

Clinical manifestations and repercussions of prolonged symptoms and post-COVID-19 sequel in men: netnography

Manifestações clínicas e repercussões dos sintomas prolongados e sequelas pós-COVID-19 em homens: netnografia


Manifestaciones clínicas y repercusiones de los síntomas prolongados y secuelas pos-COVID-19 en hombres: netnografía

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Abstract

Objective: To identify the clinical manifestations and repercussions of prolonged symptoms and post-COVID-19 sequel, expressed in the form of discomfort by men on digital social networks.

Methods: This is a netnographic study carried out from July 2020 to January 2021 on Facebook®, Instagram® and YouTube™, in Brazilian pages and/or communities. The identified data were submitted to thematic analysis and interpreted under the Theory of Unpleasant Symptoms framework.

Results: Prolonged symptoms and post-COVID-19 sequel perceived and reported by men were explained by physical health dysfunctions, systemic and cognitive/psychosomatic changes. As a consequence, men experienced changes in activities of daily living, inability to work, precariousness in health care. A set of experienced physiological, psychosocial and situational influencing factors configure the male unpleasant symptoms caused by COVID-19.

Conclusion: There are repercussions on men's physical, bioenergetic and psychosocial health in the manifestation of prolonged symptoms and post-COVID-19 sequel, which limit and impact daily life and the practice of men's health care. The configuration of these repercussions provides opportunities for specialized clinical-marketing activities and the expansion of rehabilitation work in nursing and health.

Resumo

Objetivo: Identificar as manifestações clínicas e as repercussões dos sintomas prolongados e das sequelas pós-COVID-19, expressos sob a forma de desconfortos, por homens nas redes sociais digitais.

Métodos: Estudo netnográfico realizado de julho de 2020 a janeiro de 2021 nas plataformas do Facebook®, Instagram® e YouTube™, em páginas e/ou comunidades brasileiras. Os dados apreendidos foram submetidos à análise temática e interpretados sob o referencial da Teoria dos Sintomas Desagradáveis.

Resultados: A sintomatologia prolongada e as sequelas pós-COVID-19 percebidas e relatadas pelos homens foram explicitadas pelas disfunções à saúde física, de forma sistêmica e das alterações cognitivas/psicossomáticas. Como consequência os homens vivenciaram modificações nas atividades da vida diária, incapacidades para o trabalho, precariedades no cuidado da saúde. Um conjunto de fatores influenciadores fisiológicos, psicossociais e situacionais vivenciados, configuraram os sintomas desagradáveis masculinos provocados pela COVID-19.

Conclusão: Há repercussões na saúde física, bioenergética e psicossocial dos homens em manifestação dos sintomas prolongados e sequelas pós-COVID-19, que limitam e impactam a vida cotidiana e a prática de

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cuidado à saúde masculina. A configuração dessas repercussões oportuniza uma atuação clínico-mercadológica especializada e a expansão do trabalho de reabilitação em Enfermagem e Saúde.

Resumen

Objetivo: Identificar las manifestaciones clínicas y las repercusiones de los síntomas prolongados y de las secuelas pos-COVID-19, expresados bajo la forma de malestares, por parte de hombres en redes sociales digitales.

Métodos: Estudio netnográfico realizado de julio de 2020 a enero de 2021 en las plataformas de *Facebook*[®], *Instagram*[®] y *YouTube*[™], en páginas o comunidades brasileñas. Los datos recopilados fueron sometidos al análisis temático e interpretados de acuerdo con el marco referencial de la teoría de los síntomas desagradables.

Resultados: La sintomatología prolongada y las secuelas pos-COVID-19 percibidas y relatadas por los hombres fueron explicitadas mediante disfunciones de la salud física, de forma sistémica y alteraciones cognitivas/psicosomáticas. Como consecuencia, los hombres atravesaron cambios en las actividades de la vida diaria, incapacidad para trabajar, precariedad en el cuidado de la salud. Un conjunto de factores influenciadores fisiológicos, psicosociales y situacionales vividos configuran los síntomas desagradables masculinos provocados por el COVID-19.

Conclusión: Hubo repercusiones en la salud física, bioenergética y psicosocial de los hombres como manifestación de los síntomas prolongados y secuelas pos-COVID-19, que limitan e impactan la vida cotidiana y la práctica del cuidado de la salud masculina. La configuración de estas repercusiones posibilita una actuación clínico-mercadológica especializada y la expansión del trabajo de rehabilitación en enfermería y salud.

Introduction

The Coronavirus Disease (COVID-19) pandemic, the century's health phenomenon, has persisted in some countries such as Brazil, Chile and Peru, in Latin America, in most of North America, Europe and Asia.⁽¹⁾ New epidemic waves are expected, already expressed in epidemiological bulletins. Moreover, taking into account the virus' behavior so far in the pandemic, with the increase in new cases and the increase in deaths from the disease and its complications such as prolonged symptoms and sequel.^(2,3) Additionally, the appearance of new strains with a greater degree of circulation and a higher rate of counts is raising the alarm about the real evolution and the end of the pandemic worldwide.⁽¹⁾

The global dimension of the COVID-19 pandemic has brought biopsychosocial, spiritual, economic, labor, cultural, geographic, territorial and political consequences, as it causes imbalances and multiple degrading dysfunctions for the human condition and its quality of life.^(2,4,5) In addition to its severity and its potential for transmissibility, there is a lack of knowledge about its development by new variants of the virus, immunobiological safety of vaccines and its complications, highlighting the lack of conclusions from prevention measures and social support therapeutic conducts dispensed to victims, family members and professional health teams. Thus, there is an urgent need to direct attention to the secondary phenomena that permeate the

disease's daily life, which is still ongoing with different levels of epidemiological control by geographic regions, such as continents.^(1,6-9)

With this pandemic persistence, investigations have brought evidence of its consequences in the clinical context, calling them "post-COVID-19 sequel" and/or "post-COVID-19 syndrome", expressions related to the discomforts and dysfunctions presented by survivors that reveal the emergence of new contexts of a clinical, symbolic and subjective nature to be investigated.^(10,11) In the meantime, the challenge arises to find resolute and effective answers to face the disease, its clinic, the care guaranteed to patients and their families, which have become relevant aspects for nursing, emerging the need to consider the specificities of masculinities that have marked the impairment of men's health as a result of infection, because it has shown greater vulnerability of males with regard to the number of cases, complications and worse outcomes with evolution to the deaths that have been occurring in Brazil, which justifies this study.^(12,13)

Faced with this problem and the clinical outcomes showing that COVID-19 has contributed to the implementation of different clusters of symptoms in the same individual,⁽¹⁴⁾ there is a need to understand the phenomenon through the Theory of Unpleasant Symptoms (TUS), because its influenceable factors, the symptom dimensions and the performance as a result of experiencing them allow an interpretive analysis of the causal relationship

between one symptom and another.⁽¹⁵⁾ Therefore, the question emerged: How are the discomforts that emerge after becoming ill with COVID-19 manifested by men? This study aimed to identify the clinical manifestations and repercussions of prolonged symptoms and post-COVID-19 sequel, expressed in the form of discomfort by men on digital social networks.

Methods

This is a qualitative, netnographic study: an ethnography carried out using hardware, software and electronic resources, with an investigative interest in people's expressions of thought in virtual communities and serves as a source of data to arrive at their understanding and representation by a published cultural phenomenon on the internet, with emphasis on studying forums, newsgroups, blogs and virtual communities.^(16,17) To guarantee the quality of the recording of this research, we followed the COnsolidated criteria for REporting Qualitative research (COREQ) methodological rigor criteria.

The research was carried out on Facebook[®], Instagram[®] and YouTube[™], adopting the expression "platform" to represent them. It is justified that such platforms constitute, along with WhatsApp[®], the social networks with the largest number of users worldwide, as there are more than one billion monthly active users on each platform.⁽¹⁸⁾

After defining the platforms, we proceeded with the eligibility of virtual communities – group, profile or channel that brings together members or followers interested in a common theme – for access to posts and comments. Then the authors explored the search boxes available by the platforms themselves on their homepage, inserting isolated key expressions, sequentially, in order to locate the virtual communities that respected the following inclusion criteria: having a title that referred to the post-war period COVID-19 and at least three comments from different profiles. The data collection protocol took place from July 2020 to January 2021, based on posts from the virtual community and manifestations found in the comments space.

On Facebook[®] and Instagram[®], key expressions were preceded by a hashtag, which are understood as prefixed words or phrases preceded by the # symbol and which provide an instantaneous grouping of messages and metadata from different people who use the same expression in their publications because they have a similar interest, thus leading to an automatic and freely accessible system for counting and surveying frequencies.⁽¹⁹⁾ Unlike Facebook[®] and Instagram[®], the search box on YouTube[™] presents immediate results referring to videos posted on different channels, which is why the search strategy on this platform allowed researchers to have direct access to posts with the highest number of views visualization. On YouTube[™], only key expressions were used, without hashtags. The synthesis of the methodological procedure for the choice, selection, eligibility and inclusion of virtual communities is illustrated in Figure 1.

The search strategy results followed two stages: in the first, the authors scrolled the results page in the Google Chrome 2.0[®] internet browser, reading the titles, information on home page and biography of virtual communities, excluding those that did not answer the research question; in the second, posts and comments available in each virtual community were fully read, including those that respected the criteria described below.

Posts, interactions and comments on syndromes, consequences and/or repercussions generated by COVID-19, managed by personal accounts and manifested by profiles of men, published between March and December 2020, period comprising the beginning, apex, decline and new increase in the incidence rates of the pandemic (first and second wave of the pandemic), were included.⁽²⁰⁾ For recruitment, a personal account was defined as the one with the name and photograph that revealed a person's identity. Soon after, data extraction for gender confirmation began through the availability of information in the profile regarding the variable "man" and/or "male", and later participants' confirmation through the chat. Considering the aforementioned inclusion criteria, there was no risk of heterogeneity in the inclusion group. Moreover,

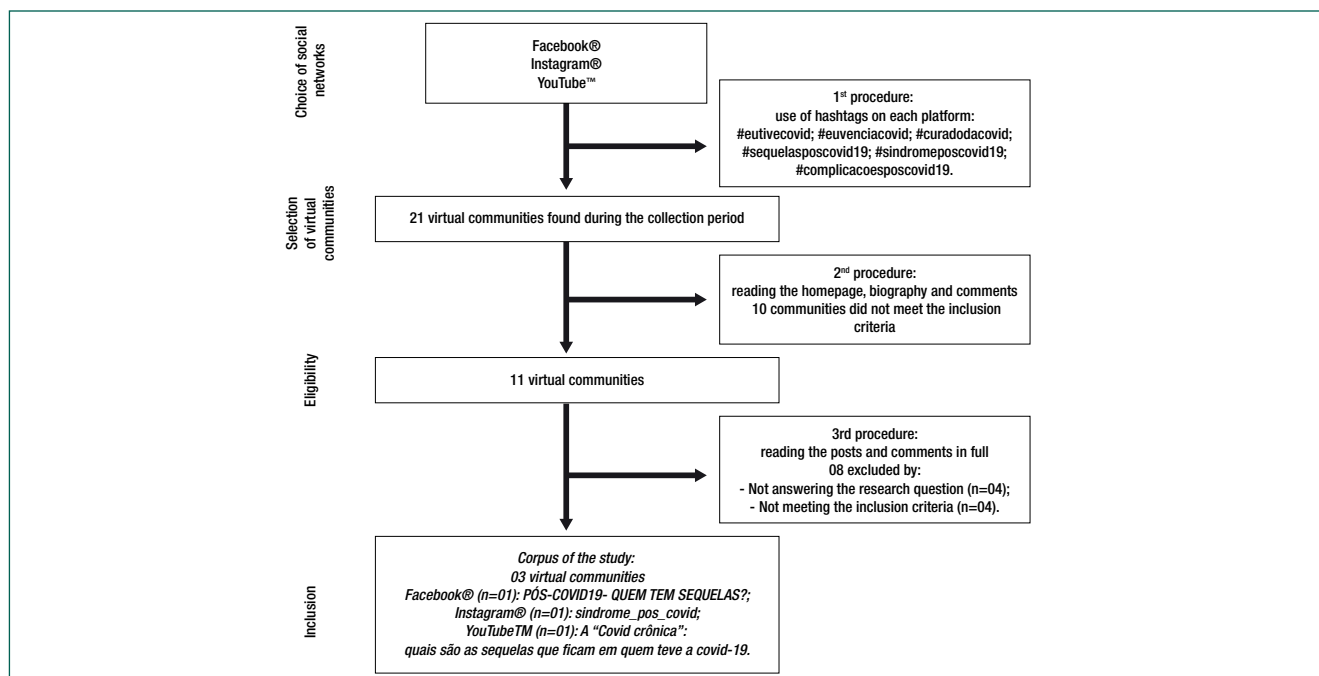


Figure 1. Flowchart of selection process, eligibility and inclusion of virtual communities

in netnographic studies, the wide manifestation of thoughts and behavior is valued.⁽¹⁷⁾ Therefore, the authors chose not to apply exclusion criteria, avoiding increasing selectivity and reducing participants.

Thus, data were collected statically – based on what was published in the virtual communities’ posts and comments – and dynamically – based on interaction with users and/or Internet users in the comments tab available on the posts. Through the chat on Facebook® and Instagram®, they asked questions: after having had COVID-19, how are you feeling? Are you or have you had prolonged symptoms after COVID-19? Are you or have you had post-COVID-19 sequel? If so, how were they confirmed? The criteria for carrying out the second stage were presenting in the post content that illustrates the experience of prolonged symptoms and sequel after COVID-19. It should also be noted that a pattern of interaction with participants was defined, consisting of: a) sending an invitation message (two access attempts); b) sending the questions; c) sending stimuli that induce the questions; d) sending a thank you message. A standardized response time system, such as the Service Level Agreement, was not used.

The corpus of analysis was then composed, in which the criterion of data analysis totality from all posts and comments published in the research period was considered. Chart 1 presents the description of communities from which content was extracted in full, identified in its entirety by a predetermined collection date. It is noteworthy that the group of assistant researchers has undergraduate, master’s, doctoral and post-doctoral training, expertise in the area of research and carry out teaching and academic training activities in the field of nursing, without direct connection with the study participants.

Chart 1. Characterization of the virtual platforms found in the researched sources related to the central theme of the object of study

Characteristics and access links to virtual communities		
Platform:	Profile name/access link:	Number of followers/members:
Facebook®	PÓS-COVID19- QUEM TEM SEQUELAS?; URL: https://www.facebook.com/groups/3029436083776405/?notif_id=1603156617046365&notif_t=group_r2j_approved&ref=notif	22.3 k (thousand) members (at the time)
Instagram®	Sde. pós-COVID; URL: https://www.instagram.com/covid_longa_/	21.6 k (thousand) members (at the time)
YouTube™	A "Covid crônica": quais são as sequelas que ficam em quem teve a COVID-19; URL: https://www.YouTube.com/watch?feature=youtu.be&v=__qixw-b1e8&app=desktop	119 k (one thousand) subscribers (at the time)

During data extraction, the information was imported into an Excel, version 365, spreadsheet, for systematization and organization according to the chronological order of data publication. In order to carry out reflective thematic content analysis, six stages were carried out: data reading and rereading; creation of indicative codes for the derivation of emerging and relevant themes; code cluster; presentation of derived themes with a focus on relationships/interrelationships between the emerged themes; naming the themes; and developing the analytical synthesis that answered the research question.⁽²¹⁾

For data framing and theoretical interpretation, TUS elements were used, namely: symptom dimensions; influencing physiological, psychological and situational factors; and performance in experiencing the symptoms. This theory made it possible to understand the points in common between the symptom clusters expressed in social networks, in which symptom clusters could be formed through the correlation between one symptom and another in a multifactorial pathophysiological cascade logic.^(15,22)

The publications were present on public domain sites with open access to anyone, however the ethical aspects regarding anonymity were applied through codes MF1 (man - Facebook[®] 1), MI1 (man from Instagram[®] 1), MY1 (man - Facebook[®] 1), MY1 (man - YouTube[™] 1), and so on. Information reliability and the use of findings for exclusively scientific purposes were respected in accordance with Resolutions 466/12, 510/16 and 674/2022, in addition to Circular Letter 02/2021. This study was approved by the Research Ethics Committee (REC), under Opinion 4.087.611/2020. It should also be noted that no instrument or software was used to detect fake news, but restricting information collection about individual experiences of the profiles that responded to the integrations.

Results

Created on July 6, 2020, the virtual community “*Pós-Covid-19: quem tem sequelas?*” (personal profile) had 22.3 k (thousand) members and the profile “*Sde. pós-COVID*” (personal profile) had

23 k (thousand) followers, which saw the highest number of interactions and interventions. The channel “Prof. Lysandro Borges” (channel profile name) reached 149 k (thousand) subscribers and its publication entitled: “*A Covid crônica: quais são as sequelas que ficam em quem teve a covid-19*”, created on September 18, 2020, reached more than 206 thousand views. The profile of users accessed in the interaction carried out in the virtual communities comprised young adults, between 20 and 49 years old, self-reported race/color white, middle class and high school level, in a total of 80 respondents, from a universe of 202 participants accessed. Thus, the empirical findings were presented by two thematic categories, “Experiences of prolonged symptoms and sequel-post-COVID-19” and “Repercussions of prolonged symptoms and sequel-post-COVID-19”, composed of their subcategories and themes. Therefore, the process of data theoretical-analytical framing is represented visually (Chart 2), and, subsequently, the central findings are presented, based on this organization.

The emergence of the first concept of central organization (01) was associated with the appearance of sequel that provoked dysfunctions in men’s physical health, presenting a character of acute manifestations, especially recognized after the first days of involvement by COVID-19 and/or after hospitalization as well as late, perceived after months of the diagnosis of cure of the disease. Furthermore, a characteristic of progressiveness and evolution of clinical signs and symptoms correlated to the experience of COVID-19 were reported by men in the investigated social networks. Physiological influencing factors that generate damage to physical health, which make up the TUS structuring, were present. These factors were grouped in the initial generating themes (01), which branched out into 11 clusters of figurative themes, clusters that were organized by titles of nursing practice domains related to the dimensions that determine the identification of a clinical diagnosis, such as the symptomatological manifestation widely explained by participants in the researched digital social networks (configuration of men’s clinical-symptomatological manifestation). Thus, the male audience produced demonstrative

Table 2. Illustrative table of data theoretical-analytical framework from content thematization

CENTRAL ORGANIZATION CONCEPT 01: EXPERIENCES OF PROLONGED SYMPTOMS AND SEQUELS POST-COVID-19	
Initial generating themes:	Initial generating themes 01: Influencing physiological factors mobilizing damage to physical health; Initial generating themes 02: Influencing physiological, neurological and psychological factors triggering damage to neurological and psycho-emotional health.
Subjects:	Derived themes 01: Theme 01A: Pain; Theme 01B: Immune function; Theme 01C: Impaired visual and auditory acuity; Theme 01D: Impaired oxygenation; Theme 01E: Impaired perfusion and circulation; Theme 01F: Impaired metabolism and hematological function; Theme 01G: Nutrition and impaired gastrointestinal function; Theme 01H: Impaired urinary output and renal function; Theme 01I: Sexual and reproductive health; Theme 01J: Impaired skin integrity and integumentary and musculoskeletal function; Theme 01L: Energy imbalance. Derived themes 01: Theme 02A: Impaired neurological function; Theme 02B: Impaired psycho-emotional function.
Internet platforms:	Facebook®, Instagram®, YouTube™.
Participants:	MF1; MF2; MF3; MF4; MF5; MF6; MF8; MF9; MF11; MF12; MF14; MF15; MF16; MF7; MF18; MF19; MF20; MF22; MF26; MF27; MF28; MF30; MF32; MF36; MY41; MY47; MY48; MY49; MY50; MF51; MY52; MF67; MI25; MI35; MI36; MI39; MI40; MI42; MI44; MI45; MI46; MI47; MY53.
CENTRAL ORGANIZATION CONCEPT 01: IMPLICATIONS OF PROLONGED SYMPTOMS AND POST-COVID-19 SEQUELS	
Initial generating themes:	Initial generating themes 01: Situational influencing factors that generate limitations to perform activities of daily living; Initial generating themes 02: Situational influencing factors generating work capacity limitations; Initial generating themes 03: Situational influencing factors generating precariousness in health care.
Subjects:	Theme 01A - Experiences of limitations in activities of daily living; Theme 02B - Experiences of work capacity limitations; Topic 03C - Experiences of precarious health care.
Internet platforms:	Facebook®, Instagram®.
Participants:	MF1; MF2; MF8; MF20; MF27; MF28; MF33; MI40; MI31; MI43.

content of signs, symptoms and medical diagnoses of pathologies and/or associated conditions, most of them of a more organic nature, represented by the physical discomforts manifested in the post-COVID-19 period. This theme illustrates the painful manifestation, its clinical characteristics such as site, quality, frequency and self-perceived reasons:

[...] I started to feel frequent muscle pain. (MF9); [...] I have a constant feeling of tightness in my head, due to the pain that appeared after COVID-19. (MF16); [...] I've been feeling a lot of pain caused by the neuropathy I developed. (MF26)

In this theme, the emergence of symptoms related to immune function, perceived after the onset of COVID-19, especially through the appearance of infectious processes and febrile episodes, is explicit:

[...] I have had a daily fever since I had COVID-19. (MF11); [...] I've been living with many adverse reactions and infections since I had COVID-19. (MF19)

Symptomatic manifestations were perceived by men, affecting visual and auditory acuity, which resulted in impairments in functionality:

[...] the vision of the right eye became blurred. (MF2); [...] it's been two months since I've lost my sense of smell. (MF4); [...] as a sequel I developed vestibular dysfunction. I also have clogged ears, and almost seven months of dizziness and discomfort. (MF5); [...] it's been more than months of curing COVID-19, but I started to feel pain in my eyes and blurred vision. The eyes and eyelids became dry, itchy and burning, with the sensation of having a foreign body inside, and also the abnormal fall of eyelashes. (MF6)

Respiratory symptoms were significantly reported by men, which corresponded to the main clinical characteristics of COVID-19. The experience lived by the male public was marked by the disease progression in terms of complexity, which demanded the need for hospital intervention and the use of diagnostic and therapeutic resources. The emergence of infectious processes in the respiratory tract, impairment of lung capacity and the description of perceived signs and symptoms were also explained. In addition to this, the content revealed the progressiveness and magnitude of the impacts on oxygenation in biophysiological and emotional terms, when the feeling was that of wanting to “disappear far away”:

[...] the tomography found 50% of the lung compromised. I was hospitalized for 65 days and intubated for 22 days. In the ICU, I acquired a bacterial infection that affected the lung. (MF1); [...] I was discharged from the hospital and even after months of the disappearance of the typical symptoms of COVID-19, I started to have a cough with mucus formation, tremendous pain in my back, ribs and chest. The tiredness and the change in breathing also returned, which makes me uncomfortable and makes me want to “disappear far away”. And to make matters worse, two nodules appeared in the lung, which required me to return to the hospital for 18 days. (MF3); [...] I received the diagnosis of cure for COVID-19, even though I had the severe condition of the disease, but since then I continue to feel a lot of shortness of breath, cough, runny nose. (MF2); [...] I needed to be intubated and due to lung failure, I had to rely on mechanical ventilation to carry out the function of my lungs. (MF18); [...] it was 56 days in the ICU and 30 days intubated. I needed to perform a tracheostomy to be able to breathe. (MF19)

This theme revealed the emergence of prolonged symptoms and cardiocirculatory sequel, causing thromboembolic, ischemic and perfusion events. The contents reveal the emergence of cardiac alterations after COVID-19, highlighting the difficulties in controlling blood pressure, heart rhythm, peripheral vascular functioning as well as the temporality of the symptoms experienced:

[...] as complications of COVID-19, I had a cardiac embolism, which caused an acute myocardial infarction, which kept me hospitalized for 45 days. (MF2); [...] I started to have tachycardia and increased pressure. (MF5); [...] the heartbeats started to accelerate. (MF12); [...] I started to feel a lot of night sweats. (MF15); [...] I have a lot of oscillation in blood pressure and heartbeat. (MI25); [...] I've been feeling paroxysmal tachycardia for more than 70 days, associated with the feeling of shortness of breath, perfusion changes in the lower limbs, mainly in the feet, like vasoconstriction. (MI35); [...] I had vascular sequel. The veins in

the legs and arms hurt all the time. In addition, varicose veins appeared. (MY48)

Metabolic and hematological symptoms caused damage to the health of men who had COVID-19. One of the investigated participants reported experiencing frequent changes in the control of metabolic rates, evidenced through the results of laboratory tests he underwent:

[...] my laboratory tests, such as the complete blood count, have constantly shown altered rates, such as triglycerides, glycemia and cholesterol. (MF22)

Also, the symptoms arising from nutrition and impaired gastrointestinal function in the face of the involvement of COVID-10 in this subject, according to men's perception, were evidenced. Medical diagnoses of diseases were mentioned as well as the discomfort felt due to changes in nutrition patterns, such as loss of appetite and weight loss, which triggered negative feelings about the experience:

*[...] I developed esophagitis and gastritis. (MF8); [...] I have had difficulty eating, lack of appetite. (MF14); [...] I had a bacterial infection after having COVID-19 and as a result I lost more than 20 kg. (MF19); [...] I started to have bad digestion, which became slower. (MI25); [...] I started to live with many gastrointestinal problems, it's horrible. (MI36); [...] I was diagnosed with esophagitis and gastritis with *h. Pylori*, but I didn't have these issues before COVID-19. (MI40)*

The urinary output and renal function pattern were perceived by men as impaired, given the experience of renal failure, the need for replacement dialysis therapy, drug therapy and hospitalization for the treatment of chronic renal health events:

[...] my kidneys stopped working. I had impaired kidney function. (MF1); [...] the kidney functions were compromised, I could no longer urinate as before, and I ended up needing hemodialysis when I was hospitalized. (MF18); [...] as a sequel to COVID-19, I had kidney damage and needed he-

modialysis. Prolonged use of medication made me acquire renal fibrosis. (MF19)

The sexual and reproductive health dimension was mentioned by the men in the identified contents and revealed the appearance of alterations in sexuality and sexual function patterns, especially in the face of perceived problems in performance, affective-sexual behaviors and practices, feeling of changes in relationships sexual feelings, decreased libido and arousal, difficulties in affective interaction in contexts of sexual intimacy with a significant partner. In addition, penile function issues were observed in relation to erection and complaints related to testicular function, which included ejaculation:

[...] I felt a difference in the sexual intercourse, with the lack of disposition for sex. (MF30); [...] I felt changes in sex, I'm slower, without energy, horny and willingness to have sex. I've been having trouble with an erection. (MF32); [...] COVID-19 changed my sexual function, changing my rhythm. (MF36); [...] I have been experiencing pain and discomfort in my testicles since I had COVID-19. (MF51); [...] since I had COVID-19 and left the hospital I had sexual difficulties, my partner masturbated me, because I was unable to have penetrative sex [...] the sperm came out with blood, I had problems to relate intimately, when it comes to orgasm, I don't feel the same pleasure as before, on the contrary, I feel discomfort and lack of desire. It has been difficult to ejaculate. I've been trying to schedule an appointment with the urologist, but I've been having difficulties because of the pandemic. (MF67)

This theme presents the male self-report of perception about symptoms related to skin integrity and integumentary and musculoskeletal function after COVID-19. The content points to a decrease in the functionality of muscles and joints, a decrease in strength and balance, hair loss, the appearance of skin lesions, considering the difficulty of locomotion and the prolonged time in the same position, characterizing it as a “very difficult situation”:

[...] the disease affected my muscle and joint function. I feel numbness in my legs, heels, fingers and toes. (MF3); [...] I was diagnosed with peripheral neuropathy with myopathic involvement. I had two pressure sores in the heel and sacral region due to lying in the same position for a long time. (MF12); [...] my hair fell out a lot when I took a shower. I stayed in bed for a long time, and that made it difficult for me to walk again, to have strength in my muscles. I had ulnar nerve compression, which caused a skin lesion. It has been a very difficult situation. (MF19)

Energy imbalance was evidenced as a symptom-atomological dimension pointed out by men in the identified content. A loss of energy was observed, characterized by weakness, fatigue, imbalance, indisposition, discouragement and tiredness, being defined as if they were “passing out”:

[...] I feel weak, discouraged, fatigued, without energy and sleepy. (MF3); [...] I have trouble walking, I lack balance, I feel without energy, it's like I'm “passing out”. (MI7); [...] I'm feeling fatigue even after days of curing COVID-19. (MF9); [...] after COVID-19, I started to have vertigo. (MY49); [...] most of the time I feel unwell and tired, totally without energy. (MY53)

Although timidly, some men addressed issues related to the impacts generated by the consequences of COVID-19 on sexual and reproductive health. Discomfort and differences were noted regarding sexual performance - libido, desire, performance and in the interaction with their bodies regarding the exercise of sexuality.

The initial generating theme (02), derived from the first concept of central organization, was structured in two themes, both interconnected to the perception of changes and neurocognitive and psycho-emotional discomforts, mobilized by influential psychological factors that were identified in male narratives. The masculine content indicated the emergence of neurological impairments and/or dysfunctions, with significant olfactory-gustatory, cognitive specificity, such as balance dam-

age, attention deficit and concentration and brain problems.

The psychological influenceable factors found in the male content represented the occurrence of one of the most complex components reported in the theory, since affective (psychoemotional) and cognitive variables of men were observed, playing a close relationship between both.

The investigated men described a vast impairment of neurological function, revealing the consequences of the disease on cerebrovascular function, in the decrease and loss of senses, sensory changes, perception, memory, attention/concentration, such as the appearance of discomforts, such as pain in the neck, dizziness and drowsiness:

[...] as a result of COVID-19, I had a cerebral embolism and a stroke. Smell and taste were lost and it took many months to get back to normal. I lost my sense of salty taste, and even saliva has a strange taste. (MF2); [...] my sense of smell has often disappeared. I'm feeling a heaviness in my nose. I constantly smell smoke. Even after hospital discharge, which occurred in May 2020, I still have neurological problems. I lost muscle strength in my hands and feet and developed Guyon's canal syndrome. (MF18); [...] I had paralysis. My hand was compromised (MF19); [...] I've been having tremors and difficulty sleeping. (MF22); [...] I have felt a lack of concentration and it has affected me. (MF27); [...] I still have a distorted sense of smell, some products, such as shampoo, dishwashing detergent, toothpaste, coffee, melon, I smell completely different. (MF36); [...] I smell a strange, terrible smell, an odor that I have never smelled in my entire life. (MI40); [...] the scents I loved today smell awful. My sense of smell was affected. (MY41); [...] with COVID-19, I started to have constant discomfort and pain located in the back of the neck and forehead, in addition to dizziness. (MI42); [...] I've been feeling confused. I see it as if everything is "spinning" around me. I feel dizzy and unable to focus my vision over longer distances since I had COVID-19. (MI45); [...] I've been having olfactory hallucinations, smelling rotten wood, constant headaches and discouragement due to the damage generated after the appearance of

COVID-19 sequels. (MY47); [...] I'm having concentration problems and a lot of sleepiness. (MY50)

The male psycho-emotional function was manifested from the reports of symptomatology indicative of psychological distress, explained from stressful events, depressive-anxious, mood and anxiety (panic), loss of control and emotional regulation, triggering negative feelings of derealization and loss of the meaning of life – hopelessness, which required the search for psychiatric intervention:

[...] I've already cried a lot and I'm not in the mood for anything. (MF4); [...] due to stress and anxiety after COVID-19, I started to grind my teeth and that made me suspicious and scared (MF20); [...] I started to get scared and panicked. (MF28); [...] I'm having anxiety attacks (MI39); [...] post-COVID-19 anxiety is horrible, I'm about to freak out, the disease has left me disturbed (MI40); [...] after COVID-19 I started to have mental health problems. There are days that seem to be the last of my life, that cause me extreme sadness. I feel like my life was stolen from me. (MY41); [...] I have felt an "agony" in my head. I went to the hospital twice and was diagnosed with depression. (MI42); [...] I started to have anxiety. I have felt sweating, chills, tremors and tachycardia. (MI44); [...] I was anxious. I feel tremors in my body as if it were "fighting" to resist an "attack". (MI45); [...] it is an anxiety that does not go away. The symptoms of COVID-19 do not go away and only make me more anxious. (MI46); [...] the consequences of COVID-19 affected my mental health. I feel discouraged, depressed. (MI47); [...] I started to live with a lot of mental fatigue (MY50); [...] the after-effects of COVID-19 left me completely "down". I am without any prospects for life, discouraged, indisposed and emotionally fragile. (MY51); [...] the prolonged symptoms of COVID-19 caused me psychological problems and I had to go to the psychiatrist. (MY52)

The second concept of central organization was configured from three initial generating themes and three themes, which together interact with the di-

mension and performance of situational influencing factors (physical and sociocultural environment) experienced by men, based on manifested symptoms. These themes made explicit the compromised access to health protection and care resources, the maintenance of routine activities of daily living, the exercise of work and the emergence of poor financial conditions, which impacted on male autonomy and independence.

The first initial generating theme, together with its theme, revealed the emergence of limitations in the performance of activities of daily living of the investigated men. The content indicated the repercussions on locomotion, dependence on support from third parties, difficulty in carrying out intellectual activities, carrying out domestic activities that require physical effort, such as fast breathing:

[...] I can't drive, and to move from home, I need to be driven by someone else. (MF1); [...] I can't study properly, or perform daily activities at home because of the lack of concentration. (MF27); [...] my lung capacity was compromised. I can't go up the stairs, make minimal efforts in household chores (I suggest taking it to the physiological factors). (MF28); [...] I have not been able to return to the normal routine of daily activities. The sequels generated physical and mental disabilities. (MI40).

The second initial generating theme, consisting of one theme, illustrates the situational influencing factors that generate limitations in the capacity to carry out work by the investigated public. The men reported experiencing difficulties in performing activities that required motor skills or physical effort - breathing, circulation, previously not compromised by the sequel caused by COVID-19:

[...] as a result of the cerebral and cardiac embolism, I had my left hand paralyzed, which has limited me to the normal return to work activities, compromising the performance of tasks that I could perform without having my hand compromised. (MF2); [...] I'm limited at work because I still can't do what I used to do. I've been feeling a

lot of pain in my chest, which limits me to perform movements that require physical effort. These pains are followed by cracking in the bones and joints. (MF20)

Situational influencing factors that generate precariousness in health care by men are illustrated in the third initial generating theme and its theme. In the identified contents, a change in care standards was observed, especially given the interruption and/or changes in habits related to physical exercises in spaces outside the home, acquisition of the desired physical shape, sedentary lifestyle, difficulty in maintaining diets, weight gain and impairments in maintaining routine sexual practice:

[...] the presence of nodules in the lung made me interrupt weight training at the gym, due to lack of resistance, which has caused other damage to my health. (MF8); [...] the persistence of tiredness and frequent coughing has prevented me from doing any physical activity. As a result, I started to become sedentary, gained weight and am having difficulty following a healthy and balanced diet. (MF28); [...] in addition to not being able to do bodybuilding training as I used to, I have been facing difficulties in gaining mass and increasing muscle strength. I lost a lot of weight. (HI31); [...] I have faced difficulties in sex due to physical fatigue. (HF33); [...] I had a routine and healthy lifestyle habits. He practiced physical activities regularly. With the consequences of COVID-19, I started to have heart instabilities that prevent me from making efforts. I am limited, affecting my previous intimate relationship with my partner. (MI43)

Discussion

Despite the magnitude of platform users, this netnographic study is limited to exploring only the manifestations of people who have access to the internet, technological resources and are registered in the appropriate networks, and there may be other discomforts that were not explored, in addition to

the fact that analyzed narratives were obtained from brief comments about what was experienced, being better explored in face-to-face situations. The collection strategy adopted by the team may also have limited the range of results. With the end of contact restrictions imposed by the pandemic, new experiences of survivors can be investigated in depth.

Since the advent of the pandemic in Brazil, a race to face the new disease has emerged. However, a denialist movement of political party polarization and formulator of conspiracy theories coexisted parallel to the race of health professionals to knowledge about COVID-19, in reducing the impacts caused by isolation and social distancing and in coping with the expansive syndromic episodes produced by the victims after the disease, which may have made it difficult to advance in knowledge of disease management, including in terms of understanding its effects, such as prolonged symptoms and after-effects of the illness.^(7,23)

Our findings made it possible to assemble a set of these symptoms and/or sequel, such as pain, immune function impairment, changes in visual and auditory acuity, lung function and oxygenation, perfusion and circulation impairment, alteration of metabolic and hematopoietic function, nutritional and gastrointestinal, damage to kidney, genitourinary, sexual and reproductive health, skin integrity and musculoskeletal integumentary function impairment, generating energy imbalance. Therefore, our study made it possible to apprehend the impacts caused by a group or clusters of symptoms (sequel) through TUS in the male public in the post-COVID-19 period.^(15,22) Thus, it comprises a unique opportunity for nursing teams and the health area to act, through access to knowledge of clusters of symptoms, based on a theoretical lens focused on clinical practice.

When considering the systemic nature of manifestation of COVID-19, there is a need to employ a clinical approach in nursing and health, which considers not only the symptoms of a given disease, but also the numerous factors that influence the perception of such symptoms and which has required an assessment of associations such as structure and organization of TUS: physiological, psychological,

and situational factors.^(15,22) The fact that the data show a synergy between the symptoms of different etiologies shows that the influencing physiological, psychological and situational factors are interconnected through a reciprocal relationship with each other, in which biological problems such as sexual dysfunction, hypertension, tachycardia, paralysis, renal failure and loss of smell and taste subsidized the onset of psychological symptoms such as insomnia, anxiety and depression, which, in turn, contributed to the relationship with situational adversities such as limitations to the normal return to work activities and the interruption of physical activities, represented in the category of results that showed the emergence of repercussions of prolonged symptoms and post-COVID-19 sequel. This scenario permeates the social constructions of masculinities and takes into account how the pandemic and its aftermath generated “threats” and “scratches” to hegemonic masculinities.^(12,13) Thus, nursing and health professionals will need to dedicate singular attention to patients’ behavioral aspects in terms of cultural relations, gender references, age and generation, geographic location/territory, race/color, social class and literacy levels, which make up subjects’ characteristics.

When experiencing body discomfort, men realized their vulnerabilities through changes in respiratory, muscular, auditory, visual, olfactory, energetic and sexual functions that, consequently, enhanced the feeling of “loss of masculinity”, “power”, “strength”, “virility” and “honor”, limiting them to occupy positions said to be masculine, such as working, driving, walking down the street and playing sports, factors that generate fear and dependence on the other.⁽¹²⁾ In this regard, findings in the literature already indicate advances in understanding post-COVID-19, as it identified that deficits in cognitive functions were closely related to hypoxia and the inflammatory profile caused by the virus, with impacts on reduced sustained attention, memory loss and decreased motor coordination. SARS-CoV-2 infection, in the initial phase, produces an acute inflammatory response and pulmonary pathologies, and in later phases, cardiovascular complications, such as ventricular wall thickening asso-

ciated with an increase in the ventricular mass/body mass ratio and interstitial coronary fibrosis, elevated levels of serum cardiac troponin I, elevated cholesterol, low-density lipoprotein, and long-chain fatty acid triglycerides, and therefore emphasize our findings related to impaired neurological, circulatory, and oxygenation function.^(24,25)

Under this logic, it is emphasized that a symptom's intensity will vary according to an individual's emotional response, to their psychological factors and their affective variables, which makes it necessary to raise awareness of the injuries and the need for healthy and effective coping.^(15,22) Based on the TUS assumptions, it is possible to understand phenomena such as time/duration, intensity, quality, suffering, which can be caused by prolonged symptoms and post-COVID-19 sequel, essential knowledge for nursing teams and health in the care of patients in these circumstances, including those who demand psychosocial care, which reinforces the need for attention to impaired psycho-emotional function, as evidenced in our study.

Therefore, the current literature shows that COVID-19 may have secondary consequences for cisgender men's sexual and reproductive health, which may affect them with testicular and ejaculatory alterations due to the deposit of coronavirus in the testicles, in association with the possibility of infertility, erectile dysfunction and even reduction in penis size, which can further intensify the difficulties faced.^(19,26-28) With this, the loss of masculinities related to changes in sexuality and/or sexual function pattern may imply the loss of their sense of living, such as the feeling of "exclusion from the tribe" and the disintegration of their socio-affective networks by the marital repercussions due to decrease or loss of desire and sexual interest, evidenced by changes in their performance, by the triggering of conflicts, withdrawals and ruptures with the significant person, as evidenced in our study, from the results about the limitations to carry out activities of daily living, the situational influencing factors that generate limitations in the ability to work and precariousness in health care.⁽²⁶⁻²⁹⁾ As a result, multiple clinical repercussions will require symptom management through specific theories, as they are

easy to apply and enable a pragmatic orientation for the relatively direct measurability of pathological experiences to nursing care production.⁽¹⁵⁾

Significant damage to men's physical health and its therapeutic consequences with harmful repercussions that bring weakness and disturbance have contributed to situations of hospitalization, submission to intubation procedures and mechanical ventilation and permanence in Critical Care Units, which deserve to be precisely investigated, as they lead to chronicity and frailty syndromes. However, not only complex and disruptive for physical health, but also a significant potential for compromising male mental health, it makes the idea about the causal relationship between one symptom and another become evident for cluster composition and implementation.^(15,30) Additionally, the findings revealed that men are explaining their complaints, their physical, situational, psycho-emotional and mental discomforts and suffering, exchanging experiences, seeking and offering social support as a form of performance and performance that can be ordered in time.⁽²⁶⁾ Moreover, another study carried out with men in Brazil revealed the biopsychosocial nature of exposure to COVID-19, triggering unpleasant symptom clusters, such as high blood pressure, depression, anxiety and sedentary lifestyle.⁽³¹⁾

In this regard, it is necessary to be attentive in an accurate and sensitive way to the manifestations of anxiety, depression and the deleterious effects of post-traumatic stress, also associated with panic, as we highlight a high risk for a severe mental illness that causes suicide, establishing a priority in nursing care for this dimension of human health with an emphasis on specific interventions.⁽³²⁾ The loss of cognitive functionality evidenced by men and already evidenced in the literature expresses another place of attention, as these abilities have been weakened with a risk of becoming even more severe or even irreparable.⁽³³⁾ This scenario points to the need to strengthen and expand matrix support to restore psycho-emotional health and support survivors with neurological deficits. One recommendation is that health professionals explore the production of narrative content of people reporting on their health and illness experiences on social media platforms

for producing new care.⁽³⁴⁾ It is important that nurses and health professionals follow the narratives and testimonies published on social networks by people who live with chronic illness. These are virtual environments dominated by patients who express themselves autonomously, different from the power relationship established in the clinical office environment. Therefore, based on netnography, it is possible to identify political spaces for associativism and knowledge production to alleviate suffering from prolonged symptoms and sequel.

In addition to this, the social networks accessed allowed locating therapeutic itineraries and critical routes that are being adopted which, on the other hand, the perception of distancing and discrimination by health team professionals and family members pointed out by men indicate the emergence of social stigma around COVID-19, which imposes barriers to accessing services with difficulties in complying with care and repair measures, implying the potentialization of other complications and new sequel.^(13,35)

Conclusion

Men experienced prolonged symptoms and post-covid-19 sequel, affecting the physical, bioenergetic and psycho-emotional dimensions, with repercussions on activities of daily living, work ability and precariousness in health care. These elements open the opportunity for nursing and health professionals to offer extended care, considering the comprehensiveness of human existence and the moral value of nursing care of an interactional and longitudinal nature. In addition, it is advised that emotional needs are included in the Systematization of Nursing Care as care strategies to raise the levels of resilience and self-esteem of men with prolonged symptoms and sequel due to COVID-19.

Collaborations

Santana WC, Lima AAC, Muniz VO, Machuca FA, Vale PRLFD, Carvalho ESS and Sousa AR declare

that they contributed to the study design, data analysis and interpretation, article writing, relevant critical review of intellectual content and approval of the final version to be published.

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