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How Community Health Workers are facing COVID-19 Pandemic in Brazil: Personal Feelings, Access to Resources and Working Process

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Abstract

Background: COVID-19 is a disease that has spread rapidly in various regions of the world, with different impacts. In order to face the pandemic, the work of community health workers (CHWs) is important in vulnerable places like Brazil.

Objective: This study aimed to analyze the response of CHWs during the COVID-19 pandemic with a focus on personal feelings, access to preparedness and equipment, and the working process.

Methods: An online survey was applied from April 15 to May 1, 2020. The limitations imposed by the pandemic hindered a probabilistic sample design so that the sample was collected by convenience from voluntary responses. The survey was carried out with 882 CHWs.

Results: CHWs feel scared and unprepared in the face of the COVID-19 pandemic. The fear of COVID-19 is related to being prepared and to receiving support from federal government. The feeling of preparedness is associated with the lack of material working conditions, such as PPEs, guidance from managers and support from superiors and federal government.

Conclusions: The CHWs' work is jeopardized without support and adequate working conditions. Although health professionals are central to combating the pandemic, alternate methods are needed to support CHWs in successfully performing their duties during the COVID-19 pandemic.

Keywords

COVID-19, Community health workers, Primary health care, Public health

Introduction

Faced with the vast COVID-19 crisis worldwide, countries whose Primary Health Care (PHC) is their citizens' gateway to health services could have an advantage by involving the capillarized system in an infection prevention strategy [1]. PHC played a leading role in previous emergencies and health crises, helping to prevent and treat patients, as in the cases of Zika, Ebola, and H1N1 [2-4]. This role is, to some extent, linked to the community orientation [5,6] that permeates the performance of PHC services: the recognition of the community's health needs through epidemiological data and direct contact with the local population [7,8]. Thus, community health workers (CHWs) are essential figures in facilitating PHC action from a community perspective in the context of health emergencies.

Brazil is one of the countries of international reference in structuring a robust and capillary PHC model and in the use of CHWs [9]. The Brazilian public health system (Sistema Único de Saúde [SUS]) promotes citizens' health guaranteeing comprehensive care, offering free services, exams and access to medicines. The system is organized in three levels of care and the entrance door is the PHC that refers users to other levels. So, PHC established itself as the gateway for services aimed at carrying out health prevention and promotion actions. The organization of PHC in Brazil is mainly due to the provision of territorialized health equipment, the Basic Health Units

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(BHU), which are found nationwide and monitor the population and provide essential health services. Currently, 76% of the Brazilian population is covered by BHU action [10].

The Family Health Strategy is the central policy of PHC provided inside the BHU. This policy provides health teams that monitor families included in each territory. There are 48 thousand family health teams in the country, each responsible for monitoring about 1,000 families. The minimum team is staffed by a doctor, a nurse, a nursing assistant, and community health workers (CHWs) [4-6]. Inspired by several international CHWs models, in Brazil, CHWs are professionals living in the same territory where they work and are responsible for home monitoring of the families under their responsibility - about 200 families. CHWs have to conduct monthly home visits and follow-up, mainly priority groups and chronic patients. They also support teams in UBS activities, such as support for vaccination campaigns, data collection, and feeding, among others. There are 286,000 CHWs in Brazil [10].

CHWs' work is important to primary health care [11,12] and was essential in previous crises, such as H1N1 and Zika [2]. Some current papers have pointed out the potentially important work of CHWs in the face of the coronavirus pandemic [9,13-16]. However, few studies still show how CHWs' working conditions are in the pandemic and how much CHWs are prepared to address COVID-19. Unlike other emergencies, this pandemic poses some central challenges for the CHWs' work. Due to the highly contagious risk and poor knowledge about the dynamics of the disease, the COVID-19 affects the central role of CHWs: daily and face-to-face interactions. This is because CHWs' main activities are developed inside patients' homes, in intensive interaction with patients and their environment. This characteristic exposes CHWs to high risk situations.

CHWs would have to develop new work dynamics to operate during the pandemic, distancing themselves from patients or else putting themselves at risk and continue to work in daily interactions [16,17]. Both situations put the CHWs' performance and their health at risk. Therefore, it is necessary to understand how much CHWs feel prepared to address this pandemic and how they are coping with the situation to develop their work. Elements such as the feeling of fear and preparedness are fundamental to analyze the real working conditions of CHWs in facing the pandemic [18]. It is also essential to analyze what are the work conditions that allow them to face this situation safer and better prepared. Issues such as training, government support, management support, and access to PPEs (personal protective equipment) are some of these conditions that can affect CHWs' ability to contribute to fighting the pandemic.

Considering the potential centrality of CHWs in combating epidemics and the challenges posed by this disease to their work, this paper analyzes CHWs' perceived performance in the COVID-19 pandemic. Thus, based on the Brazilian case analysis, it will be necessary to answer the following questions: how do CHWs feel in carrying out their work during the COVID-19 pandemic? What are the factors that influence how these professionals feel?

Table 1: Themes and questions used in the survey with CHW.

Theme	Question	Variable type	Possible response
Feelings	Are you afraid of the coronavirus?	Closed and Binary	Yes/No
	Do you feel prepared to address the coronavirus crisis?	Closed and Multiple choice	Yes/No/ I don't know
Access to resources	Did you receive the necessary equipment to fight the coronavirus?	Closed and Binary	Yes/No
	Did you receive training to address the coronavirus crisis?	Closed and Binary	Yes/No
Working process	Has the coronavirus crisis changed your working dynamics?	Closed and Multiple choice	Yes/No/ I don't know
	Has the coronavirus crisis changed your dynamics of interaction with citizens?	Closed and Multiple choice	Yes/No/ I don't know
Inclusion in the territory	How long have you been working in this region?	Closed and Multiple choice	*< 5 years* *5 to 10 years* *10 to 20 years* *> 20 years*
Working backup and support	Do you believe that the Federal Government is taking action to help you?	Closed and Binary	Yes/No
	Do you believe that the State Government is taking action to help you?	Closed and Binary	Yes/No
	Do you believe that the Municipal Government is taking action to help you?	Closed and Binary	Yes/No
	Did you receive guidance from management to cope with the crisis?	Closed and Binary	Yes/No
	Do you feel support from your management to cope with the crisis?	Closed and Binary	Yes/No

Materials and Methods

Data collection

Survey: This work reviews data from an online survey applied between April 15 and May 1, 2020, with 882 CHWs, to analyze their feelings, their activities and their working conditions during the coronavirus pandemic. The data were collected with an online survey responded by CHWs from every regions of Brazil.

The questionnaire was originally developed by the authors. It was inspired by previous international studies about frontline workers during health emergencies [19-21]. We developed a specific instrument to the pandemic in order to examine the changes imposed on health workers' activities, which is unprecedented. The questionnaire was reviewed by peers and by professionals. A pilot test was conducted two weeks before its application, with health professionals in general and CHWs in particular. The dimensions of analysis, questions and characteristics of the variables are presented in Table 1.

To reach a large and diverse sample of CHWs, the survey was disseminated by partners from unions, CHWs associations and also through Facebook and Whatsapp groups of CHWs. Respondents were invited either by different technologies or social networks to access the link, which expired shortly after the survey was closed. The platform used for data collection (Jotform) organizes and stores information in a systematic way (in .xlsx or .csv format) with the possibility of easy and automatic export. After that, data were coded using statistic software, SPSS 22. The survey was anonymous, and the ethical committee approved the research.

The limitations imposed by the pandemic did not enable a probabilistic sample design, and the sample was collected by convenience from voluntary responses [21,22]. For this reason, the results presented here cannot be generalized to all Brazilian CHWs. A sample of CHWs working in several Brazilian Federative Units was obtained. Data allowed us to understand how professionals have lived and faced the crisis.

Statistical analysis: The responses were used to perform a descriptive analysis of the observed variables, to produce contingency tables and to develop binary logistic regression observing the respondents' feelings (fear and preparedness). Comparisons of categorical variables across groups were made by Pearson's chi-square tests. A series of logistic models for binary variables, using Forward Stepwise Method, were performed to assess the association between respondents' perceptions and their characteristics in function of fear and preparedness. Appraisal of p-values < 0.05 was conducted to take into account multiple testing. All analyses were performed using IBM SPSS Statistics 22.

Results: The results analyze the research questions based on the data. It is not possible to establish causalities here, but we analyzed the correlations between the variables aiming to answer the questions. Thus, in the tables, we found correlations according to three variables: fear of the coronavirus, feeling prepared to face the pandemic, and length of service in a given region.

Table 2: Respondents' demographics characteristics*.

	n	%
Gender		
Female	695	78.00%
Male	179	20.00%
N/A	8	2.00%
Age group**		
20-29	32	3.60%
30-39	307	34.80%
40-49	346	39.22%
50-59	180	20.40%
60-67	17	1.92%
Brazilian Regions		
North	56	6.35%
Northeast	575	65.19%
Southeast	206	23.36%
Central-West	8	0.91%
South	37	4.19%
How long have you been working in this region?		
< 5 years	68	7.70%
5-10 years	180	20.40%
10-20 years	423	47.95%
20 years or more	211	23.92%
Did you have any previous ties with the region that you work?		
Yes. I had born in the region that I work	658	74.60%
Yes. I had a previous contact	145	16.43%
I have no previous ties with the region that I work	28	3.17%
N/A	51	5.78%

* n = 882; ** mean: 42.92; median: 42.

Demographic characteristics of the respondents: In total, 882 community health workers responded to the survey. Respondents were mostly women (78%), between 40 and 49 years of age (39.22%), from Northeast of Brazil (65.19%), working in the same job and region from 10 to 20 years (47.95%), with previous ties with the work region (74.6%) (Table 2). These data correspond to the average distribution and characteristics of CHWs in Brazil [23].

Feelings

Fear and preparedness: About the feeling of fear of CHWs (Table 3), we observed that 91.3% of CHWs are afraid about the work during this health crisis. There is an association between preparedness and fear (χ^2 = 52.9; p = < 0.001). About the distribution of PPEs, the data do not suggest associations between PPEs and fear (χ^2 = 0.368; p = 0.544). When we observe the relationship between fear and training, we found an association between the two variables (χ^2 = 6.9; p = 0.009).

Regarding the feeling of support from the federal, state, and municipal governments, the data point to an association between fear of coronavirus and the feeling of support by the federal (χ^2 = 19.1; p = 0.001), state (χ^2 = 7.48; p = 0.006) and municipal (χ^2 = 5.05; p = 0.025) governments. We also analyzed the association between guidance from managers and feelings of fear. The data indicate association between guidance from the management and feelings of fear (χ^2 = 6.39; p = 0.012), but do not point to an association between management support and feelings of fear (χ^2 = 1.71; p = 0.191).

Table 3: Respondents' answers about feelings, working conditions and support*.

	n	(%)**
Fear		
Yes	805	91.30%
No	77	8.70%
Preparedness		
*I don't know****	148	16.78%
Yes	668	75.74%
No	66	7.48%
Equipment (PPE)		
Yes	172	80.5%
No	710	19.5%
Training		
Yes	94	10.7%
No	788	89.3%
Help of Federal Government		
Yes	254	29.7%
No	601	70.3%
Help of State Government		
Yes	339	40.5%
No	498	59.5%
Help of Municipal Government		
Yes	298	34.9%
No	557	65.1%
Guidance from management		
Yes	463	52.5%
No	419	47.5%
Support from superiors		
Yes	158	17.9%
No	724	82.1%

* n = 882; ** related to total of respondents; *** This category was considered missing data to the chi-square tests and the binary logistic regression

Observing the feeling of preparedness (Table 3), we found that 75.74% of CHWs feel prepared. There is an association between feeling prepared and access to PPEs (χ^2 = 25.7; p = 0.001). There is also an association between feeling prepared and receiving training (χ^2 = 9.64; p = 0.008). The data also point to an association between the perception of governmental support and the feeling of preparedness (Federal government χ^2 = 16.7; p = 0.001; State government χ^2 = 16.1; p = 0.001 and Municipal government χ^2 = 15.8; p = 0.001). There is also an association between leadership guidance and the feeling of preparedness (χ^2 = 25.3; p = 0.001). Moreover, the data indicate an association between the feeling of preparedness to face the crisis and the perception of support from their superiors (χ^2 = 33.1; p = 0.001).

Based on the suggested associations (see these data in Appendix), we produced two binary logistic models to understand the CHWs feelings. In the first one, we analyzed the variables that most influence the fear (Table 4) and, in the second one, we observed the variables that most influence in the feeling of preparedness (Table 5).

Although the association is verified in the variables presented above with the performance of the chi-squares, in the binary logistic regression model only preparedness and support from federal government are important to explain fear - and preparedness is the most important of them (B = -1.963). According to the binomial logistic regression (Table 4), observing the marginal effect of the variables, preparedness and support from federal government decrease fear. The feeling that the federal government supports them reduces the feeling of fear by 45.8%. On the other hand, feeling preparedness reduces the feeling of fear by 14%.

Analyzing the feeling of preparedness to address the COVID-19 crisis, according to the binary logistic regression (Table 5), the variable "access to PPE" triples the probability of CHWs feeling prepared. The variable "support from the federal government" almost doubles the probability of CHWs feeling prepared. The guidance from managers almost triples the feeling of preparedness. The support from superiors increases the feeling of preparedness also. However, being fe-

Table 4: Binary logistic model to observe the factors related to fear (Y) of COVID-19.

Variable (X)	B	S.E	Wald Test	df	Sig.*	Exp(B)
Federal Government	-0.781	0.375	4.348	1	0.037	0.458
Preparedness	-1.963	0.393	24.943	1	0.000	0.140
Constant	3.377	0.279	146.546	1	0.000	29.285

Adjustment coefficients	Likelihood of log -2	R^2 Cox & Snell	R^2 Nagelkerke
	222.203	0.54	0.142

n = 882

*statistical significance (< 0.05)

Table 5: Binary logistic model to observe the factors related to feeling prepared (Y) to address the COVID-19 crisis.

Variable (X)		B	S.E	Wald Test	df	Sig.*	Exp(B)
PPE		1.080	0.319	11.460	1	0.001	2.946
Federal Government		0.616	0.315	3.813	1	0.050	1.851
Guidance from management		1.008	0.378	7.109	1	0.008	2.741
Support from superiors		0.831	0.349	5.684	1	0.017	2.296
Female		-0.813	0.329	6.089	1	0.014	0.444
Constant		-3.018	0.382	62.386	1	0.000	0.049
Adjustment coefficients	Likelihood of log -2		R^2 Cox & Snell		R^2 Nagelkerke		
	293.491		0.090		0.188		

n = 882; * statistical significance (< 0.05)

Table 6: Relationship between length of service in the region and working process.

	How long have you been working in this region?										p-value	χ^2
	< 5 years		*5 to 10 years*		*10 to 20 years*		*> 20 years*		*Total*			
Has the coronavirus crisis changed your working process?**											0.010*	13.2
Yes	47	5.33%	140	15.87%	308	34.92%	149	16.89%	644	73.02%		
No	11	1.25%	7	0.79%	26	2.95%	9	1.02%	53	6.00%		
Total	58	6.57%	147	16.66%	334	37.87%	158	17.91%	697	79.02%**		
Has the coronavirus crisis changed the way you relate to citizens?***											0.979	0.44
Yes	61	6.92%	162	18.37%	377	42.74%	184	20.86%	784	88.88%		
No	5	0.57%	13	1.47%	35	3.97%	18	2.04%	71	8.05%		
Total	66	7.49%	175	19.84%	412	46.71%	202	22.90%	855	96.93%**		

Confidence interval: 95%; *: statistical significance ($p < 0.05$); **: related to total of respondents; ***: n = 697 (missing cases due to no response); ****: n = 855 (missing cases due to no response)

male affects decreasing the feeling of preparedness. Between these variables, the access to PPE is the main factor that influences the feeling of preparedness (B = 1.129).

Working process during the pandemic: Finally, we analyzed the CHWs' working process during the pandemic. Among respondents, 73.02% reported that the crisis changed their working process and 88.88% reported that the coronavirus crisis changed the way they interact with citizens. Based on these findings, the last analysis intended to observe whether the length of service in the region, a proxy for inclusion into the territory, is correlated to the changes in the work dynamics (Table 6). We analyzed if those who have more time working in the same region would be more capable of changing their working process and adapting them to the new context or the other way around, whether the more significant experience would be associated with more consolidated dynamics and, thus, lower adaptation capacity.

The data suggest an association between insertion time in the territory and changes in the working process ($\chi^2 = 13.2$; $p = 0.010$). On the other hand, the data indicates no association between length of service in the region and changes in the way professionals relate to citizens who use the health services ($\chi^2 = 0.44$; $p = 0.979$).

Discussion

According to the data presented, the fear of COVID-19 decreases if CHWs feel prepared and feel that the federal government is supporting them. On other hand, the feeling of preparedness increases when CHWs have access to PPE, the action of when the Federal Government supports them, when they receive guidance from managers and the support from superiors. However, being female affects decreasing the feeling of preparedness. Finally, data suggest an association between the time living in the territory and changes in the working process, a proxy of ability to adapt the work to the new reality.

From the data exposed, and looking at the erratic responses to the crisis of Brazilian Government, we can understand the situation of CHWs during the COVID-19 pandemic. In Brazil, PHC mobilization to tackle the crisis has been uncoordinated and poorly planned. This is partly a reflection of political conflicts over the pandemic. While municipal and state governments have assumed a leading role in policies to fight the crisis, as physical distancing and health care, the President has refused to admit the crisis and encouraged people to return to the streets. Since March, the ministry of health

changed twice as they do not agree with President's non-scientific decisions. At the local level, governors and mayors are left to solve the conflict [24]. Given the high inequalities in municipalities' capacities in Brazil, PHC actions have depended mainly on local actors' efforts, often lacking the technical, political, or financial capacity to carry out planned and practical actions.

Specifically, regarding CHWs' work, the first document that sought to reorganize their work was published in March 2020, four weeks after the crisis began. Moreover, the document has several ambiguities that blurred CHWs' new roles [25]. For example, the resolution proposes that they should no longer enter the homes but also proposes that they should continue to monitor cases with chronic diseases and priorities, without specifying how this monitoring could be done without a home visit. The regulation also proposes that CHWs should act in the follow-up of cases with COVID-19, without also explaining how this should be done.

The Brazilian legislation also recommended that local teams should use PPEs and proposes the adoption of telemedicine. However, the health ministry did not supply the necessary resources for their realization, leading to high ambiguity and little feasibility [26]. In May, few municipalities made PPEs available to PHC professionals due to the lack of equipment on the world market. Furthermore, there are still several reports from professionals belonging to a risk group who had to continue working because they were under the threat of losing their jobs.

Even the change in the working hours is very different in each location, depending on the local managers and the reaction of unions. In some municipalities, clinics were off-limits for routine care. In others, functions were divided, with part of the service organized for routine care and part for COVID-19. Some of them also organized shelters to treat COVID-19 cases. Moreover, in some municipalities, PHC professionals were relocated to other functions, such as providing health barriers at the entrance of municipalities, working in the screening of hospitals, or even working in non-health services - such as helping in the queue at banks and other places.

These facts reveal a situation in which CHWs' performance in the face of the crisis is significantly compromised by the lack of definitions and political support for their tasks. This scenario shows how critical is the situation of Primary Health Care and, specifically, of CHWs is in Brazilian context during the pandemic. PHC is understood as the central axis of different health systems that excel in offering a continuous care process [7]. PHC's responsiveness implies selecting and recommending the best courses of action through prevention; promotion - heal, care, rehabilitate, help, comfort, contain; derivation - filter; and coordination - continuity of care [27,28].

CHWs are expected to connect families' daily lives to services, bring health teams closer to local dynamics, and translate policies ensuring their understanding and compliance by users, as they live in the same community where they work [9,11]. Therefore, CHWs could be primary players in coping with health crises and epidemics [13-15], as they played in previous epidemiological crises [2,3,29].

Conclusions

The research sought to analyze the CHWs' perceptions of their performance in the COVID-19 pandemic. The analysis of the Brazilian case, burdened by many conflicts, indecision, and lack of support, show how these professionals feel scared and unprepared. The data also show that the feeling of (lack of) preparedness is directly correlated with the lack of material working conditions, such as PPEs, training, managerial and political support.

However, when we analyze the case of CHWs in Brazil in the face of the COVID-19 pandemic, we see that their working conditions are below those expected by the literature and the potential of these agents to face the pandemic. The lack of PPEs, training, support from governments, and managers were, in this paper, central conditions for CHWs to be less afraid and, above all, a greater feeling of preparedness to deal with the crisis.

The research shows, therefore, that while health professionals are central to combating the pandemic, alternate methods are needed to support CHWs in successfully performing their duties during the COVID-19 pandemic. Professionals are compromised without government support and adequate working conditions, which results in an underutilization of the potential of these workers, their illness, and also a potential deterioration of the quality of care provided to the population. Caring for caregivers is a central element in health emergencies.

Conflict Interest

None.

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Contributorship Statement

Authors contributed equally to the work.

Ethical Approval

Ethics approval statements that refer to your institution: The research was presented to approved by the Ethical Committee of Getúlio Vargas Foundation (#99/2020).

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Appendix

Table 1: Factors related to fear (Y) of COVID-19.

Variables (X)	p-value	χ^2
Preparedness	< 0.001*	52.9
PPE	0.544	0.368
Training	0.009*	6.9
Federal Government actions to help**	0.001*	19.1
State Government actions to help***	0.006*	7.48
Municipal Government actions to help**	0.025*	5.05
Guidance from management	0.012*	6.39
Support from superiors	0.191	1.71

n = 882; Confidence interval: 95%; *: statistical significance ($p < 0.05$); **: n = 855 (missing cases due to no response); ***: n = 837 (missing cases due to no response)

Table 2: Factors related to feeling preparedness (Y) to address the coronavirus crisis.

Variables (X)	p-value	χ^2
PPE	0.001*	25.7
Training	0.008*	9.64
Federal Government actions to help**	0.001*	16.7
State Government actions to help***	0.001*	16.1
Municipal Government actions to help**	0.001*	15.8
Guidance from management	0.001*	25.3
Support from superiors	0.001*	33.1

n = 882; Confidence interval: 95%; *: statistical significance ($p < 0.05$); **: n = 855 (missing cases due to no response); ***: n = 837 (missing cases due to no response)

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