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Original article

Production and validation of a digital booklet on the use of masks in the COVID-19 pandemic context

Produção e validação de cartilha digital sobre uso de máscaras no contexto pandêmico da COVID-19

Producción y validación de un folleto digital sobre el uso de mascarillas en el contexto pandémico de la COVID-19

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Abstract

Objective: To produce and validate a digital booklet on the use of masks in the COVID-19 pandemic context. **Method:** An online methodological study was conducted, comprising the following steps: search for themes and theoretical study, creation of the digital booklet, expert validation, adjustments following expert validation, validation by the target audience (general population), adjustments following validation by the target audience, and publication. Validation was based on a satisfactory Content Validity Index (CVI) of ≥0.70. **Results:** The booklet "Safe Use of Masks: How to Protect Myself and Others" was produced and validated by 20 specialists and 19 target audience members, with an overall average CVI of 0.99. The content and appearance were validated with indices ranging between 0.94 and 1.00. **Conclusion:** The booklet is valid and appropriate, assessed as a motivating educational technology that is easily understandable regarding mask use, contributing to increasing the population's knowledge in the pandemic context.
Descriptors: COVID-19; Health Education; Validation Study; Masks; Educational Technology

Resumo

Objetivo: produzir e validar cartilha digital sobre o uso de máscaras no contexto da pandemia da

COVID-19. **Método:** estudo metodológico realizado via *online*, nas etapas: busca dos temas e estudo teórico, elaboração da cartilha digital, validação por especialistas, adequação após avaliação dos especialistas, validação pelo público-alvo (população em geral), adequação após avaliação pelo público-alvo e disponibilização da cartilha. Para validação, considerou-se o Índice de Validade de Conteúdo (IVC) satisfatório ≥0,70. **Resultados:** cartilha "Uso seguro de máscaras: como proteger a mim e ao outro" foi produzida e validada por 20 especialistas e 19 representantes do público-alvo, com IVC médio global de 0,99. Os itens foram validados quanto ao conteúdo e aparência, apresentando índices entre 0,94 e 1,00. **Conclusão:** a cartilha é válida e adequada, avaliada como uma tecnologia educacional motivadora e de fácil compreensão sobre o uso de máscaras, contribuindo para a ampliação do conhecimento da população no contexto pandêmico.
Descritores: COVID-19; Educação em Saúde; Estudo de Validação; Máscaras; Tecnologia Educacional

Resumen

Objetivo: Producir y validar un folleto digital sobre el uso de máscaras en la pandemia COVID-19. **Método:** Estudio metodológico online, con búsqueda de temas y estudio teórico, elaboración del folleto digital, validación por especialistas, ajustes tras la evaluación de especialistas, validación por público (población en general), ajustes tras la evaluación del público y publicación. La validación fue basada en Índice de Validez de Contenido (IVC) ≥0,70. **Resultados:** El folleto "Uso seguro de máscaras: cómo protegerme a mí y a los demás" fue producido y validado por 20 especialistas y 19 representantes del público, con un IVC promedio de 0,99. Los elementos fueron validados en cuanto a contenido y apariencia, presentando índices entre 0,94 y 1,00. **Conclusión:** El folleto es válido y apropiado, evaluado como una tecnología educativa motivadora y clara sobre el uso de máscaras, contribuyendo a ampliar el conocimiento de la población en la pandemia.
Descriptores: COVID-19; Educación en Salud; Estudio de Validación; Máscaras; Tecnología Educacional

Introduction

Due to the rapid spread of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the agent responsible for coronavirus disease 2019 (COVID-19), health authorities recommended adopting measures to combat the disease, such as physical distancing, respiratory etiquette, hand hygiene, and mask use, particularly where population distancing was not feasible.[1-2]

Population attitudes and practices towards COVID-19 determined the adoption of recommended behavioral changes advised by health authorities. These preventive behaviors require individuals to possess knowledge, skills, and motivation for proper implementation. The use of masks has proven to be an effective protective measure, as

seen in previous outbreaks like severe acute respiratory syndrome (SARS) in 2003 and Middle East Respiratory Syndrome (MERS) in 2012.[3]

However, a concurrent global epidemic of misinformation emerged alongside the COVID-19 pandemic.[4] Seeking information from official and unofficial sources, along with information overload regarding this health issue, made it challenging to differentiate between true and false elements, becoming a significant public health problem. Consequently, access to accurate information was compromised, leading to low adherence or incorrect adherence to COVID-19 prevention measures.[4-5]

In this directive, evidence-based health information is an essential component for individual and community education. This form of communication must reach all segments of the population to raise awareness about disease transmission and prevention, especially concerning proper mask use. Additionally, due to the virus's high transmissibility and mutation, variants have emerged posing a public health risk, resulting in new disease outbreaks,[6] reinforcing the need for public awareness regarding mask use. Thus, employing digital tools such as informative booklets, videos, posts, games, and websites constitutes an effective strategy to disseminate knowledge and support health education activities.[2,7]

Within the healthcare and nursing practice, research involving the construction and validation of educational technologies like booklets,[2,7-8] videos,[9] and games[10] is being developed. These resources are innovative instruments used in health prevention and promotion. Studies conducted by nursing professionals represent innovative knowledge production by developing and validating educational technologies, which can strengthen and broaden health education processes for care and self-care.[8-9,11]

Mask usage reflects the pandemic's impact on people's daily lives, especially in Western countries where this practice was not customary. Consequently, health concerns and preventive measures, particularly mask usage, have become part of everyday behavior in combating COVID-19 and its new variants, proving effective against other respiratory ailments.[12-13] Thus, this research on health education resources focusing on mask use is justified, crucial for post-COVID-19 health prevention and promotion, as other respiratory-transmitted viruses are subjects of investigations with potential epidemic and pandemic implications, such as the monkeypox virus.[14]

Creating and validating an educational technology to promote public health education regarding proper mask usage and handling is crucial. The use of educational materials with accessible language can positively influence mask-wearing practices. Additionally, the COVID-19 pandemic has taught critical lessons for public health, emphasizing the need to invest in prevention and prepare both the healthcare system and the population for tackling new events involving transmissible pathogens, especially those transmitted through respiratory means.

Therefore, the aim of this study was to produce and validate a digital booklet on the use of masks in the COVID-19 pandemic context.

Method

A methodological study was conducted to construct and validate an educational health technology presented as a digital booklet for promoting and ensuring proper mask usage during the COVID-19 pandemic, carried out online from June 2021 to June 2022. The booklet was developed as part of the research titled "Multinational Study on the Practice of Facial Mask Use Among the General Public During the COVID-19 Pandemic," at the Federal Fluminense University in Rio das Ostras.

This study encompassed seven stages: 1) Search and theoretical study; 2) Development of the digital booklet; 3) Expert validation of the digital booklet; 4) Adaptation of the booklet based on the expert validation; 5) Validation of the digital booklet by representatives of the target audience; 6) Adaptation of the digital booklet following the target audience's validation; and 7) Distribution of the digital booklet.[15]

The initial phase involved gathering materials on mask usage to identify health authority recommendations and evidence, including publications from the Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and the Brazilian Ministry of Health (MS), to guide the construction of the new educational health technology. The keywords "masks" and "COVID-19" were used. After material selection and analysis, a thorough review and reflection were conducted to compose the educational content. Primary health authority guidelines were selected to support the booklet's creation.[1,16-18]

In the second phase, researchers and collaborators developed a script on mask

usage for the preliminary visualization of the digital booklet, detailing its sections, text for exposition, and arrangement of illustrations to support the content. Additionally, the educational material production involved two professional graphic designers to ensure an attractive, creative, motivating, and detailed digital booklet. All images were crafted by a nurse specialized in graphic design exclusively for the booklet, aligned with each topic's information. Subsequently, a graphic design professional organized the structure, appearance, and layout of the produced material.

The third phase entailed the digital booklet's validation by experts, including nurses and/or health professionals experienced in infectious diseases and protective equipment. Those engaged solely in administrative and managerial roles were excluded.

Experts were selected using a "snowball sampling" method.[19] This non-probabilistic method involves random selection of individuals. The initial experts were invited by the researchers and commenced the referral chain, subsequently recommending similar participants for the study. All experts had to meet the following parameters:[20] 4 - doctoral title, 3 - master's title, 2 - publication in an indexed journal on the relevant theme, 2 - specialization in the theme, 2 - clinical practice in the area of interest for a minimum of five years, and 1 - participation in a scientific event on the theme in the last two years. Only participants scoring a minimum of five points were considered experts. Moreover, the ideal number of experts according to literature varies from six to twenty; this study included a total of 20 participants.[21]

The validation form was adapted for the mask usage theme based on a previously validated educational technology instrument.[22] The experts' form was available online via Google Forms, comprising seven sections: participant characterization, functionality, usability, efficiency, audiovisual technique, environment, and procedure. Furthermore, the form included a section for suggestions. Experts were invited to participate in the research via emails and WhatsApp® Messenger, containing the research instrument link, access to the booklet, and the Informed Consent Form (ICF). In the fourth phase, the educational material was adapted according to the experts' suggestions.

In the fifth phase, the digital booklet was validated by the target audience, involving 19 individuals, aligning with the literature's recommendation of six to twenty

participants.[21] Target audience representatives were recruited through invitations via social media platforms by the researchers (WhatsApp® Messenger, Instagram, and/or Facebook) and a project-associated Instagram account. Participation invitations were sent through these platforms, containing links for data collection, access to the booklet, and the ICF. The study encompassed Brazilian residents aged 18 or above, all possessing access to the internet. Foreign residents in Brazil and functionally and/or digitally illiterate individuals were excluded from the study. An evaluation instrument used in another study[22] was adapted for the mask usage theme. The instrument comprised five sections: objectives, organization, booklet style, appearance, and motivation. Additionally, the instrument provided space for suggestions if the target audience representatives desired to contribute.

In the sixth phase, the educational material was adjusted based on the target audience's suggestions. Finally, the seventh phase involved the distribution of the digital booklet via social media platforms (WhatsApp® Messenger, Facebook, and Instagram linked to the project), free of charge, to enable the entire population's access to the educational material, promoting proper mask usage awareness. The booklet was included in the federal institution's online repository connected to the study team, and the link was shared through the aforementioned digital platforms.

The Google form containing the participants' responses (experts and target audience) was converted into an Excel spreadsheet for Windows®, and the analysis was conducted using IBM® SPSS v.22 software. Hence, the Content Validity Index (CVI)[23] was employed, assessing the proportion of participants agreeing on specific aspects of the instruments and their items. A Likert scale ranging from one to four was utilized to evaluate item relevance. The responses were quantitatively analyzed, considering different value responses for the items: 1 - inadequate, 2 - partially inadequate, 3 - partially adequate, and 4 - adequate. The calculation of the global and item CVI, ranging from zero to one, was performed by summing the responses of three or four and dividing by the total number of responses. The obtained index was considered valid if it was equal to or greater than 0.70 (70%). Items failing to meet this criterion were adapted.[23]

The project was approved by the Research Ethics Committee of the Federal

Fluminense University School of Medicine, under protocol number: 4.765.911 (CAAE: 46754421.3.0000.5243), on June 10, 2021, and adhered to ethical aspects outlined in Resolution 466/2012 of the National Health Council. All participants provided online informed consent by selecting the "I agree" option after being informed about the research's nature, rationale, objectives, methods, potential benefits, and risks, upon reading the ICF.

Results

Starting with the thematic search and theoretical reflection on health authority recommendations, the textual composition of the digital booklet was structured into the following topics: information about the disease, its transmission, the purpose of mask use, methods of use, and the main types of masks available for public use. Additionally, details regarding proper mask handling, disinfection protocols specific to each available type, and step-by-step instructions for their correct and safe disposal were included.[1,16-18]

For the creation of the digital booklet, a script was developed containing topic divisions, text based on scientific findings, and illustrations. The script encompassed the most relevant findings related to each topic. In this phase, based on the script, layout design in Word was undertaken to preview the organization of the digital booklet with illustrations provided by the graphic designer.

The produced digital booklet underwent evaluation by 20 (100%) experts, comprising 18 (90.0%) females and 2 (10.0%) males. Among these, 19 (95.0%) were nurses, and one (5.0%) was a physician. Concerning professional qualifications, 14 (70.0%) held doctorates, three (15.0%) had master's degrees, and three (15.0%) had specializations. Regarding publications, 10 (50.0%) had disseminated articles addressing standard precautions, while 11 (55.0%) focused on mask usage during the COVID-19 pandemic. Moreover, 18 (90.0%) experts had participated in scientific events in the past year, primarily centered around COVID-19.

The validation of the digital booklet by experts achieved an overall Content Validity Index (CVI) of 0.99 (99.0%), considered excellent in the validity parameter. During the validation of the booklet's items, values ranged from 0.95 (95.0%) to 1.00 (100%). Consequently, the material was deemed valid and suitable concerning its functionality,

usability, efficiency, visual technique, environment, and procedures (Table 1).

Table 1 – Evaluation of the digital booklet by experts according to functionality, usability, efficiency, visual technique, environment, procedure, and calculation of the CVI per item and global CVI. Rio das Ostras, RJ, Brazil 2021-2022 (n=20)

Item	1	2	3	4	CVI per item
1. Functionality					
1.1. The booklet presents itself as a suitable tool for the purpose for which it is intended.	-	-	-	20	**1.00**
1.2. The booklet makes it possible to generate positive results regarding the teaching-learning process	-	-	3	17	**1.00**
2. Usability					
2.1. The digital booklet is easy to use	-	-	2	18	**1.00**
2.2. In the booklet, it is easy to learn the theoretical concepts about the use of masks used and their applications	-	-	1	19	**1.00**
2.3 The digital booklet allows customers/users to easily apply the concepts covered in their daily use of masks	-	-	3	17	**1.00**
3. Efficiency					
3.1 The length of the booklet is adequate for users to grasp the content.	-	1	8	11	**0.95**
4. Visual technique					
4.1. The quality of the images in the booklet is adequate for understanding the content	-	1	5	14	**0.95**
5. Environment					
5.1. The booklet reflects the use of masks in individuals' daily lives during the COVID-19 pandemic	-	-	3	17	**1.00**
6. Procedure					
6.1. The objectives of the digital booklet on the use of masks are clear and well structured	-	-	5	15	**1.00**
6.2. The techniques and guidelines on the use of masks according to the types were explained correctly in the booklet	-	-	2	18	**1.00**
6.3. The purpose of encouraging the use of masks was presented in the booklet	-	-	2	18	**1.00**
6.4. The objectives for using masks are clear and correct in the booklet	-	-	-	20	**1.00**
6.5. The ways to correctly handle masks presented in the booklet are appropriate	-	-	1	19	**1.00**
Global CVI: 0.99					

Note: 1-Inadequate; 2-Partially Inadequate; 3-Partially Adequate; 4-Adequate

Despite the assessment being deemed satisfactory, adjustments were made to the digital booklet based on the experts' suggestions (Chart 1) to enhance the material, making it more detailed and appealing to the intended target audience.

Chart 1– Synthesis of the qualitative analysis of the experts' suggestions. Rio das Ostras, RJ, Brazil, 2021-2022 (n=20)

Expert suggestions
1. Functionality
As the objective of the booklet is to guide the general population, I suggest using simple and objective vocabulary, avoiding specific and scientific terms, such as the term "infectibility". Although there are global authorities, such as the WHO and CDC, ANVISA is the regulatory body for the current situation of issues relating to health measures in Brazil.
Title: Safe use of masks: how to protect myself and others
I suggest standardizing the term "face protectors" throughout the booklet, although it is explained in the letter "e", the term in English may not be familiar to many Brazilians (e.g.: page 29 - changing the English terms for face protectors).
Typing errors (correct): pg. 7 - "...in children and limited available evidence on the use of masks by children." - One word missing: "...available evidence is limited about." – pg. 21 - fabric masks: "They must...", remove the second "d".
The only suggestion is regarding the approach to the use of N95 masks only by health professionals. I don't think the restriction as stated in the booklet is ideal. This type of mask should be encouraged for everyone who has the opportunity to purchase them.
Many words need to be modified into a more popular language, for example: propagation, suppress, evidence, psychosocial, underlying, face shield, the author presents the glossary, however, the words remain difficult to understand for an audience with less education.
2. Usability
The digital booklet could have links to short videos on the use of masks or even links such as "to find out more, visit...", directing to government agency websites and reliable information sources. This way it would be more interactive.
I suggest looking at the possibility of inserting a mascot into the booklet, this resource is widely used in educational materials, as it attracts the reader's attention, helps guide the reading, in addition to giving a more impersonal air;
Authors can insert a engagement resources at the end of the material, such as a 7 mistakes game, questions and answers, crosswords, associations, memory games.
I suggest using 'people' instead of 'individuals' throughout the booklet.
I suggest organizing the procedures for each type of mask and/or face shield in a step-by-step format. For example: use of a surgical mask: recommendations for use, how to use, how to handle, hygiene care, fabric mask, N95.
3. Efficiency
I agree that the content is presented in more than 30 pages because it is important to present all the important information on the topic. However, I suggest reviewing the size of some illustrations or the design of some pages, such as page 9, which has a green bottom margin. This space could be "used" to distribute information, optimize space, and slightly reduce the number of pages.
4. Visual technique
Make content easier to understand and more objective by using more visuals and less text.
I suggest that real images (photos) be included in the section on types of masks.
Page 16 - I suggest describing the picture that describes the technique for better skin adjustment. Since the target audience is the general population, if a person with a lower level of education reads the booklet just from the picture, they may have doubts about how to perform this technique.
Page 25 - in the sequence of figures 1 to 4, I missed including (even minimally) how/where to dispose of the masks. This is a common question among the general population.
Page 5 - There are figures where the understanding is not clear. I suggest identifying the illustrations with numbers and mentioning the illustration number in the text. For example: hand hygiene (illustration x), do

not touch the mask (illustration y).
5. Environment
It would be very important to include more details in the presentation about the explicit purpose for the target audience, how the material will be disseminated, and perhaps even a contact person for feedback and questions.
The content on the use and care of masks is very complete, I would just suggest adding information on the appropriate time to use fabric masks.
6. Procedure
The management and disinfection item could include details in the management and disinfection section about how to dispose of surgical masks, emphasizing the immediate discarding after use and indicating when to replace them. Highlight aspects users should observe regarding their usage.
Page 4 - The aim of the booklet is not presented in the "presentation". I propose to include it, as well as the authorship (idealization) of the main researcher.
I suggest including the PFF2 mask, as it is widely used.
Page 16 - the illustration shows the recommendation to adjust the surgical mask to the face by twisting the rubber bands, on page 22 the recommendation for surgical masks is to place the bands behind the ear without crossing them. I suggest that these recommendations be reviewed and standardized throughout the booklet so as not to create doubt among the population.
Page 26 - Practice hand hygiene before loosening the straps behind the head or removing the rubber bands.
I suggest putting page 6 (what the disease is) first and then page 5 (wearing a mask) and then page 10 (why wearing masks) and then continue as is.
I suggest reviewing the "stay at home" guidelines, as we are already in another phase of the pandemic where it is no longer possible to go out just to get medical care. Emphasize that even with the progress of the vaccine, the mask remains essential.
I suggest including a presentation page for the reader with information about the objectives of the educational material. In addition, the catalog form must be included.
The brochure states on page 7 that children 5 years of age and younger should not be forced to wear masks. However, a recent CDC publication (June 29, 2021, available at: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html) advises that if you are not fully vaccinated and are 2 years of age or older, you must wear a mask in public places where there is a greater risk of contamination. I suggest you check and enter the most recent information.
I recommend the possibility of including (objectively) the disposal of fabric masks (a common question among the population).
Regarding the structure of the booklet, I suggest that the description of "What is a coronavirus?" and information about the mode of transmission be placed before the section on the use of masks and after the presentation of the purpose of the booklet.

Regarding the representatives of the target audience, 19 (100%) took part in the validation phase, comprising 16 (84.2%) females and three (15.8%) males. Regarding educational attainment, nine (47.4%) had completed higher education, three (15.8%) had incomplete higher education, five (26.3%) had completed high school, and two (10.5%) had completed primary education. Furthermore, all affirmed using masks in public and healthcare settings.

In the validation of the digital booklet by the target audience, a global Content

Validity Index (CVI) of 0.99 (99.0%) was attained, considered excellent in the validity parameter. The evaluation of booklet items resulted in values ranging from 0.94 (94.0%) to 1.00 (100%), thus rendering the material valid and suitable concerning its objectives, organization, style, appearance, and motivation among the representatives of the target audience (Table 2).[23]

Table 2 – Evaluation of the digital booklet by representatives of the target audience according to the objectives, organization, style, appearance, motivation, and calculation of the CVI per item and global CVI. Rio das Ostras, RJ, Brazil, 2021-2022 (n=19)

Item	1	2	3	4	CVI per item
1. Objectives					
1.1. The booklet's information aligns with mask-related information	-	-	-	19	**1.00**
1.2. The booklet achieves its objectives of guiding on mask types, purposes, and handling	-	-	-	19	**1.00**
1.3. The booklet is suitable for use and distribution among the population	-	-	2	17	**1.00**
2. Organization					
2.1. The booklet is suitable for the general population	-	-	4	15	**1.00**
2.2. Messages in the booklet are clear and concise	-	-	1	18	**1.00**
2.3. The booklet follows a logical sequence	-	-	1	18	**1.00**
2.4. Information in the digital booklet is consistent	-	-	-	19	**1.00**
2.5. The digital booklet's format is appropriate	-	-	2	17	**1.00**
2.6. The number of pages in the digital booklet is adequate	1	-	5	13	**0.94**
2.7. The themes in the digital booklet cover essential aspects	-	-	1	18	**1.00**
3. Style					
3.1. The writing style in the booklet is suitable	-	-	2	17	**1.00**
3.2. The text of the booklet is engaging	-	-	1	18	**1.00**
3.3. The vocabulary in the booklet is accessible	-	-	4	15	**1.00**
3.4. The writing style corresponds to the general population's knowledge level	-	-	5	14	**1.00**
4. Appearance					
4.1. Primary topics are organized	-	-	2	17	**1.00**
4.2. The illustrations in the booklet are simple, preferably drawings	-	-	-	19	**1.00**
4.3. Images in the booklet complement the text	-	-	-	19	**1.00**
4.4. The images are expressive and adequate	-	-	1	18	**1.00**
5. Motivation					
5.1. The digital booklet is suitable for the general population	-	-	5	14	**1.00**
5.2. The booklet presents its content logically	-	-	1	18	**1.00**
5.3. The booklet encourages interaction and suggests actions through its text	-	-	4	15	**1.00**
5.4. The digital booklet addresses topics relevant to daily life	-	-	-	19	**1.00**
5.5. The booklet motivates changes in behavior and attitude	-	-	-	19	**1.00**
5.6. The booklet imparts knowledge to the population	-	-	-	19	**1.00**
Global CVI: 0.99					

Note: 1- Inadequate; 2-Partially Inadequate; 3-Partially Adequate; 4-Adequate

After validation by representatives of the target audience, the material was deemed satisfactory. Most participants found the digital booklet to be instructive and illustrative, employing simple and concise language. They also noted a strong positive impact upon encountering ethnic diversity in the illustrations within the material produced.

The educational material was finalized (Figure 1), and the ultimate version of the digital booklet was titled 'Safe Mask Use: How to Protect Myself and Others,' comprising 37 pages encompassing the cover, back cover, cataloging data, table of contents, introduction, topics (what is COVID-19, transmission, mask use, why use masks, protection, types of masks, how to choose your mask, how to use, handling and disinfection, how to discard), glossary, and references. The digital booklet was made available in the University repository, accessible via the link https://app.uff.br/riuff/handle/1/23601 and shared through social media platforms (WhatsApp® Messenger and Instagram) to reach a broader audience. Figure 2 displays the content pages of the digital booklet.

Figure 1 – Pages of the finished digital booklet. Rio das Ostras, Rio de Janeiro, Brazil, 2021-2022
Note: Sequence from left to right of the booklet pages: Page 1 (Cover with title) and Page 5 (Presentation)

Figure 2 – Pages of the finished digital booklet. Rio das Ostras, Rio de Janeiro, Brazil, 2021-2022
Note: Sequence from left to right of the booklet pages: Page 20 (How to choose your mask) and Page 23 (How not to wear masks).

Discussion

The digital booklet developed as an educational technology to encourage and promote the correct use of masks during the COVID-19 pandemic was considered valid and satisfactory, both by experts and the intended target audience. Its adoption is relatively new in Western countries. A study conducted in Brazil to investigate mask usage among Rio de Janeiro's population revealed that this practice was not universally adopted by all participants, despite the pandemic's impact on the Brazilian capital.[12] Hence, the evident need for educational materials on mask usage and management aimed at raising awareness and promoting health education regarding COVID-19.

Nursing has, as one of its main responsibilities, health care and education.[2] Thus, the creation of educational technologies by nursing professionals contributes to health promotion, using strategies to develop content that is engaging, motivating, and easily understandable for the target audience, based on information extracted from scientific research.[7,22]

The choice of a digital booklet as a tool is pertinent and relevant, as it facilitates the widespread dissemination of reliable and clarifying information for the Brazilian population. The use of digital educational technologies allows quick and easy access to content for readers, thanks to the use of digital platforms accessible on mobile devices such as smartphones and tablets with Internet access,[24] contributing to a higher level of public adherence.

The content covered in the digital booklet was based on the main scientific evidence disseminated by health authorities, aiding in disseminating information about COVID-19, the purpose, and correct management of masks. The booklet's layout and organization of topics and text boxes, coupled with illustrations, make the material attractive and more understandable for the reader,[25] enhancing its usability among the target audience.

Therefore, the production and validation of educational materials involving experts in the subject contribute to the quality of the constructed material. This process aims to establish a better understanding of the concepts, seeking improvement in complex items for the target audience and adapting the material according to the suggestions provided.[7,22-23] Additionally, validation is important to ensure that educational materials do not contain incorrect or incomplete information, posing a risk of leading the target audience astray, especially regarding low adherence or incorrect adherence to mask-wearing.[5]

The validation of the digital booklet by experts yielded mostly 'adequate' and 'partially adequate' responses, with a Content Validity Index (CVI) ranging between 0.95 and 1.0 in all aspects (functionality, usability, efficiency, audiovisual technique, environment, and procedure). This finding resembles other methodological Brazilian studies conducted for the construction and validation of educational booklets, such as one on hospital fall prevention, which achieved a CVI of 1.0 in all aspects,[25] and another on correct use of personal protective equipment among healthcare professionals in the COVID-19 context, which obtained a CVI of 0.99 in validating the final version of the material developed,[7] thus being considered satisfactory.

Despite this relevance, experts provided suggestions deemed appropriate to enhance the quality of the material produced. Among these, adapting the booklet's

language to simpler and more concise vocabulary was one of the recommendations embraced. Experts pointed out the use of expressions such as 'propagation,' 'suppress,' 'evidence,' 'psychosocial,' 'underlying,' and 'face shield'—specific and scientific terms that hinder the reader's comprehension, considering the target audience. Other validation studies of booklets and educational materials have undertaken reformulations of expressions and technical terms used by healthcare professionals aiming to simplify the text, ensuring readers, especially those with lower levels of education, understand the content.[15,25-26]

Regarding illustrations, most experts considered the quality of the booklet's images adequate for content understanding. This demonstrates that the use of illustrations is a vital element for clarification and understanding of the subject matter, and texts paired with images make the material more engaging, encouraging interest in reading the material.[25,27] This aligns with a methodological study on the construction and validation of an educational serial album on positioning during spinal anesthesia, where images helped improve understanding of the topic.[28]

Another methodological study on the production and validation of an educational video promoting breastfeeding showed that although it achieved previously set objectives, the authors addressed some suggestions from experts regarding the material's images and texts to make it more suitable.[29] A comparable situation occurred in this present study.

In the validation among representatives of the target audience, the educational material was satisfactorily evaluated concerning objectives, organization, style, appearance, and motivation of the digital booklet, considering it easy to read and informative, with appropriate and impactful illustrations portraying ethnic diversity. This result aligns with a study producing and validating a booklet for self-efficacy in Zika virus prevention, where authors concluded that the target audience's validation results were pertinent due to the population's involvement, thus identifying relevant topics and contributing to making the material more engaging and participatory.30 Hence, underscoring the importance of the validation process involving the sought-after audience.

Regarding study limitations, within the COVID-19 pandemic context, it was not

possible to evaluate the practical applicability of the booklet with the general population. Additionally, choosing to develop educational technology in a digital format may pose difficulties for individuals who are not proficient with digital tools.

As contributions to nursing, this study demonstrates the importance of creating educational technologies by nurses to contribute to health-related guidance, offering clarification on mask usage practices. Moreover, the booklet can be used as a consultation tool in new public health emergency contexts and for coping with potential pandemics caused by respiratory transmission viruses, establishing itself as a potent health education instrument for the Brazilian population.

Conclusion

A digital booklet entitled "Safe Mask Use: How to Protect Myself and Others" on the use of this protective equipment in the context of the COVID-19 pandemic was created, validated, and deemed appropriate by both experts and representatives of the target audience.

The significance lies in the development of this educational technology, which is considered motivational and easy to understand, based on the primary scientific evidence and health authority recommendations regarding mask use. Its purpose is to raise public awareness and promote health education.

This educational technology clearly and concisely addresses issues related to COVID-19 and the proper use of masks, including disease occurrence, transmission, mask purposes, methods of use, key types, proper handling, and disinfection. As a result, it helps to build and broaden the community's understanding of the subject.

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