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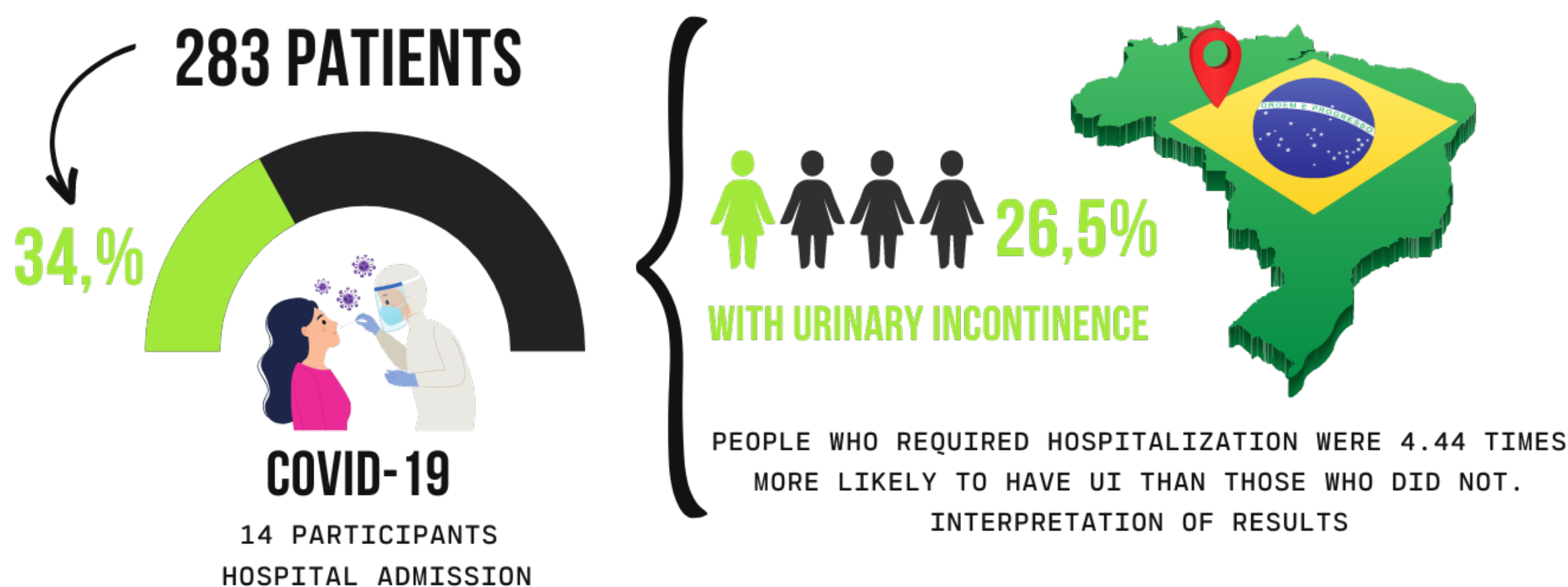
AIMS OF STUDY

The study aims to analyze the relationship between COVID-19 and the condition of urinary continence in an urban population in the interior of the State of Amazonas, Brazil.

Methods and Materials

The descriptive, cross-sectional, population-based observational study was carried out in the urban area of the municipality of Coari, in the state of Amazonas in Brazil. Data collection was carried out in the citizens' homes by community health agents volunteers and trained to do so. The International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) Brazilian Portuguese version was used to identify the presence of symptoms of urinary incontinence and a health questionnaire through self-information by answering yes or no to the conditions: having received a diagnosis of COVID-19 at some point in life and whether hospitalization was necessary for the treatment of the disease. Data were analyzed using descriptive statistics with absolute and relative frequencies. The presence of any UI was defined according to the ICIQ-SF criteria, and the sample was categorized as having UI or without UI symptoms. The association of variables (diagnosis of COVID-19 and hospitalization) between groups (with and without UI) was verified using Pearson's chi-square test, considering a significance level of 5% ($p < 0.05$) and an interval of 95% confidence.

Results



The need for hospitalization to treat COVID-19 was associated with UI symptoms [$\chi^2 = 7.939$, $df=1$, ($p=0.005$)], Phi coefficient = 0.201. People who required hospitalization were 4.44 times more likely to have UI than those who did not.

Discussion

People with COVID-19 who required hospitalization were the ones with the most UI symptoms. Studies demonstrate that the virus causes myopathic alterations in a state of critical illness, generating muscle atrophy and focal necrosis in muscle tissue, mediated by cytokines. In addition, there is increasing evidence that patients with COVID-19 often have general weakness and myalgias that can persist even for weeks after the acute phase. One of the causes of stress UI is the loss of muscle fibers and hypotonia of the pelvic floor muscles. For this reason, in this study, hospitalization increased the chances of having a UI. Accelerated breakdown of muscle protein and suppression of muscle protein synthesis due to systemic inflammation alters muscle mass and structure with a reduction in the strength of fast-twitch fibers compared to slow-twitch fibers. Also, factors such as severe illness, sepsis, mechanical ventilation, parenteral nutrition, and specific drug therapies involved in treating COVID-19 further accelerate this weakening process. Reinforcing the relationship between lower urinary tract symptoms and people affected by COVID-19(1). Another essential factor for this relationship is the hypothesis that the virus binds to the angiotensin-converting enzyme 2 (ACE2) receptor, leading to tissue changes (1). The urothelium of the bladder and the kidney harbor cells that express the receptor for the ACE2-converting enzyme, the receptor for the viral spike protein, suggesting that the urinary tract may become the target of involvement with risk for symptoms secondary to viral cystitis due to underlying COVID-19 disease (3). In our study, the severity of the inflammatory manifestations suffered by the patient with COVID-19, together with the need for hospitalization, influences the occurrence of symptoms of urinary incontinence, more frequently for stress incontinence

Conclusions

UI is associated with severe manifestations of COVID-19, indicated by the need for hospitalization. Although the information on the association of UI with COVID-19 is still insufficient because of the limited number of studies and the methodological heterogeneity found, current knowledge seems sufficient to alert the need to focus attention on rehabilitation of the pelvic floor muscles in people affected by the severe form of COVID-19, who were mainly left with sequelae of muscle weakness. This study requires more studies aimed at this theme and population. This is mainly due to the limitation regarding the cross-sectional design, which, in essence, has the weakness of being unable to establish causality. However, it allows an extension of hypotheses to detail future longitudinal studies, demonstrating the relationship between the discovered factors and the established results. Even so, studies with more robust methodologies can determine the impact of COVID-19 on urinary incontinence and other urinary tract symptoms.

References

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