Original Article

The Media and their Informative Role in the Face of the Coronavirus Disease 2019 (COVID-19): Validation of Fear Perception and Magnitude of the Issue (MED-COVID-19)

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ARTICLE INFO	ABSTRACT
	Introduction: The media play an important role in the dissemination of information on the 2019 novel coronavirus disease (COVID-19) pandemic. However, it is important to measure whether the population is receiving information that calms it down, as well as whether such news are in accordance with the magnitude of the issue. **Objective:** To validate a questionnaire that measures the perception of the media and their informative role in the face of COVID-19 pandemic. **Methods:** A validation process for a questionnaire that measures the perception of the magnitude of this issue and whether it generates fear was carried out. The validation was performed by means of a literature search. Moreover, a first version of the scale was developed, which was assessed by 30 experts (physicians, epidemiologists, among others). After this, an exploratory factor analysis and descriptive statistics were performed. **Results:** Our scale had 13 initial items; however, one of them was eliminated because of its unsatisfactory level of statistical adequacy. Exploratory factorial analysis and parallel analysis suggested three factors. Results of the KMO coefficient (0.833) and the Bartlett's test of sphericity (4998.5; gl = 66; p<0.001) were acceptable and significant, which justify the exploratory factorial analysis. The correlation between the factors was >0.4 and robust analyses revealed a satisfactory factorial structure (X2=88.0; p= 0.001; IFC=0.968; GFI=0.992; TLI=0.937; RMSEA=0.123). In the descriptive statistics of the 12 final items, moderate and significant correlations between the items were reported (> 0.5). **Conclusion:** We generate a scale to validate the perception of how people receive information from the media. Thus, this scale can be used to measure the informative role of the media regarding the COVID-19 pandemic, and may even serve for other similar public health emergencies. **Keywords:** COVID-19, coronavirus, pandemics, validation study, communications media

INTRODUCTION

The 2019 novel coronavirus disease (COVID-19) is currently the disorder with the greatest social impact (1,2) due to several factors, including associated deaths, its geographical expansion, stock exchange fall worldwide, cancellation of sporting/ artistic events, shortage of goods in marketplaces, among others (3-6). That in turn is related to the behavior of societies at different levels (micro and macro) (7).

In this context, the media must have social responsibility to keep the population properly informed, since the information is one of the most important elements for disease prevention

Table 1. Descriptive analysis of the scale for measuring fear perception and magnitude of the issue (MED-COVID-19)

Variable	M	SD	As	K
Item1	3.567	1.161	-0.400	-0.928
Item2	3.188	1.189	-0.118	-0.915
Item3	3.720	1.121	-0.620	-0.546
Item4	3.182	1.200	-0.086	-0.862
Item5	3.422	1.110	-0.253	-0.802
Item6	3.043	1.134	-0.046	-0.711
Item7	3.248	1.124	-0.109	-0.882
Item8	2.897	1.142	0.120	-0.734
Item9	2.458	1.056	0.509	-0.333
Item10	2.432	1.079	0.577	-0.269
Item11	3.030	1.237	0.062	-1.102
Item12	2.694	1.193	0.368	-0.782
Item13	3.704	1.107	-0.775	-0.116

M = Mean, SD = Standard deviation, As = Asymmetry coefficient, K = kurtosis coefficient

(8). However, negative impacts, such as "collective hysteria", speculation, looting, among others that have been seen in similar crises, should also be observed in populations that have received inconsistent information on COVID-19 (9). Therefore, it is essential that the media always provide adequate information on this issue, which are understandable, clear, and forceful (10,11).

In contrast, previous studies have showed that the population is not properly informed about protective measures regarding some diseases (12,13), which can have serious repercussions on the actions of different populations in the face of the emergence of outbreaks and epidemics (14), with great impacts for global health (15,16). Thus, this study aims to validate a questionnaire that measures the perception of the media and their informative role in the face of the COVID-19 pandemic.

METHODS

Design, Participants and Adjustments

An instrumental and cross-sectional study was conducted. Our sample included 30 experts in the field, who had a master's degree (in epidemiology or related fields), a specialty (in infectious medicine, internal or intensive medicine, or similar), or who were health professionals in some cases (due to their work and/or public health research related to the study theme). Moreover, around 400 people from 17 departments of Peru (in 20 cities located in the north, central, and south regions, coast, mountains and jungle) were selected without randomization.

Instrument

The MED-COVID-19 scale measures the fear perception and magnitude in the face of COVID-19 pandemic. It was validated based on the judgment of 30 experts (as previously mentioned) to determine if the content of the questionnaire was clear, precise, and consistent. The initial scale had 13 items, while the final questionnaire comprised 12 items, whose response options are Likert type: strongly disagree, disagree, indifferent, agree, and strongly agree.

Procedures

This project was developed based on international guidelines and ethics. The study comprised three phases. First, the scale was analyzed and reviewed by the research team.

After that, the evidence of content validity was determinate to assess the relevance, representativeness, and clarity of questionnaire items. Finally, a pilot was carried out (based on several realities) to obtain exploratory factor and other variables of interest for validation of the scale.

Data Analysis

First, descriptive statistics were analyzed. Secondly, an exploratory factor analysis (EFA) was performed, using robust ordinary least squares, with an oblique promin rotation, based on a Pearson correlation matrix. The Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) coefficient were used for this purpose. Furthermore, parallel analysis was also conducted. All statistical analyzes were performed using the Factor Analysis software (version 10.1), while the reliability of the scale was calculated with the Statistical Package for the Social Sciences (SPSS) version 25.0.

RESULTS

Table 1 shows the descriptive statistics for the 13 items of the MED-COVID-19 scale. However, the item 13 "I consider that the government / state is providing adequate information" was eliminated because it does not contribute to the scale (commonality less than 0.30).

An EFA was performed and the scale items were saturated in three factors. Results of the KMO coefficient (0.833) and the Bartlett's test of sphericity (4998.5; gl = 66; p = 0.000) were acceptable and significant, which justify the EFA. The analysis was based on a product-moment correlation matrix (Pearson), since the scale items presented skewness and kurtosis coefficients of less than 1 in absolute value, except for the item 11 ("My family/friends are the ones who are exaggerating the magnitude of the issue"). The parallel analysis, unweighted least squares and oblique promin rotation methods were also used. The item 13 was removed because it had a factor load of less than 0.4 and, moreover, common variance less than 0.3.

The parallel analysis method suggested that three factors be retained. The factor 1 (exaggeration of the media) explains 51.4% of the variance and is made up of four items, 2, 4, 6, and 8, with saturations greater than 0.75. The factor 2 (generated fear) accounts for 14.0% of the variance and is made up also of four items, 9, 10, 11, and 12, with saturations greater than 0.4. Lastly, the factor 3 (communication from health professionals, family, and friends) is made up of other four items, 1, 3, 5 and,

Table 2. Exploratory factor analysis of the scale for measuring fear perception and magnitude of the issue (MED-COVID-19)

Items	F1	F2	F3
1. Television is exaggerating the issue			0.841
3. Social media are exaggerating the issue			0.716
5. Magazines/newspapers are exaggerating the issue			0.889
7. The radio is exaggerating the issue			0.828
2. Television makes me very afraid	0.706		
4. Social media make me very afraid	0.963		
6. Magazines/newspapers make me very afraid	0.930		
8. The radio makes me very afraid	0.793		
9. Physicians and health personnel are exaggerating the issue		0.800	
10. Physicians and health personnel make me very afraid		0.761	
11. My family/friends are the ones who are exaggerating the issue		0.470	
12. My family/friends make me very afraid		0.526	

Items with factor loads less than 0.4 were omitted

Table 3. Correlations between factors and reliability of the scale for the measurement of fear perception and magnitude of the issue (MED-COVID-19)

Variable	F1	F2	F3	% EV	α	95% CI
Factor 1	1			51.4	0.94	0.92 - 0.95
Factor 2	0.469*	1		14.0	0.84	0.81 - 0.86
Factor 3	0.571*	0.538*	1	10.1	0.91	0.89 - 0.92
Total				75.6	0.90	0.88 - 0.91

EV = Explained variance, CI = Confidence intervals, *(p< 0.05)

Table 4. Descriptive analysis of the 12 items of the scale for the measurement of fear perception and magnitude of the issue (MED-COVID-19)

Variable	M	SD	As	K	h	ITCC	α
Factor 1:							
Item1	3.567	1.161	-0.4	-0.928	0.659	0.603	0.912
Item3	3.72	1.121	-0.62	-0.546	0.541	0.574	0.913
Item5	3.422	1.110	-0.253	-0.802	0.793	0.703	0.908
Item7	3.248	1.124	-0.109	-0.882	0.76	0.718	0.907
Factor 2:							
Item2	3.188	1.189	-0.118	-0.915	0.619	0.701	0.908
Item4	3.182	1.200	-0.086	-0.862	0.825	0.697	0.908
Item6	3.043	1.134	-0.046	-0.711	0.857	0.773	0.905
Item8	2.897	1.142	0.12	-0.734	0.794	0.783	0.904
Factor 3:							
Item9	2.458	1.056	0.509	-0.333	0.676	0.610	0.912
Item10	2.432	0.714	0.577	-0.269	0.68	0.615	0.912
Item11	3.03	0.666	0.062	-1.102	0.417	0.532	0.916
Item12	2.694	0.535	0.368	-0.782	0.503	0.617	0.912

M = Mean, SD = Standard deviation, As = Asymmetry coefficient, K = kurtosis coefficient, h = Communalities, ITCC = Item total corrected correlation, α = alpha of Cronbach

7, with saturations greater than 0.7, and it explains 10.1% of the variance (**Table 2**).

The correlation between the factors was > 0.4. Robust analyses (X2 = 88,043; p = 0.001; CFI = 0.968; GFI = 0.992; TLI = 0.937; RMSEA = 0.123) show that the obtained factorial structure is satisfactory. Moreover, the reliability of the total scale and its dimensions as measured by Cronbach's alpha coefficient were greater than 0.80, which indicates that the scale is reliable (**Table 3**).

In **Table 4** can be observed that the descriptive statistics for the 12 items of the MED-COVID-19 scale are adequate and report moderate and significant correlations among the items (> 0.50). Similarly, all the items that make up the scale had a Cronbach's coefficient α greater than 0.80.

DISCUSSION

COVID-19 has become the main disease of 2020, spreading to numerous countries on almost all continents (17). The public

authorities of these nations have been taking the necessary measures to prevent the spread of this disease. These measures, in turn, have been disseminated by various media (18). Therefore, it is possible that an instrument for effectively measuring the informative role of the media in the face of the COVID-19 pandemic can be validated through a simple questionnaire with 12 specific items.

In this sense, first we will discuss about the fear generated by different media, such as television, social networks, newspapers, and radio. For this, we take into account the current scenario of a public health emergency, where the information must come from adequate sources and provide calm through knowledge.

Different from this recommendation, many people often seek information from non-medical sources, local television, or from other means that are not prepared to give news (19). This occurs mostly in the dissemination of news on social networks and television (20), which generates not only disinformation as

well as can even provoke panic, fear, and collective hysteria. In this regard, future studies should evaluate which sector of the population is the most exposed to fear related to false or inappropriate news.

Another important factor in this context is the information that people receive from health professionals, friends, and family, since they are often the first-hand information (21). Thus, it would be expected that adequate information received from health personnel can decrease anxiety and fear, given that these variables measure the information received from both closest social circles and a local area (hospitals and other healthcare centers) (20,22).

Future research should measure the magnitude attributed to the COVID-19 pandemic by the media, since this factor may also have an impact on the way the population copes with emergencies (23). Moreover, they should include family and friends, who often repeat what they see or hear from other sources (24). It is also recommended that subsequent studies should measure whether any type of health personnel generates more fear, given that it would be important to make a situational analysis involving those who generate greater fear or concern about this situation. Complementary to this, the impact of the information provided by health professionals should also be explored in comparison with the information given by a family member/friend, which can generate suggestions for implementation of state strategies or policies.

Our scale allows to measure, furthermore, the exaggeration that the media report the information, which is important to be measured by the fact that it makes it possible to identify whether the population or the media is disseminating inappropriate information (25). It may happen that the media overestimate the magnitude of the issue or that the spectators/listeners underestimate the importance of the news. In both ways it is important to see what is happening (26), especially with regard to the mass media in urban and rural areas (27).

It is also worth noting that social networks are another important media that have been very well received by young people, which could also have influence on the exaggeration or distortion in series of news and their unreliability (28).In the case of newspapers/periodicals, the presentation of populist or sensational coverage can often also lead people to believe in something different from what is happening, which should be related to a greater tendency towards exaggeration in news coverage and the possibility of propagating misconceptions to the public (29).

In addition, although the radio has lost listeners compared to other media, it still continues to provide important information, especially in the most remote areas (30). New studies should evaluate these questions in accordance with the most used means of communication or the one with the greatest distortions in the information provided with respect to a given topic, such as COVID-19.

As for the limitations, the present study was carried out in 20 cities located in 17 departments of Peru involving people from different socio-economic strata and realities. Despite the sample limitation, our research is very relevant because it could be applied in several Latin American countries, since many of them present similar characteristics. Moreover, in some different realities it could serve as a basis for revalidation or future validations. However, it is recommended to be careful when extrapolating and adjusting the results of this study to other populations.

In short, we concluded that in the validation of our scale that measures the perception of the media and their informative role concerning the COVID-19 pandemic were found three factors: exaggeration of the media, generated fear and information received from health personnel, family, and friends, which could all have some influence according to how they inform people about the COVID-19 pandemic.

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APPENDIX

Questionnaire Items (from Table 2) written in Spanish (Table 5) and Portuguese (Table 6)

Table 5. Items in Spanish

Preguntas
1. La televisión está exagerando su magnitud
3. Las redes sociales están exagerando su magnitud
5. Los periódicos/diarios están exagerando su magnitud
7. La radio está exagerando su magnitud
2. La televisión me genera mucho miedo
4. Las redes sociales me generan mucho miedo
6. Los periódicos/diarios me generan mucho miedo
8. La radio me genera mucho miedo
9. Los médicos y el personal de salud están exagerando su magnitud
10. Los médicos y el personal de salud me generan mucho miedo
11. Mi familia/amigos son los que están exagerando su magnitud
12. Mi familia/amigos me generan mucho miedo

Table 6. Items in Portuguese

Questões
1. A televisão está exagerando a magnitude do problema
3. As redes sociais estão exagerando a magnitude do problema
5. Revistas/jornais estão exagerando a magnitude do problema
7. O rádio está exagerando a magnitude do problema
2. A televisão me deixa com muito medo
4. As redes sociais me deixam com muito medo
6. Revistas/jornais me deixam com muito medo
8. O rádio me deixa com muito medo
9. Médicos e outros profissionais de saúde estão exagerando a magnitude do problema
10. Médicos e outros profissionais de saúde me deixam com muito medo
11. Minha família/amigos são os que estão exagerando a magnitude do problema
12. Minha família/amigos me deixam com muito medo