Original Article

ORIENTA COVID-19 app

Aplicativo ORIENTA COVID-19

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■ **ABSTRACT**

Objective: Develop an application to guide health professionals during home care in coping with the COVID-19 pandemic. **Method:** The structure of the application was developed in four stages: Analysis - an integrative literature review was carried out with the Health Sciences databases, such as MEDLINE, SciELO, and LILACS. Design - this step involved planning and producing didactic content, defining topics and writing subjects, selecting media, and designing the interface (layout). Development - definition of the navigation structure and planning of the configuration of environments. Implementation - construction of an environment for downloading the application on the Internet. **Results:** The ORIENTA COVID-19 application has 40 screens and 130 images describing gowning, and undressing of PPE, including using a homemade mask, guidelines for care to prevent COVID-19, and social etiquette. After registration at the National Institute of Industrial Property, it will be available on the Google Play Store under ORIENTA COVID-19. **Conclusion:** After an integrative review of the literature obtained from the main databases, the ORIENTA COVID-19 application was developed to support health professionals during home care related to COVID-19.

Keywords: COVID-19; SARS-CoV-2; Mobile applications; Personal protective equipment; Family health strategy; Nursing care; Tertiary healthcare.

■ **RESUMO**

Objetivo: Desenvolver um aplicativo para orientar os profissionais de saúde durante o atendimento domiciliar, no enfrentamento da pandemia da COVID-19. **Método:** A estrutura do aplicativo foi desenvolvida em quatro etapas: Análise - foi realizada uma revisão integrativa da literatura junto às bases de dados das Ciências da Saúde, como: MEDLINE, SciELO e LILACS. *Design* - esta etapa envolveu o planejamento e a produção do conteúdo didático, a definição dos tópicos e a redação dos assuntos, a seleção das mídias e o desenho da interface (*layout*). Desenvolvimento - definição da estrutura de navegação e o planejamento da configuração de ambientes. Implementação - construção de um ambiente para *download* da aplicação na Internet. **Resultados:** O aplicativo ORIENTA COVID-19 tem 40 telas e 130 imagens descrevendo a paramentação, desparamentação dos EPIs incluindo a técnica do uso da máscara caseira, orientações dos cuidados para prevenir a COVID-19 e a etiqueta social. Após seu registro no Instituto Nacional da Propriedade Industrial, estará disponível no Google Play Store sob o nome ORIENTA COVID-19. **Conclusão:** Após revisão integrativa da literatura obtida nas principais bases de dados, desenvolveu-se o aplicativo ORIENTA COVID-19, para apoio aos profissionais da saúde durante o atendimento domiciliar relacionado à COVID-19.

Descritores: COVID-19; SARS-CoV-2; Aplicativos móveis; Equipamento de proteção individual; Estratégia saúde da família; Cuidados de enfermagem; Atenção terciária à saúde.

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Conflicts of interest: none.

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INTRODUCTION

Respiratory secretions and saliva transmit COVID-19. Some precautions are indicated to avoid contamination and transmission to other individuals, such as: covering your mouth when coughing or sneezing, washing your hands regularly, and avoiding touching your face, especially in the area of eyes, nose, and mouth[1,2].

The performance of health professionals who provide home care goes beyond hospital environments. Many work in the patients' homes and, in this health context, home patients are generally those with acute, chronic, re-aggravated conditions, in palliative care, with respiratory syndromes, neurological disorders, hypertension, and diabetes more susceptible to the COVID-19 virus.[3,4]

Professionals who provide home care must have technical-scientific knowledge that goes beyond those learned during professional training, as entering the home and developing care actions requires much more than knowing and acting. This is because the care is performed in a space controlled by the patient and his family, and the health professional is a mere guest[3,4].

There is a need for health professionals to strictly observe the precautions standardized by the Ministry of Health in order to minimize transmission. It is recommended that the use of personal protective equipment (PPE) be adopted by all health professionals involved in home care and that all patients, family members, and caregivers are advised on the measures to be used to prevent infection COVID-19[5,6].

In this sense, it is important to build and validate applications that provide professionals with appropriate information on the use of PPE and measures to prevent the spread of COVID-19 infection for patients, family members, caregivers, and communities. Thus, when using this technology, the professional will safely provide damage-free care with minimal risk to the patient, avoiding contamination.

An application is a software with a specific function capable of assisting in a given task. Smartphones are important tools, as most of the population has them, and they are almost always available due to their portability[7].

The use of computational tools in the health area is expanding, as this type of support can provide professionals with greater precision and agility in their work. Concerning assistance in the health area in Brazil, the adoption of technological resources has been a growing factor since the 1960s, with the scientific foundation of the profession[8-10].

This research is part of a project to develop a mobile application for health professionals, providing information about the techniques for using PPE and the guidelines that must be provided to patients, family members, and caregivers to prevent the spread of COVID-19 for family members, caregivers, and the community. Thus, when using this technology, the professional who provides care at home will provide harm-free, safe, and risk-free care for the patient, family members, caregivers, and the community.

OBJECTIVE

Develop an application to guide health professionals during home care in the fight against the COVID-19 pandemic.

METHOD

The study applied the modality of technological production based on software engineering of the methodological development research type. The study was developed at the University of Vale do Sapucaí from February to March 2020.

The study was approved by the Research Ethics Committee of the Faculdade de Ciências da Saúde Dr. José Antônio Garcia Coutinho (Opinion No. 4,472,241).

For the construction of the ORIENTA COVID-19 application, the methodology relevant to Contextualized Instructional Design was used, which involves a constructivist proposal and consists of the intentional action of planning, developing, and applying specific didactic situations, incorporating mechanisms that favor contextualization[11,12]. The construction of the ORIENTA COVID-19 application followed the following steps:

First step: Analysis

An integrative literature review was performed. The following steps were delimited for the development of the research: identification of the theme and selection of the research question; the establishment of criteria for the inclusion and exclusion of studies; defining the information to be extracted from the selected studies and categorizing the studies; the evaluation of the studies included in the integrative review; the interpretation of the results, presentation of the review; and the synthesis of knowledge[12].

The theme was "Application to guide health professionals in coping with the COVID-19 pandemic during home care".

The objective was to answer the following guiding question: What are the personal protective equipment and the correct techniques to use during home care of patients with COVID-19?

What should preventive measures available in the literature be provided to patients, family members,

and caregivers to prevent the spread of COVID-19 to family members, caregivers, and the community?

For the construction of an adequate question for the resolution of the researched clinical question, the PICO13 strategy was used, with "P" corresponding to the population (a health professional who attends at home); "I" to intervention (technique of PPE and undressing and preventive measures that professionals should use during home care related to the transmission of COVID-19); "C" for comparison (does not apply, as this is not a comparative study) and "O" for an outcome (application protocol).

An integrative literature review was carried out with the Health Sciences databases: (MEDLINE), Scientific Electronic Library Online (SciELO), and Latin American and Caribbean Literature in Health Sciences (LILACS).

The descriptors controlled in Health Sciences were COVID-19, personal protective equipment, family health strategy, and home care. Depending on the searched base, the search strategy occurred from its different combinations, adopting the Boolean AND operator in Portuguese, Spanish, and English.

The following inclusion criteria were adopted for the selection of publications: only primary studies directly connected with the theme; be available in full, original articles published between 2015 and 2020.

As exclusion criteria: theses, dissertations, monographs, technical reports, and articles that, after reading the abstract, are not related to the proposed object of study, and publications that are repeated in the databases.

The titles and abstracts were read independently by two authors of the study in question to ensure that the texts contemplated the guiding question of the review and met the established inclusion criteria. In case of doubt regarding the selection, it was decided to initially include the publication and decide on its selection only after reading its entire content.

To classify the level of evidence of the selected studies, the categories of the Agency for Healthcare Research and Quality were used, which cover six levels: Level 1: evidence resulting from the meta-analysis of multiple controlled and randomized clinical trials; Level 2: evidence obtained from individual studies with an experimental design; Level 3: evidence from quasi-experimental studies; Level 4: evidence from descriptive studies (non-experimental) or qualitative approach; Level 5: evidence from case reports or experience; Level 6: evidence based on expert opinion.

Chart 1 presents the articles selected during the integrative literature review to develop the ORIENTA COVID-19 application, which were classified according to the level of evidence.

Second step: Design

This step involved planning and producing didactic content, defining topics and writing subjects, selecting media, and designing the interface (layout). We opted for using texts, drawings, photos, and videos structured in topics. The didactic contents addressed in the application were distributed in the following phases:

Phase 1 - COVID-19 infection

Information was provided on the definition, type, signs, and symptoms of COVID-19 and preventive measures recommended by the World Health Organization.

Phase 2 - Use of Personal Protective Equipment by health professionals during the COVID-19 pandemic

At this stage, the definition of PPE was provided; thus, the types of PPE recommended by the World Health Organization should be used when providing care to patients with COVID-19.

We will also seek well-defined instructions on the correct techniques for donning and undressing PPE during home care, which must be carried out systematically to prevent the professional from contracting the infection.

Phase 3

The second phase will consist of preventive measures that professionals should guide patients, family members, caregivers, and the community during home care to avoid contamination and transmission of the COVID-19 infection.

Third stage: Development

Understood the selection of the application's tools, the definition of the navigation structure, and the planning of the configuration of environments. A decision tree was built to guide the professional system analyst regarding the construction of the application.

Fourth step: Implementation

The configuration of tools and educational and technological resources was prepared, as well as the construction of an environment for downloading an application on the Internet and installing it on a mobile device, which will be available for free on the Play Store.

RESULTS

During the integrative literature review, 9,982 articles were identified in the LILACS, PUBMED, and SciELO

databases. After exclusion, 19 articles were selected to develop the ORIENTA COVID-19 application (Figure 1).

The application has 40 screens and 130 images describing clothing and undressing of PPE, including the technique for using a homemade mask, care guidelines to prevent the transmission of COVID-19, and social etiquette. Examples of application screens are shown in Figure 2.

DISCUSSION

Many applications are available online, including everything from fitness systems to monitoring and controlling the most diverse diseases. When well designed, they are didactic and educational tools that can benefit patients and health professionals[10,31,32].

The application developed in this study sought to meet the needs and clarify doubts of health professionals who are at the forefront of home care, offering information about the types and correct techniques for using PPE and measures to prevent and avoid contamination and transmission of the infection caused by COVID-19 among professionals, patients, families, caregivers, and communities.

The use of applications as a tool for therapeutic, preventive, and diagnostic procedures is quite innovative and capable of generating interest and motivation for learning since the mobile devices that host these applications are used by 45% to 85% of health professionals or caregivers, being consulted more than books and magazines[10,29-32].

An application developed by health professionals should be built to manage care, indicate preventive measures and assist in formulating the diagnosis, and provide subsidies for a clinical assessment of risk factors for developing a disease or complication[10,31,32].

The ORIENTA COVID-19 application was developed after an integrative literature review. It can be considered a technological innovation in health as it is the first mobile application produced in Brazil to support health professionals during home care, bringing benefits to health professionals, caregivers, and patients assisted, and providing guidance that should be provided during the COVID-19 home visit,

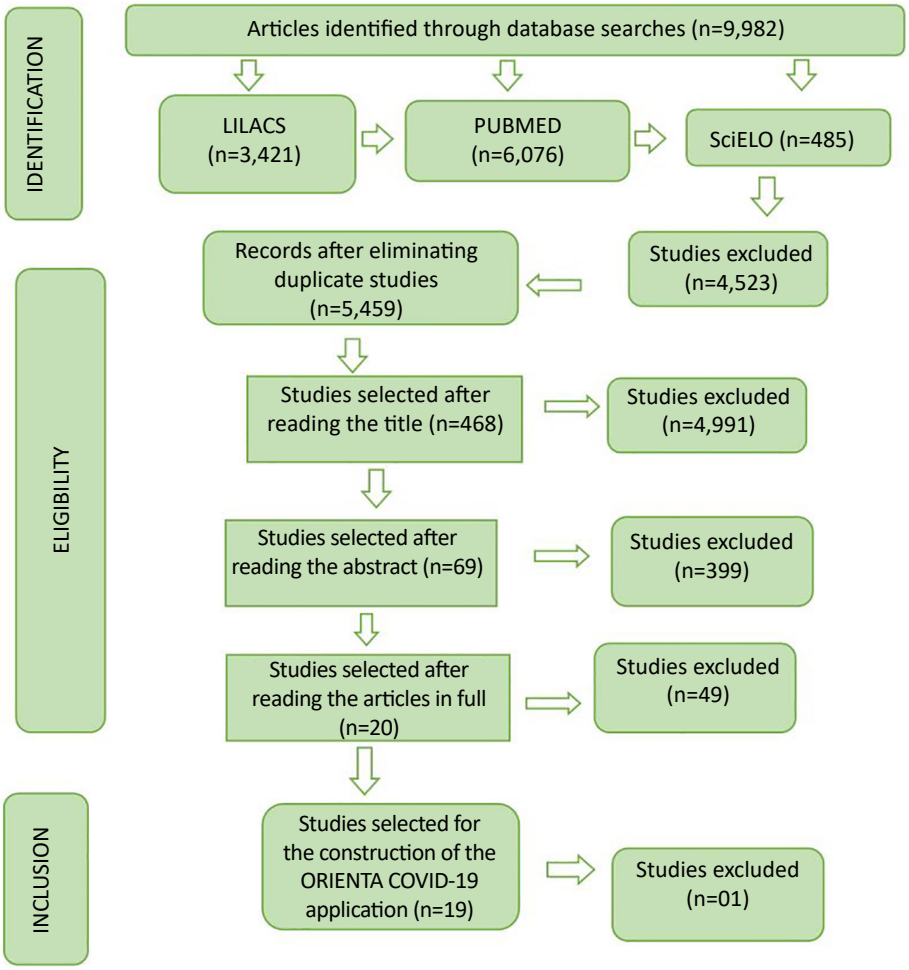

Figure 1. Flowchart of the studies' identification, selection, and inclusion process, prepared based on the PRISMA recommendation. Pouso Alegre, MG, Brazil, 2021.

Figure 2. Screen examples of the ORIENTA COVID-19 application. (A) Summary with hyperlinks to the subjects addressed; (B) Recommendations for home care; (C) Screen related to the choice of personal protective equipment and gowning and undressing techniques; and (D) Mask care during use and after removing it. Pouso Alegre, MG, Brazil, 2021.

thus avoiding the transmission of the infection to the relatives of the patients assisted and to the community.

Applications must be built scientifically, so the application favors the execution of the correct technique and general care, systematic and individualized care recording, enabling safe assistance[30-32].

The ORIENTA COVID-19 application allows quick access to information on the main national and international guidelines during home visits through smartphones and tablets. It assists the professional in data collection, guidance related to signs and symptoms, and preventive measures to avoid the transmission of COVID-19. It also offers which PPE should be used by professionals during home visits and the technique of gowning and undressing. It also contributes to the professional's routine, increasing their scientific knowledge, as it puts an up-to-date tool in the professional's pocket that helps clinical practice develop actions to prevent complications, damages, and risks.

CONCLUSION

After an integrative review of the literature obtained from the main databases, a multimedia application was developed on a mobile platform called ORIENTA COVID-19 to support health professionals during home care related to signs and symptoms, preventive measures to prevent the spread of COVID-19 among professionals, family members, caregivers, the community and guide the use of personal protective equipment.

The application developed in this study can potentially reduce adverse events, assisting with minimal risk, damage, and greater safety and quality, but its update will be carried out according to new evidence.

COLLABORATIONS

JRA Analysis and/or data interpretation, Conception and design study, Data Curation, Final manuscript approval, Formal Analysis, Funding Acquisition, Methodology, Project Administration, Realization of operations and/or trials, Software, Validation, Writing - Original Draft Preparation.

GMS Analysis and/or data interpretation, Final manuscript approval, Methodology, Supervision, Validation, Visualization, Writing - Original Draft Preparation, Writing - Review & Editing.

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