

Reporter's communicative performance, while wearing face masks, during the COVID-19 pandemic

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ABSTRACT

Purpose: to identify the impact of wearing protective face masks on reporters' communicative performance during the COVID-19 pandemic and verify whether there was an association between these aspects.

Methods: a quantitative, descriptive, cross-sectional study with a sample of 32 reporters (16 females and 16 males) who worked, during the pandemic. Most participants had a bachelor's degree ($n = 28$; 87.5%). The sample's mean age was 35.09 years ($SD = 9.41$), and they had been working in the area for a mean of 10.09 years ($SD = 7.62$). Reporters answered an online form with 26 questions, developed by the researchers, on their self-perception of voice and communicative performance when wearing a mask, during the pandemic. Data were descriptively analyzed, and the chi-square test was applied with the Statistical Package for the Social Sciences 20 (SPSS).

Results: most reporters ($n = 20$; 62.5%) classified their voices and speech articulation as good ($n = 19$; 59.4%) and reported difficulties hearing and/or being heard by interviewees in noisy places and perceived their voices were lower, muffled, or with a low volume ($n = 28$; 87.5%). Also, 22 (68.8%) reported having to speak louder than usually to be heard. Lastly, the questions on reporters' communicative performance were associated with wearing masks while reporting.

Conclusion: wearing protective face masks, during reportage, negatively impacted reporters and was associated with their communicative performance.

Keywords: COVID-19; Masks; Communication; Journalism; Speech, Language and Hearing Sciences



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INTRODUCTION

The COVID-19 pandemic greatly changed everyday life worldwide, and large health institutions around the globe recommended the use of protective face masks to decelerate COVID-19 contagion¹. According to the World Health Organization (WHO), such face masks should cover the nose and mouth perfectly to minimize the risks of contamination.

Brazilian states and municipalities passed their own laws regarding COVID-19, including provisions on health surveillance, and determining the mandatory use of face masks in public and private places¹. Thus, as the world faced the greatest health crisis in the century and sought to address its impacts, news broadcasting took on the role of the spokesperson for science.

In 2020, Brazilian television stations determined that their reporters would wear masks during reportage, with which their branches also complied². The main objective of this decision was to protect their employees, as television reporters usually give news on the site of events. Moreover, they convey a semiotic message of safety to their viewers.

At the beginning of the pandemic, Brazil reached the highest COVID-19 transmissibility rate in the world³. Research conducted by the National Federation of Journalists (FENAJ, in Portuguese)⁴ in a sample of 457 journalists from all over Brazil verified that 20% (88) of participants had contracted COVID-19. Of that population, 38 (8.4%) were journalists from Paraíba.

Despite the great importance of protective face masks in the current scenario, becoming part of the world population's everyday life, wearing them limits communication^{1,5,6}. When it is worn, individuals lose the lip-reading cue, which is important to increase speech intelligibility. It also diminishes speech discrimination and limits facial expressions, making the speaker's emotions less perceivable⁷. Moreover, wearing masks at work can trigger complaints due to symptoms of fatigue, vocal discomfort and effort, and uncoordinated speech and breathing⁸.

Hence, speech-language-hearing studies must address changes in reporters' performance and work settings due to the pandemic, including their speech expressiveness when communicating news – i.e., the impacts of wearing masks regarding the voice (aspects of voice quality) and nonverbal (gestures and facial expressions) communication resources. Oral and physical expressiveness comprise the communication process between speakers, presenting relevant

information coherent with the message conveyed to listeners⁹.

Since this is a current issue, there was scarce scientific production on the topic. Nonetheless, reporters' professional work must be identified, known, understood, and analyzed to guide the assistance given to them.

Thus, the following research question was raised: "Does wearing protective face masks during the COVID-19 pandemic negatively impact reporters' communicative performance?"

This study aimed to identify the impact of wearing protective face masks on reporters' communicative performance during the COVID-19 pandemic and verify whether there is an association between these aspects.

METHODS

This quantitative, descriptive, observational study is part of a larger project, named, "Effects of a voice advisory program for journalism, radio, and television professionals and students", approved by the Human Research Ethics Committee of the Department of Health Sciences at the *Universidade Federal da Paraíba* (UFPB), Brazil, under evaluation report number 3.531.465 and CAEE number 12862819.9.0000.5188. All participants signed an informed consent form (ICF) before being submitted to the research procedures, as recommended by Resolution 466/12 of the National Research Ethics Commission (CONEP, in Portuguese).

Data were collected with an online form. This collection strategy was used mainly to reach more participants and respect the social distancing measures and municipal and state decrees due to the whole context brought about by the COVID-19 pandemic. The study was conducted between August and October 2021, in Paraíba, Brazil.

The research used Google Forms resources, as it is a support tool where online forms can be created for research. The form had 26 required questions (Appendix 1), all of them developed by the researchers based on the following protocols in the area: Speech-Language-Hearing Guide to Observing Expressiveness (RoFOE)¹⁰, Voice-Related Quality-of-Life Survey (VRQOL)¹¹, Voice Handicap Index (VHI)¹², Voice Symptom Scale (VoiSS)¹³, and Self-Assessment of Communication Competence (SACCom)¹⁴.

Researchers decided not to use the full validated instruments, but rather construct a form based on them because they were not specifically focused on assessing the target public. Moreover, they did not

address the reality in question – i.e., the pandemic and facial mask use.

The convenience sample in this study included participants that met the following eligibility criteria: being a television reporter; having worked during the COVID-19 pandemic; having agreed to participate in the research by signing an ICF; and having fully answered the questionnaire. Research participants were contacted at the television stations where they worked and through social media (Facebook®, Instagram®, and WhatsApp®). When they agreed to participate in the research, they received a link to an ICF and the questionnaire.

Altogether, 40 reporters from Paraíba were invited, of which 32 (16 females and 16 males) were interested in participating and met the study eligibility criteria. Most participants had a bachelor's degree ($n = 28$; 87.5%). The mean age of the sample was 35.09 years ($SD = 9.41$), and they had been working in this area for a mean of 10.09 years ($SD = 7.62$).

The form was divided into three sections: 1) ICF and participant's identification; 2) reporter's self-perception of voice; and 3) reporter's communicative performance wearing a mask during reportage. Thus, the first stage aimed to characterize the sample. Then, questions on COVID-19 were presented, based on a recent meta-analysis study¹⁵. Second-stage questions approached the reporters' self-perception of voice and speech articulation (which could be classified as excellent, good, average, poor, or awful), as well as one question on the

use of gestures and facial expressions associated with speech. This section was developed based on RoFOE and SACCom questions.

The third stage comprised questions on the reporters' self-perception of wearing protective face masks during reportage, regarding difficulties and differences they felt when wearing them. The researchers developed the questions based on the synthesis of studies on the topic found in the literature, aiming to characterize the present research. The questions in this section were developed based on VRQOL, VHI, VoiSS, and SACCom.

All collected data were descriptively analyzed through absolute and relative frequencies; means and standard deviations were also extracted. The inferential analysis used the chi-square test in the Statistical Package for the Social Sciences 20 (SPSS) to verify the presence of associations between questionnaire items on the reporters' communicative performance when wearing masks during reportage. The level of significance in this study was set at 5%, and the confidence interval was set at 95%. Only variables with significance will be presented and discussed.

RESULTS

The analysis of self-perception showed that most reporters classified their own voice and speech articulation as good, and all of them used gestures and facial expressions to accompany their speech (Table 1).

Table 1. Reporters' self-perception of voice, speech articulation, and the use of gestures and facial expressions

Variable	Answer	n	%
How would you classify your voice?	Excellent	5	15.6
	Good	20	62.5
	Average	7	21.9
	Poor	0	0
	Awful	0	0
How would you classify your speech articulation?	Excellent	6	18.8
	Good	19	59.4
	Average	7	21.9
	Poor	0	0
	Awful	0	0
Do you normally use gestures and facial expressions to accompany your speech during reportage?	Yes	32	100
	No	0	0

Captions: n = number; % = percentage

It was found that 13 reporters (40.6%) had already been diagnosed with COVID-19, and most of them had the following persistent symptoms after virus contamination: fatigue ($n = 3$; 23.1%), shortness of breath ($n = 3$; 23.1%), and hair loss ($n = 3$; 23.1%). However, at the time of the research, 96.9% of the reporters ($n = 31$) had no influenza symptoms. When asked what type of protective face mask they usually wore during reportage, most of them answered the surgical ones ($n = 28$; 87.5%).

Most participants perceived the following when wearing protective face masks during reportage: difficulties hearing and/or being heard by interviewees in noisy settings; perceiving their own voice as lower, muffled, or with a low volume because of the facial mask; and having to speak louder than usual to be heard when wearing the mask (Table 2).

Questionnaire items on the reporters' communicative performance were associated with wearing masks during reportage (Table 3).

Table 2. Questionnaire items on the reporters' communicative performance when wearing masks during reportage

Self-reported sensations	Answers (%)		
	No, I did not feel it	Yes, but I do not feel it anymore	Yes, and I still feel it
1. I feel a difference in the quality of my voice when I wear a protective face mask during reportage.	9.4	25.0	65.6
2. I feel difficulties in speech articulation (diction) when wearing a protective face mask during reportage.	9.4	28.1	62.5
3. I feel difficulties expressing myself with gestures and facial expressions when wearing a protective face mask during reportage.	40.6	9.4	50.0
4. I feel short of breath or breathing discomfort when I wear face masks during reportage.	18.8	25.0	56.3
5. I need to make an effort to speak during reportage when I am wearing a protective face mask.	21.9	12.5	65.6
6. My throat has been sore or uncomfortable since I started wearing protective face masks during reportage.	65.6	12.5	21.9
7. I notice I started coughing or clearing my throat when I started wearing protective face masks during reportage.	71.9	6.3	21.9
8. I feel I have to speak louder than usual to be heard when I wear a protective face mask.	15.6	15.6	68.8
9. I feel my voice tired by the end of the reportage because of the face mask.	34.4	9.4	56.3
10. I feel my voice is lower, muffled, or with a low volume for wearing a face mask.	6.3	6.3	87.5
11. I have difficulties hearing and/or being heard by interviewees in noisy places.	12.5	0.0	87.5

Caption: % = percentage

Table 3. Association of questionnaire items on the reporters' communicative performance when wearing a mask during reportage

Variables	p-value
Sinto falta de ar ou algum desconforto na respiração usando máscaras faciais durante as reportagens	
I need to make an effort to speak during reportage when I am wearing a protective face mask	0.003*
I feel my voice tired by the end of the reportage because of the face mask	0.001*
I have difficulties hearing and/or being heard by interviewees in noisy places	0.028*
I feel I have to speak louder than usual to be heard when I wear a protective face mask	
I feel a difference in the quality of my voice when I wear a protective face mask during reportage	0.018*
I feel my voice is lower, muffled, or with a low volume because of wearing a face mask	0.006*
I need to make an effort to speak during reportage when I am wearing a protective face mask	0.013*
I need to make an effort to speak during reportage when I am wearing a protective face mask	
I have difficulties hearing and/or being heard by interviewees in noisy places	0.009*

* Significant values ($p < 0.05$). Statistical test: chi-square.

DISCUSSION

Protective face masks became allies during the COVID-19 outbreak to avoid virus contamination and propagation, being included in the population's everyday life – including reporters. Hence, this study aimed to identify the impact of wearing protective face masks on reporters' communicative performance during the COVID-19 pandemic and verify whether there were any associations between these aspects. The results showed that participants were negatively impacted by wearing face masks during reportage.

The characterization of participating reporters showed that they self-perceived their voices and speech articulation as good, and all of them used gestures and facial expressions to accompany their speech during reportage. A study¹⁶ in social communication students, including journalism students, verified that they had a positive self-image of voice, especially regarding voice quality and the use of expressive resources. The literature^{16,17} reports that such professionals commonly have a good self-perception of their performance and believe they make a pleasant impression on listeners.

When asked about COVID-19, 13 (40.6%) participants self-reported having been infected with the virus. Thus, more reporters had not been diagnosed with COVID-19 by the time of data collection than those who had acquired the disease. The main persistent symptoms in professionals affected by the virus were fatigue, shortness of breath, and hair loss. These findings were similar to preliminary results of a systematic review and meta-analysis study¹⁵, though with higher percentages and some different symptoms

from those found in the present study, such as dyspnea and attention disorder.

Questionnaire items on reporters' communicative performance wearing masks during reportage were analyzed, finding that they self-reported difficulties hearing and being heard in noisy environments and perceived their voices were lower, muffled, or with a low volume when wearing face masks. The literature¹⁸ suggests that masks work as acoustic filters – hence, about 4 dB are lost with surgical and fabric masks, and about 12 dB are lost with N95/FFP2 mask models – which, however, are more efficient.

A study¹⁹ in individuals who wore protective face masks in the workplace verified that almost half of the study population had difficulties being heard and understood by others when wearing them. Authors^{7,19} also reported that most of them compensated for this difficulty by speaking louder, a result likewise verified in the present article.

Studies^{19,20} approaching the general population point out that when one speaks louder due to decreased auditory feedback, the self-perception of voice diminishes. This may interfere with speech intelligibility and increase the phonatory effort, which was reported by the participants in the present research.

The sensation of having to make an effort to speak is one of the most self-reported in the literature¹⁹⁻²¹. It is suggested that projecting the voice to compensate for the loss of auditory feedback is an attempt to make speech clearer, thus making it easier to understand. However, it is an incorrect speech pattern, and this hyperfunction can strain the region of the shoulder girdle and increase the risk of changes in voice function, consequently causing dysphonia²².

In this regard, it was also verified that the participants in the present research self-reported differences in voice quality after they began wearing face masks during reportage. Other studies^{19,21} found similar data, in which subjects self-reported voice changes when wearing masks. Thus, the results suggest that protective face masks increase self-reported voice changes.

Crossing questionnaire items on communicative performance showed that “I feel short of breath or breathing discomfort when I wear face masks during reportage” was positively associated with “I need to make an effort to speak during reportage when I am wearing a protective face mask”, “I feel my voice tired by the end of reportage because of the face mask”, and “I have difficulties hearing and/or being heard by interviewees in noisy places”.

Recent research⁸ aimed to analyze the self-perception of voice in individuals who wore face masks for essential activities and in those who wore them for professional and essential activities during the COVID-19 pandemic. The results revealed that those who wore them for professional and essential activities perceived greater symptoms of vocal fatigue, discomfort, and effort and difficulties in speech intelligibility and breathing and speech coordination. These aspects were similar to those found in the present study.

Moreover, “I feel I have to speak louder than usual to be heard when I wear a protective face mask” was positively associated with “I feel a difference in the quality of my voice when I wear a protective face mask during reportage”, “I feel my voice is lower, muffled, or with a low volume because of wearing a face mask”, and “I feel I need to make an effort to speak during reportage when I am wearing a protective face mask”.

In this sense, studies^{23,24} point out that wearing face masks causes an occlusion effect, impairing auditory feedback. Therefore, subjects tend to speak lower or louder than usual and make a greater vocal effort to compensate for the effect of the mask. Consequently, the prolonged use of this inadequate vocal adjustment may trigger voice disorders²².

Lastly, it was also found that “I feel I need to make an effort to speak during reportage when I am wearing a protective face mask” was positively associated with “I have difficulties hearing and/or being heard by interviewees in noisy places”. The presence of noise in the work setting is a daily reality of reporters who speak live²⁵, and wearing masks during the pandemic

aggravated this factor. A study⁵ approached health professors and tutors who wore face masks on long workdays and found they had vocal fatigue and effort, especially when they were in noisy places.

Given the loss of speech intelligibility due to wearing face masks, reporters should ideally seek strategies to optimize their communication. For instance, they must have good voice quality, use expressive facial, gestural, and postural resources, and structure well the text of the news piece^{25,26}, as in television both their voices and images make up these professionals’ participation^{17,25,27}.

Even though wearing protective face masks is no longer mandatory, it is currently known that some Brazilian cities recommend them when COVID-19 cases increase again. Also, a study conducted by the Oswaldo Cruz Foundation (Fiocruz, in Portuguese) indicates the risk of new epidemics or pandemics occurring in Brazil, as this country has a considerable variety of parasites and pathogens²⁸. Hence, the list below presents some essential aspects speech-language-hearing therapists must know and consider to ensure reporters’ good communicative quality and performance when wearing masks:

1. Wearing masks is known to partially obstruct the upper airways. Therefore, it would be interesting to invest in therapeutic procedures to increase the control of breathing and speech.
2. Reporters should be instructed to look for less noisy places to speak live.
3. Ideally, they should use more pauses both to breathe and to construct the narrative, aiming for a natural speech.
4. It is important to use expressiveness resources to enrich news communication.
5. The literature¹⁸ says that surgical masks provide a high protection rate and interfere less with the voice.

This study was limited by the low participation of reporters in the research, as they were fewer than expected, given the number of such professionals who work in Paraíba. Thus, further experimental studies with larger samples should be carried out on the topic, addressing the use of different types of face masks, and approaching training and advisory to improve communication while wearing masks.

Aware of the variability of data regarding the pandemic scenario, it should be highlighted that the research produced significant elements to assess reporters’ work in the current moment. Hence, it can

direct possible actions to improve communicative performance and raise reporters' awareness of communicative and vocal aspects.

CONCLUSION

Wearing protective face masks negatively impacted reporters in their work. They had difficulties hearing and/or being heard by interviewees in noisy places; perceived their voices were lower, muffled, or with a low volume; and had to speak louder than usually to be heard. Moreover, wearing protective face masks was associated with the reporters' communicative performance.

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JDFS, GAM: conceptualization, project administration, original draft writing.

PBCP, AMGDA, ALFM: methodology, visualization, review and editing.

DAH: formal analysis.

MFBL: supervision, review and editing.

Appendix 1. Data collection form

Participant's identification	
Question	Answer options
E-mail	Open answer
Sex	Female Male
Age	Open answer
Educational Attainment	Middle school graduate High school graduate Professional degree Bachelor's degree Specialization Master's degree Doctoral degree
How long have you been working as a reporter?	Open answer
Did you work as a reporter during the COVID-19 pandemic?	Yes No
Did you get COVID-19?	Yes No
If so, do you have any persistent symptoms? (Consider the main one)	Fatigue Shortness of breath Headaches Sore muscles Hair loss Temporary or lasting loss of taste and smell Chest pain Dizziness Thromboses Palpitations Depression and anxiety Difficulties with language, reasoning, and memory Other (open answer)
At the moment of this research, do you have any influenza symptoms?	Yes No
Reporter's self-perception of voice	
How would you define your voice?	Excellent Good Average Poor Awful
How would you classify your speech articulation (diction)?	Excellent Good Average Poor Awful
Do you normally use gestures and facial expressions to accompany your speech during reportage?	Yes No

Reporter communicative performance when wearing a mask during reportage	
I adapted better to wearing this mask during reportage:	FFP2/N955 Surgical masks Fabric masks
I feel a difference in the quality of my voice when I wear a protective face mask during reportage	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I feel difficulties in speech articulation (diction) when wearing a protective face mask during reportage	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I feel difficulties expressing myself with gestures and facial expressions when wearing a protective face mask during reportage	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I feel short of breath or breathing discomfort when I wear face masks during reportage	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I need to make an effort to speak during reportage when I am wearing a protective face mask	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
My throat has been sore or uncomfortable since I started wearing protective face masks during reportage	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I notice I started coughing or clearing my throat when I started wearing protective face masks during reportage	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I feel I have to speak louder than usual to be heard when I wear a protective face mask	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I feel my voice tired by the end of the reportage because of the face mask	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I feel my voice is lower, muffled, or with a low volume because of wearing a face mask	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
I have difficulties hearing and/or being heard by interviewees in noisy places	Yes, but I do not feel it anymore Yes, and I still feel it No, I did not feel it
How was it to you, at the beginning of the pandemic, to make reportage wearing a protective face mask?	Open answer
And now? What changed? (What do you perceive now, 1 year after you were recommended to wear a protective face mask during reportage?)	Open answer