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ORIGINAL ARTICLE

Post-COVID conditions: construction of a manual for health professionals in user management

Condições pós-COVID: construção de um manual para profissionais de saúde na gestão de usuários

Condiciones post-COVID: construcción de un manual para profesionales de la salud en la gestión de usuarios

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ABSTRACT

Background and Objectives: in the course of care for users affected by COVID-19, there were persistent signs and symptoms or the development of late symptoms called post-COVID conditions. Thus, it is necessary to promote Continuing Education in Health practices to meet post-COVID conditions. Thus, the study aimed to construct a manual to assist Primary Health Care (PHC) professionals in managing post-COVID conditions. **Methods:** the method proposed by Echer was adopted for constructing the manual, which provides six steps for structuring a manual. Moreover, this study used only five of them, and the sixth step consists of manual validity. In addition, the following guiding axes were established: objectivity, self-explanatory formulation, problematizing pedagogical approach inspired by Bordenave and Pereira and the Brazilian National Policy for Continuing Education in Health. **Results:** the study resulted in the construction of a manual that comprises 25 post-COVID conditions, presented in a didactic way, with content selection and language adjustment considering the target audience, with illustrations and flowcharts that facilitate the conduct of the line of clinical reasoning as well as inclusion of clinical cases aiming at bringing them closer to clinical practice. **Conclusion:** the manual construction allows professionals to offer the affected users a quality and resolutive assistance, minimizing the damage to their quality of life. Furthermore, it is expected that the manual will reach a wide dissemination in the most distinct health spaces, providing subsidies to health professionals.

Keywords: *Post-COVID conditions. Educational Technology. Delivery of Health Care.*

RESUMO

Justificativa e Objetivos: no decorrer do atendimento aos usuários acometidos pela COVID-19, ocorreram sinais e sintomas persistentes ou desenvolvimento de sintomas tardios denominados quadros pós-COVID. Assim, é

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necessário promover práticas de Educação Permanente em Saúde para atender às condições pós-COVID. Assim, o estudo teve como objetivo construir um manual para auxiliar os profissionais da Atenção Primária à Saúde (APS) no manejo das condições pós-COVID. **Métodos:** para a construção do manual foi adotado o método proposto por Echer, que prevê seis etapas para estruturação de um manual. Além disso, este estudo utilizou apenas cinco deles, e a sexta etapa consiste na validação manual. Além disso, foram estabelecidos os seguintes eixos norteadores: objetividade, formulação autoexplicativa, abordagem pedagógica problematizadora inspirada em Bordenave e Pereira e na Política Nacional de Educação Continuada em Saúde. **Resultados:** o estudo resultou na construção de um manual que contempla 25 condições pós-COVID, apresentado de forma didática, com seleção de conteúdo e ajuste de linguagem considerando o público-alvo, com ilustrações e fluxogramas que facilitam a condução da linha de raciocínio clínico bem como inclusão de casos clínicos visando aproximá-los da prática clínica. **Conclusão:** a construção manual permite aos profissionais oferecer aos usuários acometidos uma assistência de qualidade e resolutiva, minimizando os prejuízos à sua qualidade de vida. Além disso, espera-se que o manual alcance ampla divulgação nos mais distintos espaços de saúde, proporcionando subsídios aos profissionais de saúde.

Palavras-chave: *Condições pós-COVID. Tecnologia Educacional. Prestação de cuidados de saúde.*

RESUMEN

Antecedentes y Objetivos: en el transcurso de la atención a usuarios afectados por COVID-19 se presentaron signos y síntomas persistentes o el desarrollo de síntomas tardíos denominados condiciones post-COVID. Así, es necesario promover prácticas de Educación Continua en Salud para afrontar las condiciones post-COVID. Así, el estudio tuvo como objetivo construir un manual para ayudar a los profesionales de la Atención Primaria de Salud (APS) en el manejo de las condiciones post-COVID. **Métodos:** para la construcción del manual se adoptó el método propuesto por Echer, el cual proporciona seis pasos para estructurar un manual. Además, este estudio utilizó sólo cinco de ellos, y el sexto paso consiste en la validez manual. Además, se establecieron los siguientes ejes rectores: objetividad, formulación autoexplicativa, enfoque pedagógico problematizador inspirado en Bordenave y Pereira y la Política Nacional Brasileña de Educación Continua en Salud. **Resultados:** el estudio resultó en la construcción de un manual que comprende 25 condiciones post-COVID, presentado de forma didáctica, con selección de contenidos y ajuste del lenguaje considerando el público objetivo, con ilustraciones y diagramas de flujo que facilitan la conducción de la línea de razonamiento clínico. así como la inclusión de casos clínicos con el objetivo de acercarlos a la práctica clínica. **Conclusión:** la construcción manual permite a los profesionales ofrecer a los usuarios afectados una asistencia resolutiva y de calidad, minimizando el daño a su calidad de vida. Además, se espera que el manual alcance una amplia difusión en los más distintos espacios de salud, brindando subsidios a los profesionales de la salud.

Palabras-clave: *Condiciones post-COVID. Tecnologia Educacional. Prestación de atención médica.*

INTRODUCTION

Coronavirus Disease 2019 (COVID-19), a disease caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), characterized as a pandemic and which caused numerous deaths and ostensible demand on health services for a period of at least three years from 2020, it was recently no longer considered a public health emergency by the World Health Organization.[1] However, health professionals and services still face challenges related to the late repercussions of the disease.

The clinical presentation of SARS-CoV-2 infection ranged from asymptomatic conditions to severe pneumonia, including Severe Acute Respiratory Syndrome (SARS).[2] Given the global vaccination program for COVID-19, these symptoms, classified as acute, are systematically attenuating in response to the immunization of populations. It is estimated that 70% of the world's population has received at least one dose of some type of vaccine against COVID-19, corresponding to 13.38 billion doses administered globally. In Brazil, from February 5, 2021 to March 22, 2023, 189.4 million people were immunized.[3]

In addition to the complications evidenced during the acute period of the disease, so-called post-COVID conditions are currently observed,[4] also known as persistent symptoms of COVID-19, post-COVID syndrome[5], or long COVID, by some scholars.[6-7] Furthermore, post-COVID conditions are defined as "a range of new, recurrent or persistent clinical manifestations present after acute SARS-CoV-2 infection, when these are not attributed to other causes".[4] Therefore, they require improvement from health professionals in managing post-COVID conditions.[7]

Although the pathological manifestations of acute infection have already been widely described in research, investments are needed to understand the causes that explain the prolongation of symptoms.[8] In this regard, studies have shown that post-COVID conditions are characterized by presenting some symptoms, such as fatigue, dyspnea, metabolic changes, elevations in protein substances and the presence of inflammatory markers, which indicate damage to the metabolism of affected individuals.[8,9]

Therefore, it is imperative to mobilize efforts in the pursuit of specific scientific development and provide

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appropriate clinical training for health professionals in an assertive manner, minimizing damage arising from post-COVID conditions through promotion, prevention, therapy and rehabilitation.

Therefore, this study aimed to construct a manual to assist Primary Health Care (PHC) professionals in managing post-COVID conditions.

METHODS

This is methodological research on the construction of an informative manual following the steps described by Echer (2005).[10] The first four steps were covered in this study, namely: research project preparation; content definition and selection; language adaptation; and illustration inclusion. Furthermore, the following guiding principles were established: objectivity; self-explanatory formulation; problematizing pedagogical approach inspired by Bordenave and Pereira (1991)[11] and the Brazilian National Policy for Continuing Education in Health (PNEPS - *Política Nacional de Educação Permanente em Saúde*).

Below, the steps of Echer's (2005)[10] methodology developed in this study is detailed:

1st step: research project preparation

Initially, the researchers developed a research project that included the steps of introduction, objective, literature review, method, schedule, budget and references. The project made it possible to organize the study development, thus guaranteeing the best results.

2nd step: content definition and selection

A search was carried out for studies, manuals, protocols, national and international guides regarding the management of post-COVID conditions. To achieve this, first, the researchers developed a search for studies in the Virtual Health Library, which encompasses several databases, thus making it possible to select original and review articles. Furthermore, due to the scarcity of articles published during the manual's construction period, it was necessary to deepen this search in documents published by national and international government bodies.

Additionally, information archived in researchers' own database was used, obtained from collections carried out in previous research with the responsible multidisciplinary team. for care at the Rehabilitation Center linked to PHC in the city that is the focus of the study, aiming to combine theory and practice in light of the local reality.

Furthermore, in this step, the team of researchers, after obtaining the subsidies they organized and structured, met in a total of twenty meetings, in person and online, in order to discuss how to approach and what to actually address in the instrument to be constructed. This dialogue process made it possible to jointly define which guiding axes would be suitable for use as well as suitable for the proposal intended to be constructed. Still in this process, the most relevant content was jointly discussed and defined based on published research and data previously collected from the multidisciplinary team. Furthermore, it should be noted that the dialogue between researchers made it possible to discuss the steps to follow in Echer's methodology.

3rd step: language adaptation

In this step, it was necessary to define the language structure to be included in the proposed manual, in order to serve the target audience. Thus, in the case of health professionals, for adaptation, scientific language was considered, characterized by easy-to-compress and summarized writing.

4th step: illustration inclusion

The inclusion of illustrations seeks to facilitate the understanding of information, as it helps to consolidate content and makes the material attractive.[10,12] Therefore, illustrative figures prepared by the authors are included in the manual. Thus, for each of the human body systems covered in the manual, to present the symptoms of post-COVID conditions, an image with the respective affected target organ (brain, heart, lungs, etc.) was created. In its surroundings, signs and symptoms were described, providing a didactic presentation to professionals.

The study was approved on June 23, 2022 by the Research Ethics Committee, under Opinion 5.485.653 and CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 55337722.0.0000.5564, as required by Resolutions 466/12 and 510/2016 of the Brazilian National Health Council, which deals with research involving human beings.

RESULTS

Considering the method used in the study proposal and the guiding principles, the result comprises a manual that deals with 25 post-COVID conditions, which were the most reported in the previous study carried out by the researchers together with the multidisciplinary team of the aforementioned service. Thus, Figure 1 summarizes the concepts and conceptions involved in this construction.

Figure 1. Founding theoretical bases in the manual construction.
Source: prepared by the authors (2023).

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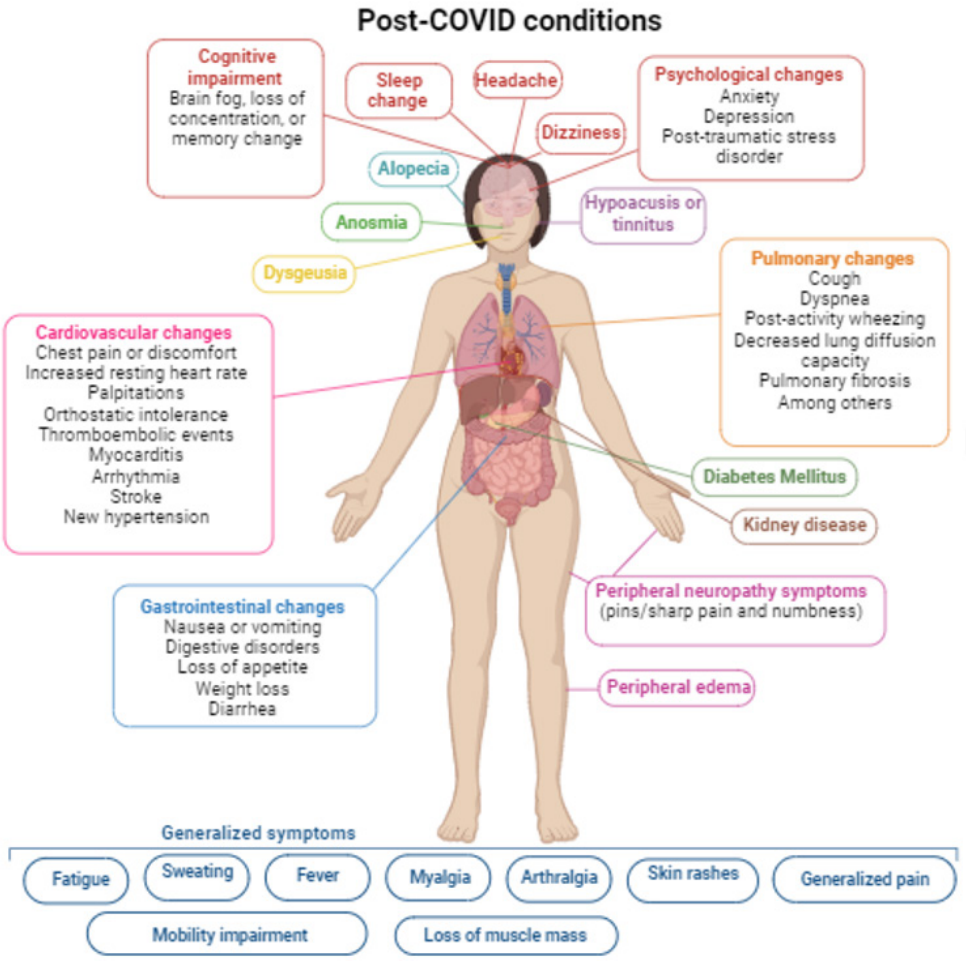

Figure 2. Signs and symptoms of post-COVID conditions.
Source: prepared by the authors (2023).

As for the manual graphic assembly, the result comprised a division between pre-textual elements and textual elements, with pre-textual elements being any and all content developed to facilitate handling the manual by PHC professionals. Therefore, pre-textual elements are illustrative cover, manual presentation, list of abbreviations and manual organization description.

Regarding textual elements, the definition of the term post-COVID conditions was addressed, and how the pathology is codified in the International Classification of Diseases, followed by the presentation of a figure illustrating all of its signs and symptoms (Figure 2).

Subsequently, the post-COVID conditions selected for the manual were presented, separated by body systems or locations of the human body, with their respective illustrative images, such as neurological, psychological/psychiatric, audio vestibular, smell and taste, gastrointestinal, dermatological, respiratory, cardiovascular, endocrine, renal changes and generalized symptoms, followed by a pathophysiological explanation.

Afterwards, each post-COVID condition (sign or symptom) is explained, along with a clinical case, its assessment and management. Furthermore, different colors were used in the titles, present in the textual elements, thus making it possible to quickly find information and icons throughout the manual, with reading suggestions for delving deeper into the topic. Additionally, flowcharts adapted from other literature were used, as can be seen in figure 3.

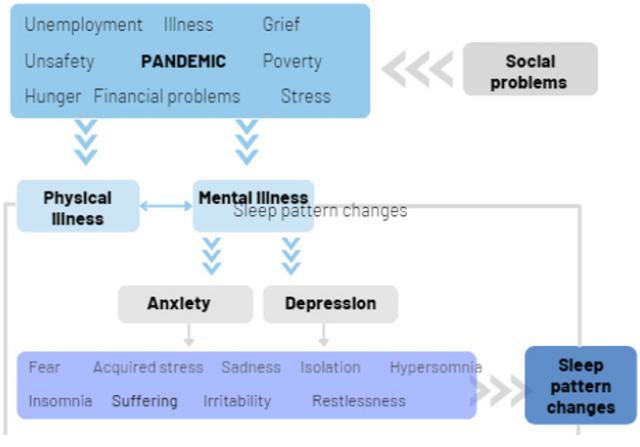

Figure 3. Example of a didactic flowchart of biopsychosocial factors associated with sleep disorders.
Source: prepared by the authors (2023).

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Finally, in certain situations that require specific professional development, materials with specific guidelines were inserted, as can be seen in the following example (Figure 4) by attaching a folder on olfactory training guidelines.

Figure 4. Example of inserting explanatory materials: smell training.
Source: prepared by the authors (2023).

DISCUSSION

The development of a manual for use within the scope of the Brazilian Health System (SUS – *Sistema Único de Saúde*) is a necessary and indispensable resource, characterized as a light technology to be used in the process of Continuing Education in Health (CEH) and/or Health Education.[13] To this end, the initiative and commitment spent on creating an educational manual are not only well received, but also encouraged in the SUS Health Care model.

When considering the relevance, for the health field, of a scientific construction with this educational character, choosing concepts and conceptions to guide its development, such as objectivity, self-explanatory formulation and problematization, combining them with the principles inscribed in PNEPS, there is the selection of information in a material with feasible and positive potential.

That said, Echer (2005)[10] highlights that manuals must contain clear and objective language so that individuals who use them understand what is written. Therefore, the author points out that it is necessary to select which information is really essential to be included in the manual, as it must be attractive and succinct, in addition to having a significant orientation to the proposed topic.

In the same vein as the construction of explanatory materials with clear and objective information, a study carried out in Australia on the development of a manual for people with heart failure points to the importance of using verbal and non-verbal language that facilitates understanding by those involved. Thus, the authors created a manual with a reading level equivalent to that of the 6th grade, also using pictorial visualizations. As a way of assessing the expected understanding, they approached manual users, asking them to present in their own words what they understood about the manual.[14]

By developing a self-explanatory presentation in a manual, as in the case of this study, professionals are able to handle it quickly with immediate responses, helping to understand the symptoms described by users, which assessment procedures should be performed as well as management given the clinical condition presented. This corroborates, therefore, a Cuban study that pointed out that constructing and using a practical guide is essential to provide accurate information and better care, in addition to facilitating clinical decision-making in a shorter time, considering it to be a synthesis tool.[15]

Using images in the constructed manual, in association with each post-COVID condition, provided a visually attractive structure. In line with findings in the literature, in addition to recommending using simple language, it is essential that manuals contain images, with the aim of facilitating communication with the reader and, in this way, making the material more attractive and inviting, since reading and understanding become more simplified and objective.[16]

Furthermore, considering that the proposal embedded in the construction of this educational technology is aimed at health professionals' improvement, production was guided by focusing on the problematizing conceptions of teaching and learning. Thus, from a pedagogical point of view, it is understood that using a proposal with a problematizing nature, which introduces a clinical case for each of the post-COVID conditions, leads professionals to compare the service situation with the situation problematized in the manual, providing greater security regarding the conduct to be agreed upon and greater learning, especially given the fact that the accumulated experience with post-COVID conditions is still incipient.

However, it is argued that using clinical cases for teaching is beneficial, as it arouses interest in learning and improves the capacity for self-learning, clinical thinking, analysis and problem-solving.[17] Still, another study points out that, in the academic scenario, it was observed that teaching approaches based on clinical cases ensure that students have greater self-perceived competence and confidence, compared to students subjected to a traditional teaching model without problematization.[18]

Furthermore, since the manual preparation also took PNEPS as a guiding reference, it is reinforced that health workers' education strategies involve the problematization of their work processes,[19] thus defining one of the methodological bases for learning, together with meaningful and reflective learning.[20]

Authors such as Bordenave and Pereira (1991)[11] discussed in the 20th century the importance of problematization as a teaching and learning strategy, concluding that learning consists of a naturalized human response to a problem situation. These conjectures are deepened by considering that, at the center of the teaching and

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learning process, is the social and individual reality of human life as a guiding axis and trigger for pedagogical practices, and, faced with this reality, there are problems that instigate resolution or improvement.[21]

Therefore, structuring the proposed manual based on real situations tends to assist in the learning process, since, in this way, the final product is not restricted to just a pragmatic listing of post-COVID conditions. Such care taken by researchers finds scientific support in a study where researchers clarify the importance of problematization as a resolving path for clinical training, pointing to the simulation scenario as a real user care environment, which favors and instigates clinical improvement.[22]

Subsequently, it is discussed that educational materials must be adequate in terms of the sequence of content and organization of ideas, prioritizing subjects, using brief, clear and objective writing. Therefore, it is essential that there is a presentation with attractive colors, spacing and choice of the ideal font, in order to allow a language that is accessible to the target audience and facilitates reading.[23] Furthermore, the importance of validating these materials is observed in the literature in order to make their scientificity and applicability legitimate through the reformulation of texts, readjustment of illustrations and adjustments regarding formatting, in order to qualify the constructed product.[24]

Therefore, the signs and symptoms covered in the manual, organized based on changes by systems or locations of the human body, allow professionals to search for the post-COVID condition of interest in a practical way, considering the clinical event that users manifest during care. Manual organization according to the main demands present in the service allows quick and objective access, which can also be facilitated with the use of colors; consequently, this agility will provide safer and more qualified assistance.[25]

Given the above, construction of educational technology became possible and involved the collective, valuing the reality of the service and following the methodological principles guided by Echer for the construction of manuals and PNEPS, in addition to having the ability to guarantee professional development, as it clarifies and updates health professionals on the assessment and management of post-COVID conditions.

Furthermore, the manual construction allows professionals to offer the affected user quality and resolute assistance, minimizing damage to their quality of life. Furthermore, it is expected that the manual will be widely disseminated in the most diverse health spaces, providing support to health professionals.

Finally, it is believed that the manual organization, based on established principles, guaranteed the construction of concise material capable of achieving the objective of professional development. However, as limitations of this study, it is necessary for the manual to go through the validity process, in order to guarantee your qualification; however, even though it is not validated, the manual was produced by experts on the subject who, prior to the manual preparation, made up the proposal construction team.

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