

COVID-19 PANDEMIC: ALTERNATIVES AND OBSTACLES IN THE EDUCATIONAL PROCESS

PANDEMIA DA COVID-19: ALTERNATIVAS E ENTRAVES NO PROCESSO EDUCACIONAL

PANDEMIA DE COVID-19: ALTERNATIVAS Y OBSTÁCULOS EN EL PROCESO EDUCATIVO

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Objective: to identify the implications of the COVID-19 pandemic in the education of higher education students in the health area and to investigate the teaching methodologies adopted by institutions for professional training. **Method:** integrative, descriptive, exploratory and qualitative review. The descriptors: “coronavirus infections”, “pandemics” and “health training” in PubMed and “*infecções por coronavirus*”, “*pandemias*” and “*formação em saúde*” at IBICS and VHL were applied. Selected 13 articles, exposed in summary chart. **Results:** the impossibility of the face-to-face meeting, articulation of teaching bodies and institutions, cancellation of internships and elective classes, shortening of internships, anticipation of graduation and insertion of students in care were identified; teaching methodologies were adopted, such as remote education, application of simulations and lectures, compaction of classes in internships. **Final considerations:** even with the COVID-19 pandemic, higher education in the health area continued with academic activities through remote actions, aiming at the permanence of learning.

Descriptors: Coronavirus Infections. Education, Higher. Pandemic. Health Human Resource Training. COVID-19.

Objetivo: identificar as implicações da pandemia da COVID-19 na educação de discentes do ensino superior da área da saúde e averiguar as metodologias de ensino adotadas pelas instituições para formação profissional. Método: revisão integrativa, descritiva, exploratória e qualitativa. Aplicados os descritores: “coronavirus infections”, “pandemics” e “health training” na PubMed e “infecções por coronavirus”, “pandemias” e “formação em saúde” no IBICS e na BVS. Selecionados 13 artigos, expostos em quadro síntese. Resultados: identificaram-se impossibilidade do encontro presencial, articulação de órgãos e instituições de ensino, cancelamento de estágios e aulas eletivas, encurtamento de estágios, antecipação de formatura e inserção de discentes na assistência; foram adotadas metodologias de ensino, como educação remota, aplicação de simulados e palestras, compactação das aulas em estágios. Considerações finais: mesmo com a pandemia da COVID-19 a educação superior da área da saúde continuou com as atividades acadêmicas por meio de ações remotas, visando a permanência do aprendizado.

Descritores: Infecções por Coronavírus. Educação Superior. Pandemia. Capacitação de Recursos Humanos em Saúde. COVID-19.

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Objetivo: identificar las implicaciones de la pandemia de COVID-19 en la educación de los estudiantes de educación superior en el área de la salud e investigar las metodologías de enseñanza adoptadas por las instituciones para la formación profesional. Método: revisión integradora, descriptiva, exploratoria y cualitativa. Se aplicaron los descriptores: “coronavirus infections”, “pandemics” y “health training” en PubMed y “infecções por coronavirus”, “pandemias” y “formação em saúde” en IBECs y BVS. Selección de 13 artículos, expuestos en cuadro resumido. Resultados: se identificó la imposibilidad de la reunión presencial, articulación de cuerpos e instituciones docentes, cancelación de pasantías y clases electivas, acortamiento de pasantías, anticipación de graduación e inserción de estudiantes en cuidado; se adoptaron metodologías de enseñanza, como la educación a distancia, la aplicación de simulaciones y conferencias, la compactación de clases en pasantías. Consideraciones finales: incluso con la pandemia de COVID-19, la educación superior en el área de la salud continuó con actividades académicas a través de acciones remotas, apuntando a la permanencia del aprendizaje.

Descriptor: Infecciones por Coronavirus. Educación Superior. Pandemia. Capacitación de Recursos Humanos en Salud. COVID-19.

Introduction

In mid-December 2019, statements about the emergence of an outbreak of the new coronavirus in China had great repercussion stem from and became the subject of discussion around the world. Gradually, the other countries were notified about the possibility of infestation and dissemination of the virus, which would have a high degree of transmissibility and lethality. In March 2020, in addition to China, new cases began to emerge in other countries exponentially. The World Health Organization (WHO) declared a public health emergency of international interest, characterizing the situation as a pandemic⁽¹⁾.

Belonging to the Coronaviridae family, SARS-Cov-2 is the agent responsible for causing COVID-19, a pathology that can trigger several respiratory symptoms, having the potential to vary from a simple flu-like to a Severe Acute Respiratory Syndrome (SARS)⁽²⁾.

The crisis experienced in recent months, due to this pandemic, has led the population to reflections that cover all aspects of human life. In this way, it has become notorious that governments around the world are tirelessly investing in public policies, actions and measures that contain the harmful effects of the virus on the biological system of individuals. In addition, the exponential growth of positive cases for COVID-19, the increase in hospitalizations in intensive care unit beds and the high numbers of deaths from the virus have worried the

responsible organs and the population, besides causing panic among individuals, which makes precautionary measures more essential⁽³⁾.

It should be evidenced that, among the measures recognized by the Ministry of Health, social distancing and self-care have become the most effective preventions in the fight against the disease, as well as in other periods of pandemic. However, these precautions brought sudden changes in the routine of individuals, who faced the need to adapt to a new way of living and working, in general, in their own homes. The focus was on the use of technological devices to interact with family and friends, in work activities, such as in the home office and in online teaching. This became a new form for the continuity of academic activities⁽⁴⁾, which needed to be reviewed by institutions, teachers/professors and, mainly, by students, recipients of the final product, resulting in significant changes in teaching and learning behaviors⁽⁵⁾.

Moreover, it is undeniable that the quarantine caused by COVID-19 has caused a global crisis in public and mental health. The World Health Organization (WHO) defines, as healthy, the individual who presents him/herself in physical, mental and social well-being, not only the absence of pathologies or diseases as the only factor to establish his/her health condition. For this, living in society is a powerful determinant for the development of the human being and the maintenance of his/her health⁽⁶⁾.

It was in this direction and observing the magnitude of the problem that the *Conselho Nacional de Educação* (CNE) launched guidelines that approved an opinion for both basic education and higher education during the pandemic. Thus, the education systems were authorized to carry out actions remotely, in order to comply with the mandatory course load⁽⁷⁾. With this, the possibility of developing online studies was created, so as not to harm the student's training process.

All these changes allowed the managers of educational institutions to reinvent the methodologies and pedagogical resources applied to the education center, developing new forms of learning, so that the reliability of past contents is preserved, as well as the quality of learning. Thus, the use of remote methodologies was inserted in this context with an impressive intensity and speed, showing itself to be an extremely important challenge for professors, especially those of health courses, who had to break paradigms and provide students with the sensation of immersion, navigation and interest, even in the midst of a virtual scenario⁽⁸⁾.

In this direction, the following question was asked: What are the implications of the COVID-19 pandemic in the education of higher education students and the alternatives adopted by health institutions present in the scientific literature? Thus, the objectives were: to identify the implications of the COVID-19 pandemic in the education of higher education students in the health area and to investigate the teaching methodologies adopted by institutions for professional training.

Method

This is an integrative review of descriptive, exploratory character with qualitative approach. For this, the proposed steps for an integrative review were followed: identification of the theme and selection of the hypothesis or research question; establishing the inclusion and exclusion criteria of the studies; definition of the information to be extracted from the

studies; evaluation of the included studies (level of evidence); interpretation of the results; and synthesis of knowledge⁽⁹⁾.

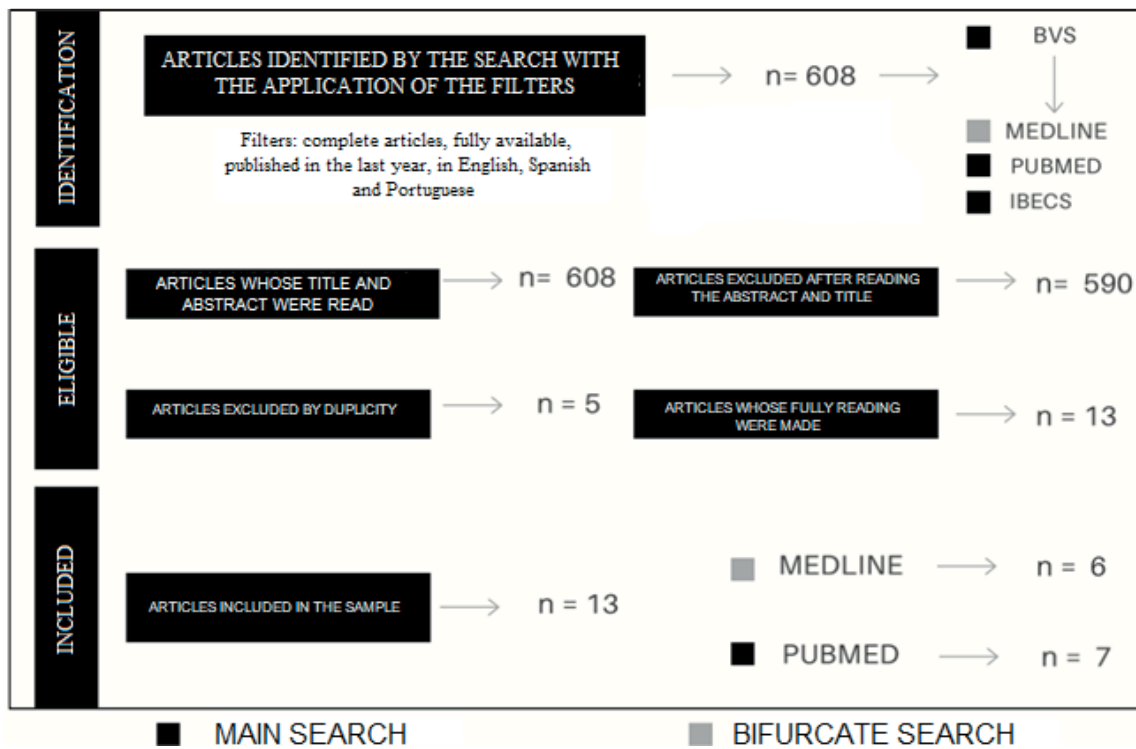
The tracing of the theme and the elaboration of the research question were based on the structure of the acronym PICo used in non-clinical research, in which the P (patient) is about the students, professors and educational institutions, the I (interest) refers to the alternatives adopted and the Co (context) alludes to the pandemic situation experienced due to COVID-19.

Subsequently, the virtual health library (VHL) searched the descriptors “*Coronavirus infections*” AND “*Pandemias*” AND “*Formação em saúde*” (keyword used). In the VHL, 14 articles originated from the Medical Literature Analysis and Retrieval System Online (MEDLINE) database were found. Inclusion criteria were: manuscripts in English, according to the results of the databases, published in the last year (2019 to 2020), fully available. The exclusion criterion was to be duplicated manuscript. After reading the title and abstract, three publications were excluded. Thus, eight articles were selected. The search was also performed at the Bibliographic Index of Health Sciences (IBECS) platform, applying the same descriptors and the keyword, but no results were obtained.

Then, the descriptors and keyword were applied in PubMed Central (PMC) associated with the Boolean operator “AND”: “*Coronavirus infections*” AND “*Pandemics*” AND “*Health training*”, resulting in 853 publications. After applying the inclusion criteria, 594 scientific documents remained. After reading the title, 24 articles remained; 11, after reading the abstracts; and, in the end, 7 articles were selected.

Thus, at the end of the selection stage, a total of 16 articles were obtained. However, three were in more than one database. With this, the sample of the present study totaled 13 scientific articles. Taking into account the six steps for the construction of an integrative review, the levels of evidence were classification following the GRADE mode, for better sample seriation.

Figure 1 shows the process of selection of articles:

Figure 1 – Selection of articles

Source: Created by the author.

Results

The data were organized in a chart of categorization of the papers, taking into account criteria such as title, level of evidence, country, course and implications of the pandemic for

education, as well as the alternatives adopted. Soon after, in the discussion, the critical analysis of the content brought by the articles and cited will be undertaken, as well as the synthesis of the findings.

Chart 1 – Description of the studies regarding the title, level of evidence, country, course and implications of the pandemic in relation to education and adopted alternatives (continued)

Title of the study	Level of evidence	Country	Course	Implications/adopted alternatives
The coronavirus (COVID-19) pandemic: Adaptations in medical education ⁽⁸⁾	Level II	United Kingdom	Medicine	The tests were performed through the exposure of videos and images; some students had the option to advance exams, take exams remotely or cancel; cancellation of elective internships.
The current effects of the spread of COVID-19 in learning environments involving Japanese college students: What is the state of those environments elsewhere in the world? ⁽¹⁰⁾	Level II	Japan	University students	Classes started to be online and the situation at COVID-19 awoke a feeling of giving up for students, due to the financial situation.

Chart 1 – Description of the studies regarding the title, level of evidence, country, course and implications of the pandemic in relation to education and adopted alternatives (continued)

Title of the study	Level of evidence	Country	Course	Implications/adopted alternatives
Impact of Sars-Cov-2 And Its Reverberation in Global Higher Education And Mental Health ⁽¹¹⁾	Level II	Brazil	University students	The conversion of face-to-face teaching into online teaching caused stress, anxiety and depression in students.
The impact of the COVID-19 pandemic on final year medical students in the United Kingdom: a national survey ⁽¹²⁾	Level IV	United Kingdom	Medicine	Online tests, cancellation or shortening of internships.
Coalition for medical education-A call to action: A proposition to adapt clinical medical education to meet the needs of students and other healthcare learners during COVID-19 ⁽¹³⁾	Level V	United States	Medicine	Use of platforms such as Zoom and WebEx for lectures and simulations, especially for students from the 3rd year of medicine onwards.
Pedagogical foundations to online lectures in health professions education ⁽¹⁴⁾	Level II	Australia	University students	Online classes brought concerns mainly related to content absorption, due to the possibility of being in other activities simultaneously.
Nepalese Medical Students in the COVID-19 Pandemic: Ways Forward ⁽¹⁵⁾	Level VII	Nepal	Medicine	Early graduation; students put to act on the front line against COVID-19, exposing them to risks of contamination, physical and psychological stress.
Using Technology to Maintain the Education of Residents During the COVID-19 Pandemic ⁽¹⁶⁾	Level II	United States	Surgical Residency	Continuation through online platforms, with simulation of procedures and surgical videos.
Coronavirus Disease 2019 (COVID-19) and Radiology Education-Strategies for Survival ⁽¹⁷⁾	Level V	United States	Radiology	Use of technologies for didactic teaching and case discussion through articles and sending images for better accuracy.
COVID-19 pandemic: Beyond medical education in Brazil ⁽¹⁸⁾	Level II	Brazil	Medicine, nursing, physical therapy and pharmaceuticals	Temporary suspension of classes, by public institutions, due to the social vulnerability of students.
Practical approaches to pedagogically rich online tutorials in health professions education ⁽¹⁹⁾	Level II	Australia	University students	The inverted classroom allowed the students themselves to become the protagonists, in addition to promoting better interaction between students and teachers. It was a teaching strategy to attract the attention of students in online education.

Chart 1 – Description of the studies regarding the title, level of evidence, country, course and implications of the pandemic in relation to education and adopted alternatives (conclusion)

Title of the study	Level of evidence	Country	Course	Implications/adopted alternatives
Medical genetics education in the midst of the COVID-19 pandemic: Shared resources ⁽²⁰⁾	Level II	United States	Medicine	Through images, the students anonymously indicated abnormalities through the Zoom platform chat.
Adapting to a new reality: COVID-19 coronavirus and online education in the health professions ⁽²¹⁾	Level II	Australia	University students	New challenges in the implementation of online classes, such as well-being, health, safety and discipline. It was important to carry out videoconferences for better interaction.

Source: Created by the author.

Discussion

After evaluation of the manuscripts, studies of level of evidence II, IV, V and VII were also identified. There was also variation in the geographic scale, presenting in the United States, Brazil, Japan, United Kingdom, Australia and Nepal, with population samples from the courses of medicine, nursing, radiology, physiotherapy, pharmacy and residents in surgery. Thus, in view of the challenges imposed by the circumstances, it was possible to observe a certain heterogeneity in the means used by students and institutions to facilitate learning by electronic means.

COVID-19 originated in Wuhan City, China. Since its inception, governments have recommended that citizens use the remote system for their activities of craft and teaching. Thus, due to the fall in the economy, many people had their income reduced. This fact triggered, in the students, thoughts of withdrawal or even discontinuity of their courses, because, in view of the process of change they began to experience, they believed in the impossibility of supporting themselves financially during the pandemic. Therefore, it has become necessary to articulate social entities to arrive at alternatives and solutions for the teaching sector, since a fall in the scientific production of a country also means a return to the very solutions of the current epidemiological picture⁽¹⁰⁾.

Thus, considering this reality, many educational institutions remained closed, to ensure the safety of students, professors and civil workers. Faced with this reality, online teaching has become an alternative for learning, despite its difficulties. Many students did not have access to the Internet and also did not have technological tools to attend classes, due to the social and economic inequalities of the countries, especially in Brazil. Other aspects little explored in the existing literature on the impacts of COVID-19 are the psychological problems that may arise from this stop of educational activities. Anxiety and stress, for example, are feelings shared by the community and, therefore, the stoppage of activities and uncertainty about the epidemiological picture can be harmful⁽¹¹⁾.

Studies conducted mention the use of online platforms, such as Zoom and WebEx, to perform health education, as well as the applicability of simulations and lectures for students⁽¹²⁻¹³⁾. Also highlighting the practice of compaction of classes in internships, they explained the implementation of the tests of the disciplines, through the exposure of videos and images⁽¹⁴⁾.

Alternatively, several teaching methods can be applied online. However, it is necessary that the content covered is intended to involve the student and make the learning process more accessible. That is, the use of active methodologies emerges as a fundamental pillar,

so that there is success in the classes. Thus, the pandemic period experienced challenged those involved in the educational process and invited them to apply the knowledge acquired through didactic and remote approaches. With this, it promoted a more comfortable learning environment for students⁽¹⁵⁾.

Thus, given the great urgency before the epidemiological picture of COVID-19 and the need for professors to act in this reality, it was necessary to think about such measures in health education⁽⁸⁾. Thus, many educational institutions had to cancel their internships and practical classes and had to adapt to the remote reality, with the use of online tools, indispensable in the epidemiological scenario, because it is difficult to imagine the resumption of activities. In view of this, this crisis can serve as an impulse for the planning of a more innovative and adaptive professional education to contemporary learning⁽¹³⁾.

In the United Kingdom, for example, through an investigation with medical students from the last year of the course, they sought to understand the main impacts caused by the pandemic situation in teaching. It was inferred that many internships and elective classes were canceled, due to the impossibility of performing, but most of them also agreed that assistance in hospitals, in view of this reality, would be of great importance for learning. Thus, it was understood that maintaining activities, as before the current epidemiological picture, would be harmful and, therefore, the use of remote activities, such as courses, lectures and voluntary internships, would be more indicated⁽¹²⁾.

In a study conducted in Nepal, it was observed that medical students had their graduation anticipated and others were directed to work on the front line of COVID-19⁽¹⁵⁾.

It was evident that universities began to adapt to the new reality and this, to a large part, was through online tools. Therefore, the study stated that the education of residents would be impaired if it were completely paraded, since the training of more health professionals would be at risk. The authors also emphasized that, as much as it did not compared to practical teaching, universities

would need to adapt to remote learning, through the use of videoconferences, online classes and even telemedicine⁽¹⁶⁾.

Another study showed that, in addition to the commitment to maintain the effectiveness and quality of the radiology service provided to patients, in view of the COVID-19 pandemic, it would also be necessary to ensure the continuity of training, given the need for the labor market. Thus, it was found that it would be of fundamental importance to implement and use remote tools. Such changes were made possible through the consistency and continuation of clinical learning based on clinical case discussions and debates at online platforms and the continuity of learning with a more creative perspective, meeting educational needs. Moreover, the use of a virtual database for case analysis and the interdisciplinarity of areas and roles were resources that universities began to use⁽¹⁷⁾.

In this sense, it was understood that the COVID-19 pandemic configured a new reality of life for individuals, since they had to adapt mandatorily to the measures of distancing. Thus, the education system also had to adapt to remote modalities, since the face-to-face meeting became impossible⁽¹⁸⁾.

In this study, especially in emerging countries, with underdeveloped economies, there was a concern with professional training in general, in view of the situation experienced, which proved to be quite adverse. Therefore, it was noted that Brazil, because it has most of its training centered on public institutions that sometimes present a structural deficit for remote education, could suffer from the little adaptability and scarcity of resources for contingent measures during the pandemic⁽¹⁸⁾.

Moreover, research has observed many difficulties of adaptation in remote teaching, since educators cannot use methods used in classroom classes to capture the student's attention on the theme addressed. In online classes, the student sits with mobile devices and numerous distractions competing for attention. Thus, it is perceived that there is an impairment in the educator's ability to develop a relationship with the students, because this causes the

identification of motivations, difficulties and experiences not to be explicit as occurs in face-to-face discussions⁽¹⁹⁾.

The identification of a large number of countries affected by the consequent changes in the pandemic situation reveals the deficits in health systems in countries with scarcity of resources. Therefore, many had to reinvent their forms of transmission of teaching and construction of knowledge, in view of the reality experienced. It was clear, however, that many creative measures also emerged from the students themselves. As an example, there is the case of Nepal, one of the countries, thus far, less affected, but which a posteriori could suffer an epidemic, also articulated students and Ethical Councils, to act in prevention and health promotion, through collaborative measures of different administrative entities, aiming at reducing the impact of the virus in the country⁽¹⁵⁾.

As seen, in the course of the pandemic crisis, many aspects of modern life have changed and the global educational system could not be different. It was necessary to reinvent and develop teaching options⁽²⁰⁾. Remote education gained space and proved effective as much as the conventional way. Although face-to-face learning remains a very important component in academic and curricular education, this modality could become another viable and effective option during this period. It is worth mentioning that the content and methodologies applied must meet the requirements of health and education authorities, as well as follow the teaching plan designated for each area⁽¹³⁾.

With this study, it was believed that the adaptive process had repercussions on people's lives, especially with regard to social distancing. However, it is worth noting that the extension of measures against the return of face-to-face classes can be harmful to individuals locked in their homes⁽²¹⁾. In this sense, the new reality may imply impacts on the mental health of students, considering the uncertainties experienced in the current conjuncture, which may imply the worsening of anxious and depressive conditions, because they are considered the most recurrent disorders in this public⁽¹¹⁾.

In view of the type of study, some limitations were observed. Among them, the one that stood out the most was the scarcity of manuscripts in the databases, to support a broader and more complex sample. This fact occurred because it is a recent and unexpected subject, both for the general population and for researchers in the area.

However, the research allowed the analysis of the various educational methods adopted by different countries, compiling alternatives that can be used by institutions of other nationalities. Because it is an integrative study, it allowed the analysis of several studies of the most diverse methodological approaches, serving as a complementary basis for future studies with higher levels of evidence.

Final considerations

The scenario caused by the COVID-19 pandemic and the emergency situation of adaptation of health education, which is based both on the continuity of academic activities and on the shortness of training, the need was felt for the articulation of various organs and institutions to trace remote teaching actions, aiming at the permanence of learning, in order to avoid the delay in professional training.

The alternatives implemented in several countries were numerous. The digital platforms were the most cited in the manuscripts, ranging from more dynamic and innovative options and methods previously used in a complementary way in the process of face-to-face training.

Another point identified in this investigation was that the pandemic allowed the insertion of some students from the health area in care, helping, in the care process, now emergency, of patients affected by COVID-19, either in the front line, in primary, secondary or tertiary health care.

The methodological changes, through the use of online platforms, such as Zoom and WebEx, for the execution of health education, as well as the applicability of simulations and lectures to students, the practice of compaction of classes in internships and the implementation of the exams of the disciplines, through the exposure

of videos and images, as well as benefits, they also brought reflections about the psychological consequences that were accentuated and sometimes related to the picture of changes that came to light and were associated with COVID-19, as was the case of social distancing, total participation of students to such methodology, shortening of stages, among other questions, according to the literature addressed.

In view of these findings, it was perceived the need to conduct more qualitative and quantitative studies for a broader and more solid synthesis of such items mentioned in the first articles produced, besides being necessary to identify the most diverse modes of methodological approaches of institutions and organs. Moreover, it is necessary to have a greater understanding of the positive and negative consequences of such adaptation, in a more comprehensive and concise way, which can favor and contribute to a refinement of the adaptive and complementary process in health learning.

Collaborations:

1 – conception, design, analysis and interpretation of data: Hevillyn Cecília Ventura Barbosa and Kalyne Araújo Bezerra;

2 – writing of the article and relevant critical review of the intellectual content: Hevillyn Cecília Ventura Barbosa, Maria Karoline Santos Lima, Maëly Cristinne Ventura Barbosa and José Arthur Guimarães dos Santos;

3 – final approval of the version to be published: Elisângela Braga de Azevedo.

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