, where symptoms persist beyond 12 weeks and are not attributable to other diagnoses[5].

The World Health Organization (WHO) estimated that 10 to 20% of individuals infected with SARS-CoV-2 developed post-COVID-19 syndrome. More than half of the patients who developed moderate to severe forms of the disease reported at least one functional sequel. The epidemiology and prognosis are still unknown, however, there are associated conditions such as symptom severity, comorbidities, advanced age, and treatment response[6,7].

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Concerns arise for older adults in this scenario when affected by COVID-19, with them becoming more susceptible to complications from this infection[8,9]. This fact is attributed to immunosenescence, i.e., the decline in the immune system caused by the aging process and the presence of comorbidities, making them a more vulnerable group to infectious diseases, clinical deterioration, and the development of persistent symptoms[10].

Research indicates that individuals over 60 years of age with prevalent diseases or comorbidities have an increased risk of developing more severe complications of the disease. Furthermore, lifestyle habits such as smoking, alcohol consumption, and sedentary behavior also negatively impact the clinical outcome of COVID-19[11,12].

Accordingly, a high incidence of individuals with persistent symptoms and sequelae has been observed after acute infection, referred to in the literature as post-COVID-19 syndrome or long COVID, which occurs three weeks after infection. It is characterized by a diffuse and multisystemic inflammatory condition that may be present, even in asymptomatic individuals, and can extend indefinitely[13].

These sequelae are caused by the inflammatory and multisystemic action of the virus and the consequences of prolonged hospitalizations and/or ventilatory support. Individuals who experience severe illness have a higher risk of developing post-COVID-19 syndrome, with older adults being more vulnerable. A study conducted in Israel found that 79.8% of those who developed sequelae after acute COVID-19 infection were over 60 years of age[12,13].

The prolonged symptoms that characterize post-COVID-19 syndrome can cause, in addition to clinical complications, social, economic, and behavioral implications, constituting a public health concern given the substantial impact on healthcare services, care providers, and public policy managers[12].

Post-COVID-19 syndrome is not currently targeted in the recovery process for individuals with sequelae, making the need for specific protocols and training of new care providers essential for society's recovery after the advent of the pandemic, requiring investments in research, innovation, and scientific production[14].

The older adult population requires special attention, representing a vulnerable age group for complications during acute infection and the development of post-COVID-19 sequelae. Identifying conditions that impair the health of this population is of great relevance, as they can guide clinical decisions and care strategies, assisting in the planning and development of health policies.

Therefore, the study aimed to describe the sociodemographic and clinical characteristics of older adults with COVID-19 sequelae.

METHOD

This quantitative, observational, and descriptive documentary study was conducted at the Municipal Post-COVID-19 Referral Center in São Luís, Maranhão, Brazil. The research participants were older adults, aged 60 years or over, who experienced sequelae after SARS-CoV-2 infection and attended consultations at the outpatient clinic mentioned.

The Center aims to support the ongoing treatment of individuals who developed complications after the SARS-CoV-2 infection period[15]. Clinical monitoring is carried out by a multidisciplinary team. The patient initially undergoes evaluation by a general practitioner who conducts screening and investigates persistent symptoms to identify sequelae and needs, referring them to the specialists of the multidisciplinary team when necessary[16].

Data collection from the physical records of older adults took place from March to May of the year 2022. All records registered since the inauguration of the health unit in April 2021 until March 2022 were considered, totaling 539 older adult individuals.

The eligibility criterion selected was those with a record of at least two professional visits, including a nurse, comprising a total of 204 patients.

A form developed by the researchers, comprising sociodemographic variables (age, gender, skin color/race, marital status, economic condition, family income, number of cohabiting and residing individuals), lifestyle habits (smoking, alcohol consumption, physical activity), and health conditions (presence of comorbidities), was used, in line with the study's objectives.

The collected data were organized in spreadsheets using Microsoft Excel® and exported to the IBM SPSS version 23 program. The analysis included measures of central tendency (frequency, mean, and percentage) and

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measures of dispersion (standard deviation). Inferential analysis was performed using Pearson's Chi-square test and Fisher's Exact test.

All ethical considerations were addressed, adhering to norms and regulatory guidelines. The research protocol was submitted to the *Plataforma Brasil* and approved by the Ethics Committee of the involved institution.

RESULTS

The age group predominantly ranged from 60 to 69 years (*n* = 136; 66.7%), with a majority of females (*n* = 119; 58.3%), individuals of mixed race (*n* = 105; 54.1%), married (*n* = 100; 49.0%), with children (*n* = 131; 64.2%), residing with their spouses (*n* = 106; 52%), retired (*n* = 91; 44.6%), and with a family income between two and four minimum wages (*n* = 69; 33.8%).

The prevalent comorbidities are presented in Table 1.

Table 1: Comorbidities observed in the older adults receiving care at the Municipal Post-COVID-19 Referral Center. São Luís, MA, Brazil, 2022.

Variables	n	f(%)
Systemic Arterial Hypertension (*n* = 204)		
Yes	133	65.2
No	71	34.8
Diabetes Mellitus (*n* = 204)		
Yes	48	23.5
No	156	76.5
Cardiac Disease (*n* = 204)		
Yes	28	13.7
No	176	86.3
Respiratory Disease (*n* = 204)		
Yes	16	7.8
No	188	92.2
Obesity (*n* = 40)		
Yes	16	40.0
No	24	60.0
Renal Disease (*n* = 204)		
Yes	7	3.4
No	197	96.6
Oncological Disease (*n* = 204)		
Yes	7	3.4
No	197	96.6
Stroke (*n* = 204)		
Yes	3	1.5
No	201	98.5
Hepatic Disease (*n* = 204)		
Yes	2	1.0
No	202	99.0
Dementia (*n* = 204)		
Yes	2	1.0
No	202	99.0
Others (*n* = 204)		
Yes	32	15.7
No	172	84.3

Systemic arterial hypertension was identified in 65.2% of cases, obesity in 40.0%, diabetes mellitus in 23.5%, cardiac diseases in 13.7%, and respiratory diseases in 7.8%.

Table 2 presents data related to the risk behaviors of older adults.

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Table 2: Risk behaviors in older adults receiving care at the Municipal Post-COVID-19 Referral Center. São Luís, MA, Brazil, 2022.

Variables	n	f(%)
Smoking (*n* = 204)		
No	200	98.0
Yes	4	2.0
Alcohol Consumption (*n* = 204)		
No	178	87.3
Yes	26	12.7
Overweight (*n* = 46)		
No	24	52.2
Yes	22	47.8
Physical Activity (*n* = 64)		
No	38	59.4
Yes	26	40.6

It was observed that the vast majority of older adults were non-smokers (98.0%) and non-drinkers (87.3%). However, more than half were sedentary (59.4%) and overweight (52.2%). A significant number of records lacked information on these variables.

Table 3 presents the results of the association analysis between comorbidities and hospitalization.

Table 3: Association between comorbidities and hospitalization due to COVID-19 in older adults receiving care at the Municipal Post-COVID-19 Referral Center. São Luís, MA, Brazil, 2022.

	Hospitalization		
	Yes	**No**	
Variables	***n* (%)**	***n*(%)**	***p*-value ***
SAH			
Yes	48 (36.4%)	84 (63.6%)	0.367
No	30 (42.9%)	40 (57.1%)	
DM			
Yes	27 (56.3%)	21 (43.8%)	0.004
No	51 (33.1%)	103 (66.9%)	
Cardiac Disease			
Yes	11 (39.3%)	17 (60.7%)	0.006
No	67 (38.5%)	107 (61.5%)	
Cancer			
Yes	5 (83.3%)	1 (16.7%)	0.521
No	73 (37.2%)	123 (62.8%)	
Chronic Kidney Disease			
Yes	1 (14.3%)	6 (85.7%)	0.181
No	77 (39.5%)	118 (60.5%)	
Overweight			
Yes	6 (27.3%)	16 (72.7%)	0.141
No	9 (37.5%)	15 (62.5%)	
Obesity			
Yes	11 (68.8%)	5 (31.3%)	0.668
No	9 (37.5%)	15 (62.5%)	

Note: *Pearson's Chi-square test and Fisher's Exact test

The comorbidities that most led older adults to progress to hospitalization were diabetes mellitus (56.3%), obesity (68.8%), and cancer (83.3%).

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DISCUSSION

Post-COVID-19 syndrome has emerged as a significant public health concern due to long-term multi-organ sequelae, irrespective of the severity of the initial infection and certain particularities in the evolution of these complications[13,14].

In this study, it was observed that the demographic group most affected by post-COVID-19 syndrome consisted of older women, confirming the feminization of aging. Despite men often exhibiting riskier health behaviors such as alcohol and tobacco consumption, they seek medical assistance less frequently, possibly explaining the higher presence of women in healthcare units and the subsequent diagnosis of post-COVID complications[1516].

A cross-sectional study conducted with Brazilian older adults during the pandemic revealed that the majority were married (61.3%), lived with another person (81.9%), were retired (38.7%), and had a family income greater than one minimum wage (68.1%). Despite a significant percentage reporting an income lower than one minimum wage (31.9%)[17].

This scenario exposes evidence of a high and unequal impact of the COVID-19 pandemic on the health and economic conditions of the older adult population. However, being married and living with another person was a positive aspect due to having a support network, and consequently minimizing loneliness.

Despite most older adults in this study having favorable economic conditions during the pandemic, those with incomes less than one minimum wage constitute a significant portion, surpassing one-third of the study sample.

Accordingly, sociodemographic characteristics related to COVID-19 may positively or negatively impact the configuration of the disease dynamics in the country, proving crucial for developing pandemic coping measures and minimizing harm in this specific population[18].

The diagnosis of systemic arterial hypertension, obesity, diabetes mellitus, and other chronic conditions serves as a severity predictor for COVID-19 and is common in the older adult population[11,17,19], as observed in this study with a high percentage of hypertensive and obese patients. A study conducted in China demonstrated that the majority of individuals over 60 with comorbidities had the more severe form of COVID-19, and those with multimorbidities faced significantly higher risks of a negative outcome (admission to the Intensive Care Unit, invasive ventilation, or death) compared to those with a single comorbidity[20].

Systemic arterial hypertension and diabetes mellitus share a common association with an increased angiotensin-converting enzyme receptor[21], leading to decreased phagocytic cell capacity, impaired T-cell function, and elevated interleukin-6, facilitating viral entry into cells, resulting in increased inflammation and a poor prognosis[22].

The association between diabetes mellitus and COVID-19 complications may be linked to advanced glycation end-product formation, the release of pro-inflammatory cytokines, and oxidative stress. An exaggerated inflammatory response, alterations in the coagulation cascade, and direct virus aggression to the pancreatic islet cells, responsible for glucose regulation, contribute to the poor prognosis[23]. Hospitalized diabetic patients with severe COVID-19 require frequent glucose monitoring, as proper glycemic control can be crucial for reducing viral replication and the duration of disease signs and symptoms[24].

The pathological mechanisms associated with comorbidities are closely related to the chronic inflammation present in COVID-19. Obesity also contributes to mortality, as excessive body fat accumulation is associated with reduced blood oxygen saturation and, consequently, compromised ventilation in the base of the lungs due to limited expansion, hindering airflow[25,26].

Individuals who are obese or overweight exhibit a higher percentage of body fat and inflamed cells, factors associated with insufficient physical activity, representing risk factors for the exacerbation of COVID-19[27].

The social isolation recommended by health authorities for pandemic control hindered physical exercise, reported by 59.4% of the study participants, favoring weight gain and cardiovascular risk, increased blood pressure, and psychosocial disorders such as anxiety and depression. Sedentary behavior is linked to increased body weight in older adults and an increased risk of cardiovascular mortality[28].

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Healthy lifestyle habits such as regular physical activity and a balanced diet are beneficial measures to enhance immunity, especially in older individuals with chronic diseases, predisposing them to the development of post-COVID-19 symptoms[29].

A longitudinal study with 646 individuals found that the duration and severity of COVID-19 symptoms were more frequent in older individuals. The older adult population was more likely to experience prolonged post-COVID-19 symptoms, and there was an association between the duration of post-COVID-19 symptoms and the presence of comorbidities[26].

Risk behaviors constitute a danger factor for the development of severe forms of COVID-19, its complications, and sequelae.

Understanding health conditions and lifestyle allows for the adoption of more appropriate strategies to address this clinical condition - post-COVID-19 syndrome, which is still insufficiently addressed. Identifying these individuals can aid in risk stratification, enabling a targeted and specific approach to prevent fatal events.

Study limitations

Study limitations include the incomplete recording of some sociodemographic variables. Adequate medical record-keeping can affect the quality of care, therapeutic planning, and decision-making, as well as the performance of research. Additionally, caution should be exercised in generalizing the results due to the regional characteristics of the data.

CONCLUSION

The older adults most affected by post-COVID-19 syndrome were women (58.3%), aged 60 to 69 years (66.7%), married (49%), with children (64.2%), retired (44.6%), and with an income between 2 to 4 minimum wages (33.8%). Systemic arterial hypertension (65.2%), obesity (40.0%), diabetes mellitus (23.5%), cardiac diseases (13.7%), and respiratory diseases (7.8%) were the most prevalent comorbidities.

Risk behaviors observed included a sedentary lifestyle and being overweight in 59.4% and 52.2% of the population, respectively. Almost the entire sample were non-smokers (98.0%) and non-drinkers (87.3%).

The association between comorbidities and hospitalization demonstrated that diabetes mellitus (56.3%), obesity (68.8%), and cancer (83.3%) were the clinical conditions that most led older adults to progress to hospitalization.

The importance of continuous monitoring of the older adult population based on individualized, comprehensive, and coordinated care across all levels of assistance is emphasized. The complexity of the aging process and the high incidence of comorbidities and chronic diseases are conditions associated with severe forms of COVID-19 and increased mortality. There is a need to maintain healthy lifestyle habits, geriatric and gerontology services, and care strategies, as well as to implement public policies that ensure multidimensional care tailored to the specific needs of this segment of the population.

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Authors' contributions

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