









# Construction and validation of leaflets for caregivers of the elderly on COVID-19 prevention

Flávia de Oliveira<sup>1</sup> , Hemelly Nogueira Guimaraes<sup>1</sup> , Greyce Hellen Rabelo Cezar<sup>1</sup> , Rayssa Nogueira Rodrigues Machado<sup>2</sup> , Aline Carrilho Menezes<sup>1</sup> , Diego Dias de Araújo<sup>3</sup> , Silmara Nunes Andrade<sup>2</sup> , Danilo Donizetti Trevisan<sup>1</sup> 

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## ABSTRACT

**Background:** As a care tool for the elderly population, caregivers must have knowledge about the prevention of COVID-19 to minimize the transmission of SARS-CoV-2. **Objective:** Describe the process of construction and validation of educational leaflet content for caregivers of the elderly on covid-19 prevention measures. **Methods:** Methodological study developed in three stages. The first stage corresponds to the literature review; the second involved the construction of the brochure and the last stage was content validation by a committee of twenty-three experts who judged the objectives, structure/presentation and relevance of the brochure from a validated 3-point Likert scale. Items with positive opinions by more than 80.0% were considered adequate. **Results:** The leaflet was prepared containing six pages, with information on the new coronavirus, forms of transmission, signs and symptoms, protection of the disease, alteration of the routine of daily care, the importance of hand hygiene, surfaces and food; correct use of mask; care for the caregiver or family member; emotional health and how to proceed in case of suspicion of COVID-19. Only one evaluation round was required; the content validity index was 1.0 and the agreement between judges was statistically significant in all domains of the scale ( $p < 0.006$ ). **Conclusion:** This study provides an educational leaflet with validated content, configuring a capable component to improve the knowledge of caregivers about prevention measures against COVID-19 in the elderly.

**Keywords:** Coronavirus infections, Caregivers, Elderly, Educational and dissemination materials, Validation studies.

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1. Federal University of São João Del Rei, Divinópolis, (MG), Brazil  
2. State University of Minas Gerais, Divinópolis, (MG), Brazil  
3. State University of Montes Claros, Montes Claros, (MG), Brazil



## INTRODUCTION

The world has faced a new challenge related to the COVID-19 pandemic caused by coronavirus two of a severe acute respiratory syndrome (SARS-CoV-2). This disease can affect people of all ages and in diverse ways. Data from the World Health Organization (WHO) confirmed more than 399.5 million people were affected by COVID-19 and exceeded 5.7 million deaths worldwide, characterizing it as a disease of rapid contamination and dissemination. In Brazil, more than 630,000 victims died, with a lethality rate of around 2.5%.<sup>1,2</sup>

Most infected people are asymptomatic or have mild to moderate symptoms of the disease such as fever (temperature  $\geq 37.8^{\circ}\text{C}$ ), chills, odynophagia, headache, myalgia, dry cough, runny nose, olfactory disorders (anosmia), gustatory (ageusia) and, therefore, do not require hospitalization. On the other hand, the infection also can cause severe symptoms such as dyspnea and respiratory distress and progress to Severe Acute Respiratory Syndrome (ARS) requiring hospitalization in the intensive care unit and often resulting in death.<sup>3,4</sup> In addition, at least 10% of affected people may have persistent symptoms or have late complications from disease onset, including fatigue, malaise, dry cough, cardiovascular, neurological, psychiatric, and metabolic changes.<sup>5</sup>

In this sense, different therapeutic strategies have been developed and researched for prevention, treatment and/or control of the spread of the disease. Medications have been and are being tested by several groups of researchers around the world for their respective potentials against the new coronavirus. However, there is still a wide discussion in the literature about the effectiveness of each of them.<sup>6-9</sup> So far, there is consensus in the literature, as a prevention measure, the administration of vaccines; although none of them are 100% effective, they have the potential to contribute to reducing the severity of the disease if there is exposure to the virus SARS-CoV-2.<sup>10-12</sup>

Given this scenario, it is justified to carry out and maintain non-pharmacological measures for disease prevention, mainly related to vulnerable groups, such as the elderly and people with serious diseases and/or underlying comorbidities.<sup>2</sup> The elderly tend to present limitations in the autonomy and independence characteristic of the aging process, which often causes the need for a caregiver, a member or not of the family, to assist or perform care

related to daily life activities.<sup>13</sup> Thus, as a prevention tool for COVID-19 in the elderly, it is important that caregivers have adequate knowledge about ways to prevent and minimize the risk of contamination and transmission of SARS-CoV-2.

COVID-19 prevention measures are low-cost and high-effectiveness actions that mainly refer to home isolation, physical distancing, the use of masks, proper hand hygiene and respiratory label.<sup>14</sup> However, it is observed that part of the population does not fully agree to these measures. It is considered that the involvement for the conscious adoption of precautionary measures in the face of COVID-19 requires a change of individual and collective behaviors as well as immediate and precise.<sup>15</sup> The approaches to achieve this purpose should involve health education because they are important for social change and empowerment of people.<sup>16</sup>

Health education practices associated with technological resources favor the mediation of teaching and learning processes in care. These technologies enable the dissemination of information, facilitate understanding and expand the facets of formal education.<sup>17</sup> Educational materials, whether printed or digital, such as manuals, leaflets and booklets can contribute positively to guidance and information of care for the elderly as well as to the decision-making of the caregiver.<sup>18</sup> In particular, educational brochures may guide home care actions and contribute to the development of the interference capacity of the information recipient in decision-making processes.<sup>19</sup>

To our knowledge, after searching the databases, no validated educational materials were identified aimed at caregivers of elderly people with a focus on COVID-19 prevention and with language that is easy to understand for this target audience. Thus, this study aimed to describe the construction and validation of educational leaflet content for caregivers of the elderly on prevention measures of COVID-19.

## METHODS

### *Design, study place and time*

This is a methodological study, with a quantitative approach, involving the construction and validation of an educational leaflet directed to elderly caregivers on the prevention of COVID-19, conducted between May and August 2020, in a municipality in

the Midwest region of Minas Gerais, Brazil. For the construction of the leaflet, the following steps were established: 1- integrative review; 2 - construction of the educational brochure with the graphic designer to aid the development of educational technology and 3 - content validation by a committee of experts.<sup>20</sup>

The theoretical framework used for the development of the educational booklet was based on the Health Belief Model (HBM) that considers the factors that can influence the health behavior of a given population.<sup>21</sup> These factors are: perception for the fact that it is susceptible to some situation of health risk (contemplated in the leaflet with content about a greater susceptibility of the elderly to be contaminated by COVID-19); perception of the severity of such a situation (addressed in the leaflet by content referring to the consequences of COVID-19; these are often serious or fatal); perception of the benefits of performing actions that reduce the risk (contemplated in the leaflet in how to prevent the transmission of COVID-19 to the elderly); the perception for the barriers about the performance of such actions (addressed in the educational material in content that described possible difficulties of daily life to carry out prevention measures for COVID-19).<sup>21</sup>

### *Bibliographic survey*

The integrative review was conducted in June 2020 and the following libraries/databases were consulted: PubMed, VHL and SCOPUS. The descriptors used were Covid-19, Coronavirus, Caregivers, The Elderly and the structured search strategies were: PubMed - (((("COVID-19" [Supplementary Concept])) OR "Coronavirus"[Mesh]) AND "Caregivers"[Mesh]) AND ("Aged"[Mesh] OR "Health Services for the Aged"[Mesh]); VHL - (tw:(covid-19)) OR (tw:(coronavirus)) AND (tw:(Caregivers)) AND (tw:(Elderly)) OR (tw:(Elderly Health)); SCOPUS - (TITLE-ABS-KEY ("COVID-19") OR TITLE-ABS-KEY (coronavirus) AND TITLE-ABS-KEY (caregivers) AND TITLE-ABS-KEY (aged) OR TITLE-ABS-KEY ("Health Services for the Aged"))).

The inclusion criteria were articles, guidelines or recommendations of national and international bodies made available in English, Spanish or Portuguese no stipulated period. Repeated materials that did not address the study theme were excluded.

We identified fifteen studies in PubMed, 108 in the VHL and fifty-four in The SCOPUS. After reading the abstracts and texts in full, eight publications (articles and other research documents) were selected for reflective reading and synthesis of the most relevant points that led to the elaboration of the content of the educational booklet. No educational material was identified to provide guidance on covid-19 prevention for caregivers of the elderly. Information regarding title, year of publication, country, language, objective, method, results, conclusion and level of evidence were collected. Information present in the COVID-19 prevention protocols provided by the WHO, Ministry of Health (MH) and National Health Surveillance Agency (ANVISA) were also included.

### *Construction of the educational leaflet*

After establishing the relevant content for the educational booklet, the construction process began, based on three aspects: language, illustration and layout/design, according to the recommendation for the elaboration of educational materials in health.<sup>20</sup> The texts were elaborated with objective language and directed to the target audience and the images were hand-drawn by one of the authors.

Then, the material (composed of texts and scanned images) was delivered to a professional specialist in the area of designer for the improvement of illustrations as well as diagramming according to recommendations for the elaboration of educational materials.<sup>22</sup> The illustrations were created and developed by Krita and Sketchbook software and later completed in Adobe Illustrator.

### *Content validation by the expert committee*

After the construction of the leaflet, the content validation process was conducted through a committee of experts. The sample size for the selection of specialists was calculated according to the following formula:  $n = Z_{\alpha}^2 \cdot P(1-P)/e^2$ , being  $Z_{\alpha}$  (confidence level) = 95%,  $P$  (proportion of minimum agreement of specialists) = 85%, and (acceptable difference of expected) = 15%; resulting in a minimum sample of 22 participants.<sup>23</sup>

For the selection of specialists, the following inclusion criteria were established<sup>24</sup>: having expertise

on the theme of elderly health, infectology or public health; knowledge/skill acquired by the professional experience of at least one year (assistance, teaching or research) and have experience in the development of health technologies or published articles on the subject.

Thus, the search for the specialists occurred from the snowball sampling, that is, each participant was asked to indicate other professionals with a profile eligible for participation in the study. For data collection, each specialist received, via e-mail, the invitation letter explaining the objective of the study, the Free and Informed Consent Form (FICF), the profile characterization script, the Educational Content Validation Instrument in Health (ECVIH)<sup>25</sup>, and the leaflet itself. After sending e-mails to thirty potential participants, twenty-three sent the agreement to participate in the study. The initial period stipulated for the return of the evaluation was 15 days. However, it needed to be extended for another 15 days to reach the minimum number of evaluations.

The ECVIH consists of eighteen items divided into three domains: 1) Objectives: purposes, goals or purposes; 2) Structure/Presentation: organization, structure, strategy, coherence and sufficiency; 3) Relevance: significance, impact, motivation and interest. From a Likert scale, the answer options ranged from 0 to 2, being 0 = disagree, 1 = partially agree and 2 = totally agree; a final intraclass correlation coefficient of 0.877 was reported, indicating satisfactory internal consistency.<sup>25</sup>

In addition, at the end of the instrument, there was an open space for comments and suggestions. All suggestions sent by the specialists were organized and analyzed according to the variables of the instrument, which were duly performed.

### Data analysis

The data were analyzed with the help of Statistical Package for the Social Sciences (SPSS) version 23. Descriptive analysis of the variables of characterization of the specialists was performed. To verify the content validity of the leaflet, the Content Validity Index (CVI) was calculated as follows: I-CVI (Item-Level Content Validity Index), which corresponds to the agreement of the evaluators for each item and the global CVI – the sum of all I-CVI, divided by the number of evaluators. The minimum cutoff point for the item to be considered valid was 0.80.<sup>26</sup> Finally, the binomial test, with a significance level of 5%, was performed to statistically

verify whether the agreement between the specialists was equal to or greater than 80%.

### Ethical aspects

The study was approved by the local Research Ethics Committee (CAAE 30659520.0.0000.5545) and complied with resolution 466/2012 of the National Health Council as well as the Helsinki Declaration of the World Medical Association.

## RESULTS

The leaflet was entitled "Promotion of care for the elderly in the time of COVID-19" and consists of six pages (cover, presentation pages on the subject, references and technical datasheet). The contents of the leaflet were presented with the following sequence: presentation on the new coronavirus; transmission form; signs and symptoms; forms of protection of the disease; change in the routine of daily care; the importance of hand, surfaces and food hygiene; correct use of mask; care for the caregiver or family member; emotional health of the elderly and how to proceed in case of suspicion of COVID-19. The illustrations of the pages of the brochure are presented in Figures 1A, 1B and 1C. Full access can be made by downloading the material in PDF format at the link: <https://drive.google.com/file/d/15mubJQWVMY8x-r2qiZIVKbO1gOSOBB-P/view?usp=sharing>.

Content validation was performed by twenty-three specialists, two (8.7%) physicians, one (4.3%), physiotherapist and 20 (87%) nurses. As for titration, four (17.3%) were specialists, nine (39.1%) experts and ten (43.5%) doctors. In relation to the current occupation, three (13%) were graduate students (master's or doctorate), ten (43.5%) worked as care professionals, two (8.7%) professors of the undergraduate course in medicine and eight (34.8) professors of the undergraduate nursing course. The majority (56.5%, n=13) worked in higher education institutions, followed by basic health units (26.1%, n=6). The average time of formation was 11.5 years ( $\pm$  8.3).

The eighteen items evaluated by the ECVIH regarding objectives, structure/presentation and relevance are detailed in table 1. No item received a disagreement evaluation and reached 1.0 points in the I-CVI and, consequently, global CVI of 1.0. The binomial test showed statistical significance ( $p=0.006$ ) in agreement equal to or greater than 0.80 among the judges in all items evaluated. Given this result, only one round of validation with the judges was necessary.



Figure 1A. Pages 1 and 2 of the educational booklet. Divinópolis, Minas Gerais, 2020.

However, even with important levels of agreement and a global CVI of 1.0, judges made suggestions to improve the information in the leaflet. In the item "Signs and symptoms of COVID-19" the experts suggested including information that in the elderly, fever is not always present, as well as observing signs of agitation, prostration, drowsiness and decreased food intake. The phrase previously written as "Difficulty breathing, starting with mild tiredness and may progress rapidly, leading to severe respiratory failure", was reworked as "Difficulty breathing, represented by mild tiredness, can progress rapidly to severe respiratory failure. In this situation, it is recommended to go immediately to the emergency room for care."

Another rewritten phrase was "It is indicated to restrict visits to the elderly" to "It is indicated to perform the isolation or social distancing of the elderly. In this case, it is suggested to restrict visits and minimize departures from home." Information on cleaning and disinfection in general and the use of masks was also

adjusted. The phrase "Cleaning and disinfection of various surfaces such as door handles, countertops, tables, chairs, packaging should be performed with 70% alcohol or sodium hypochlorite (bleach)" has been rewritten to "Surfaces such as support bars, door handles, chairs, switches, remote controls and handles should be sanitized daily with a 0.1% bleach solution or 70% alcohol". It is noteworthy that the dilution ratio had been explained previously in the leaflet.

Regarding the correct use of masks, it was explained in the leaflet which type of mask is indicated for the caregiver and the elderly and on what occasion they should use it. Initially, there was the indication of reuse only after washing, drying and iron passage. This information was adjusted to "fabric masks should be washed in hot water at 60 °C with soap or laundry detergent". For the elderly, if they need to leave home or be transported, it is recommended to use a surgical/surgical mask. At the end of all corrections, the brochure passed through a Portuguese-language broker in Brazil.





Figure 1B. Pages 3 and 4 of the educational booklet. Divinópolis, Minas Gerais, 2020.

## DISCUSSION

The present study aimed to build and validate the content of an educational leaflet for caregivers on the prevention of COVID-19 in the elderly. Unanimously from the committee of experts, all items evaluated by the ECVIH received partial or total agreement evaluation. The validation process with evaluation of items related to the objective, structure/presentation and relevance is important for educational materials to intuitively present the universe of technical-scientific information and exclude the elements unnecessary to the transfer of knowledge.<sup>27</sup> The approach of the theme through illustrations stands out among the items evaluated. The study points out that materials with images are visually appealing and preferred, making them more likely to be read.<sup>28</sup>

Specifically, regarding the health education technologies used in the care of the elderly, integrative review results describe that the use of health technologies, including the educational

booklet, establishes adequate and innovative conditions for satisfactory care.<sup>29</sup> The use of educational materials can strengthen the health care communication when considering the characteristics of the target population.

Although caregivers are recognized as an integral part of the elderly care system, the high average age along with low level of education can be barriers to performing care activities, such as administering medications, receiving and transmitting guidance from health professionals and informing themselves about the receipt of public resources (use of the Benefit of Continued Provision, for example).<sup>30</sup> Informal, unpaid care is usually done by the spouse, brother, friend, neighbor<sup>31</sup>, that is, by people who face difficulties like the recipient of care. In addition, the burden imposed on caregivers puts them at risk of health problems. In this direction, a cross-sectional study showed that the workload of formal caregivers is three times that compared to that of informal caregivers (19.8 and 7.5 hours daily, respectively).<sup>32</sup>



Figure 1C. Pages 5 and 6 of the educational booklet. Divinópolis, Minas Gerais, 2020.

In this context, concerns may arise since access to support services is scarce. The caregiver often finds himself in unexpected situations and, consequently, needs counseling and guidance regarding knowledge about how to perform the activities of care for the elderly.<sup>30</sup> From this perspective, the relevance of the existence of educational resources, constructed and validated, that can be used in health education activities for this public is ratified.

From the HBM theory, it was possible to identify the topics necessary to cover the items that made up the educational booklet, as well as the way they should be organized. Older people diagnosed with COVID-19 are more likely to have complications and evolve to death.<sup>3</sup> Although strategies aim to increase the awareness of the population for this fact, the way people, in general, appropriate information can be variable; information that leads to negative emotions – such as sadness, anguish and fear – can accentuate distorted thoughts about health.<sup>33</sup>

It is also perceived difficulties in the proper direction of society through information, especially when it comes to a group with high susceptibility to contagion. COVID-19 disproportionately affects the elderly<sup>34</sup> and these may become highly vulnerable to infodemic. Psychobiological degeneration, characteristic of the aging process, can reduce cognitive abilities, thus conferring difficulties in storing information.<sup>35</sup> In this sense, this process not only impacts the support of preventive measures by the elderly who receive care, but also on the elderly who play the role of caregiver. Thus, identifying and understanding how susceptible elderly people are to COVID-19, and how seriously they can become sick by infection, can help caregivers reinforce disease prevention behaviors<sup>36</sup>, whether in relation to the elderly recipient of care or even with self-care.

However, as the perceived barriers to these actions increase, the likelihood of the person performing the prevention behavior decreases. Thus, it is important to explore ways to reduce or remove

**Table 1.** Agreement of the experts regarding the objectives, structure, presentation and relevance of the leaflet. Divinópolis, MG, Brazil, 2020. (n=23)

Evaluated items	I totally agree	Agree	I-CVI*
	n (%)	n (%)	
<b>1. Objectives</b>			
1.1 It addresses the proposed subject	22 (95.7)	1 (4.3)	1.00
1.2 Suitable for the teaching-learning process	20 (87.0)	3 (13.0)	1.00
1.3 Clarifies doubts on the subject	22 (95.7)	1 (4.3)	1.00
1.4 Provides reflection on the subject	22 (95.7)	1 (4.3)	1.00
1.5 Encourages behavior change	19 (82.6)	4 (17.4)	1.00
<b>2. Structure and Presentation</b>			
2.1 Language appropriate to the target audience	16 (69.6)	7 (30.4)	1.00
2.2 Language appropriate to educational material	19 (82.6)	4 (17.4)	1.00
2.3 Interactive language	18 (78.3)	5 (21.7)	1.00
2.4 Correct information	17 (73.9)	6 (26.1)	1.00
2.5 Objective information	21 (91.3)	2 (8.7)	1.00
2.6 Enlightening information	22 (95.7)	1 (4.3)	1.00
2.7 Information needed	22 (95.7)	1 (4.3)	1.00
2.8 Logical sequence of ideas	21 (91.3)	2 (8.7)	1.00
2.9 Current subject	23 (100.0)	0 (0.0)	1.00
2.10 Proper text size	19 (82.6)	4 (17.4)	1.00
<b>3. Relevance</b>			
3.1 Stimulates learning	23 (100.0)	0 (0.0)	1.00
3.2 Contributes to knowledge in the field	23 (100.0)	0 (0.0)	1.00
3.3 Arouses interest in the subject	23 (100.0)	0 (0.0)	1.00

them.<sup>36</sup> In the present study, caregivers are proposed to encourage video calls with family members to minimize distance; maintain an entertainment schedule; practice meditation to relieve stress and take light walks indoors or backyards. Recognizing this moment as an opportunity to perform other habits/activities is essential.

Thus, the study can contribute to the scientific advance in the health area by making available, for the care and academic environment, a material with an educational focus of the short and light reading, validated by specialists and guided by the constructs of a theoretical model. The possibility and potentiality of contributing to the translation of knowledge, that is, because it is a self-explanatory material that favors the teaching-learning process and can be used to inform caregivers and the elderly, including in the absence of health professionals, is also one of the fundamental points of this investigation.

However, this study has limitations that can be elucidated: the educational booklet did not go through a validation with a target audience. This can be justified by the characteristics imposed by the pandemic itself, whose home visits and visits were suspended by the health department of the municipality where the study was conducted and were only conducted in urgent situations.

## CONCLUSION

The educational booklet entitled “Promotion of care for the elderly in the time of COVID-19” was constructed from the review of the scientific literature and protocols of ANVISA, the MH and WHO and, also with theoretical foundation under HBM. Moreover, in view of the I-CVI and global CVI of 1.0 for both, in addition to a binomial test that confirmed statistically superior agreement to



80%, the leaflet was considered valid by experts. Thus, an educational leaflet is available to provide fundamental information on the prevention of COVID-19 that needed to be introduced into the routine of the “new normal” of caregivers in the performance of direct care activities for the elderly.

It is expected that this leaflet will contribute to the practice of health professionals, teachers and students to disseminate information on health behaviors related to the prevention of COVID-19 in teaching, research and/or extension activities and, consequently, to contribute to the reduction of major injuries and mortality of the elderly.

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### **Authors' contributions**

HNG, GHRC and FO: worked on data collection and tabulation and writing of the article; FO, RNRM, DDT: worked on the conception and design of the study and performed data analysis; FO, RNRM, DDA, ACM, SNA and DDT: they worked on the writing and critical review of the manuscript. All authors read and approved the last version sent.

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Corresponding author:

Danilo Donizetti Trevisan  
ddtrevisan@gmail.com

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