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RESEARCH

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PREVENTIVE MEASURES OF THE COVID-19 ADOPTED BY THE HEALTH PROFESSIONAL IN THE FAMILY COEXISTENCE

*Medidas de prevenção da COVID-19 adotadas pelos profissionais de saúde no convívio familiar**Medidas preventivas del COVID-19 adoptadas por el profesional de la salud en la convivencia familiar***Polyana Carla da Silva Costa Cabral¹** **Rilva Lopes de Sousa-Muñoz¹** **Ana Cristina de Oliveira e Silva¹** **Wynne Pereira Nogueira¹** **Fabiola Moreira Casimiro de Oliveira¹** **Elucir Gir²** 

ABSTRACT

Objective: analyse non-pharmacological measures of prevention of the Covid-19 adopted by health professionals in the Primary Attention to Health in family coexistence. **Methods:** transversal and analytical study performed with 229 health professionals of the Primary Attention. Data were collected through a virtual questionnaire in the platform SurveyMonkey. The data analysis was performed by the Chi-Square Test, exact of Fisher and logistic regression. **Results:** most of the professionals used hygiene measures of hands, environment cleaning, food hygiene, use of tissue masks and physical distancing of relatives. Male single/divorced health professionals have smaller chance to adopt environment cleaning, food hygiene and use of tissue masks. **Conclusion:** the adoption of non-pharmacological measures against Covid-19 by health professionals in family coexistence is essential for reducing contamination risk among their relatives.

DESCRIPTORS: Primary health care; Communicable disease control; COVID-19; Disease prevention; Health professional.

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RESUMO

Objetivo: analisar as medidas não farmacológicas de prevenção da Covid-19 adotadas pelos profissionais de saúde da Atenção Primária à Saúde no convívio familiar. **Métodos:** estudo transversal, analítico, realizado com 229 profissionais de saúde da Atenção Primária. Os dados foram coletados por meio de um questionário virtual na plataforma *Survey Monkey*. Teste Qui-Quadrado, exato de Fisher e regressão logística foram utilizados para as análises de dados. **Resultados:** a maioria dos profissionais utilizou medidas como higiene das mãos, limpeza de ambiente, higiene dos alimentos, uso de máscaras de tecido e distanciamento físico dos familiares. Profissionais de saúde do sexo masculino e solteiros/divorciados tem uma menor chance para adotar a limpeza do ambiente, higiene dos alimentos e uso de máscaras de tecido. **Conclusão:** a adoção das medidas não farmacológicas contra a Covid-19 pelos profissionais de saúde em seu convívio familiar é fundamental para a diminuição do risco de contágio entre seus familiares.

DESCRITORES: Atenção primária à saúde; Controle de doenças transmissíveis; COVID-19; Prevenção de doenças; Profissionais de saúde.

RESUMÉN

Objetivo: analizar las medidas no farmacológicas de prevención del Covid-19 adoptadas por los profesionales de salud en la Atención Primaria de Salud en la convivencia familiar. **Métodos:** estudio transversal y analítico realizado con 229 profesionales de salud de la Atención Primaria. Los datos fueron recolectados con el cuestionario virtual en la plataforma *SurveyMonkey*. El análisis de datos se realizó mediante el Test Chi-Cuadrado, exacto de Fisher y regresión logística. **Resultados:** la mayoría de los profesionales utilizó medidas de higiene de manos, limpieza ambiental, higiene alimentaria, uso de mascarillas de tejido y distanciamiento físico de familiares. Los profesionales de la salud varones solteros / divorciados tienen menos posibilidades de adoptar la limpieza ambiental, la higiene alimentaria y el uso de mascarillas de tejido. **Conclusión:** la adopción de medidas no farmacológicas frente al Covid-19 por profesionales de salud en la convivencia familiar es fundamental para reducir la contaminación entre sus familiares.

DESCRIPTORES: Atención primaria de salud; Control de enfermedades transmisibles; COVID-19; Prevención de enfermedades; Profesionales de salud.

INTRODUCTION

An emerging and highly infectious disease, disease by the novel coronavirus 2019 (Covid-19), whose etiologic agent is Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), has posed an unprecedented threat to global health. Covid-19, was defined as a pandemic in March 2020 by the World Health Organization (WHO) and still poses a challenge to health systems.¹

As of December 6, 2021, the Northeast region of Brazil had registered 4,923,062 cases, with the state of Paraíba ranking fourth in number of Covid-19 cases (461,988 cases).² Campina Grande, as the second largest municipality in the state, registered 49,348 cases and 1,113 deaths.³ Since the declaration of the pandemic, the Paraíba state and Campina Grande municipal governments have declared a situation of emergency in the state and enacted measures to reduce the mobility of citizens and adopt preventive measures.

It is known that health professionals in Primary Health Care (PHC) are fundamental to the health care and clinical practice of the population.⁴ They have a professional responsibility to provide comprehensive health services with a wide range of resources. Therefore, the Covid-19 pandemic poses a major challenge in PHC and requires practitioners to be aware of available updates, preventive measures, epidemiological trends, and treatment modalities to guide their patients and clarify immediate concerns.

Moreover, the Covid-19 pandemic has affected the work, family, and social lives of the entire Brazilian population, accentuating points of conflict between professional and personal life. Health care workers in particular faced many challenges, such as learning to cope with the new disease while caring for infected patients, living with the limitations and new habits imposed by the health crisis, continuing to treat patients with other health conditions, and maintaining their personal responsibilities, including caring for their families and themselves.⁵

It is known that family, work, and health are the three most important areas in people's lives, with values particularly relevant for health professionals because of the multiple roles they jointly play in the work and family system.⁶ Thus, reducing the risk of infection in the home environment and protecting the family has become a concern among health professionals, which has required them to change routines, habits, and adherence to the main prevention measures against Covid-19 at home.

Given the lack of pharmaceutical treatments and limited vaccines for the world's population, the main public health strategy to slow the spread of Covid-19 has been the use of non-pharmacological measures. Non-pharmacological measures (NPM) have individual, environmental and community reach. Among the main ones are hand hygiene, mask use, cleaning of surfaces and objects, quarantine, social distancing, changes in health care delivery, and mass screening.⁷

Therefore, knowing and presenting the MNFs adopted at home by PHC professionals who worked directly with the individual can help protect the family and make the home environment a “locus” of care and protection against Covid-19. Therefore, this study aims to analyze the non-pharmacological measures to prevent Covid-19 adopted by primary health care professionals in the family environment.

METHODS

This is a cross-sectional, analytical, online survey study conducted from October 1 to December 31, 2020 in the municipality of Campina Grande, in the state of Paraíba. This study followed the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) and was guided by the Checklist for Reporting Results of Internet E-Surveys (CHERRIES).

It is noteworthy that the present research is part of the Multicenter Project related to the effects and consequences of the Covid-19 pandemic among health professionals in Brazil. The municipality of Campina Grande was one of the centers participating in this multicenter project.

The study included 229 health professionals working in the PHC of that city and who met the following inclusion criteria: being a health professional working in the PHC of Campina Grande in the last six months before the beginning of data collection. Professionals who were away from their activities during the collection period were excluded.

Data were collected individually by means of a survey instrument applied through a virtual platform, Survey Monkey. The data collection instrument was built and validated by fifteen experts in infectious diseases or healthcare-associated infection control.

The professionals were recruited using an adaptation of the Respondent Driven Sampling (RDS) method to the virtual environment. In this method, the participant is encouraged to recruit other individuals in the same category as their own through social networks. For this research, researchers from all regions of Brazil were selected to participate in the data collection stage. These, in turn, underwent a four-hour training on how to conduct an online survey in the context of the Covid-19 pandemic.

Thus, for this research, 12 researchers were selected to work in the data collection stage. Each researcher identified health care professionals who met the inclusion criteria for the study, and from the first eligible professionals, other professionals were identified. Each researcher had control of his or her respondents, and periodically the number of interviewees was evaluated by the data collection coordinator of the municipality.

The approach to participants was initially made through digital social media (WhatsApp®, Facebook®, Instagram®). After contact was established, a link was sent via WhatsApp® to the participants who, by clicking on it, were directed to the digital platform to access the online Informed Consent Form (ICF) on the first page and the questionnaire. The approached professionals

who agreed to be part of the study, and electronically signed the ICF, were directed to the page of questions with the study eligibility criteria. Those who met the survey inclusion criteria were directed to the survey questionnaire.

The instrument consists of multiple choice questions, some of them mandatory to proceed, divided into professional information, type of assistance provided, variables related to prevention measures adopted in family life and on the diagnosis of Covid-19 among health professionals in primary health care. The completed instruments were hosted in a software, Survey Monkey, which allowed a single form submission per IP (Internet Protocol), aiming at the security of the collected information.

This study considered prevention measures against Covid-19 in the home environment. These were defined by the Centers for Disease Control and Prevention (CDC)(8) and included hand hygiene, the use of masks, and family distance, among others.

The collected data were exported and analyzed in the statistical software R, version 4.0.4. For characterization of the participants, we used descriptive statistical analysis with absolute and relative frequency measures. The variables considered dependent were the most self-reported MNF: hand hygiene, environmental cleanliness, food hygiene and use of cloth mask. The independent variables were: gender, age group, region, professional category, marital status, living with children under 12 years old in the home environment, living with the elderly and people from risk groups in the home environment, Covid-19 diagnosis, and whether they had been assisted in a Covid-19 field hospital.

Chi-square and Fisher's exact test were used to examine the associations between the independent and dependent variables. To estimate the odds ratio or Odds Ratio (OR), the logistic regression model was used. The confidence level adopted in all analyses was 95%. Associations with a significance level of less than 5% ($p < 0.05$) were considered statistically significant.

The project was approved by the Research Ethics Committee (CEP) under opinion number 4.258.366/2020 and CAAE 33539820.3.0000.5393. All ethical aspects were considered for its realization according to Resolutions 466/2012 and 510/2016.

RESULTS

Participated in this study 229 PHC health professionals from the municipality of Campina Grande, Paraíba. Most are nursing professionals 97 (42.3%), female, 173 (65.5%), in the age group of 31 to 59 years, 141 (61.6%), single or divorced, 121 (52.8%) and with post-graduation, 141 (61.6%). Covid-19 diagnosis was referred by 54 participants (23.6%).

As for the MNFs against Covid-19 used in the home environment, 218(95.2%) healthcare professionals reported using them. Among the self-reported MNFs, hand hygiene had the highest frequency, 214 (93.4%). This was followed by cleaning the environment, 194 (84.7%), hygiene of food, 168 (73.4%), use of cloth masks, 125 (54.6%), and physical distancing from family members, 120 (52.4%). It is noteworthy that other measures were

used less frequently, being the separation of household utensils, 35 (15.3%) and home isolation, 33 (14.4%).

The association analysis between the most self-reported MNFs by health professionals showed that hand hygiene was statistically significantly associated with marital status ($p=0.030$) and cleaning the environment was associated with gender ($p=0.020$) and marital status ($p=0.040$). (Table 1)

Food hygiene was associated with gender ($p < 0.001$), marital status ($p < 0.001$) and professional category ($p=0.031$). Moreover, in a frequency analysis, it was observed that nursing professionals

more frequently adopted food hygiene when compared to other professional categories. (Table 2).

In the logistic regression model, as shown in Table 3, the variable gender remained associated with environmental cleanliness, food hygiene, and use of cloth mask. Thus, male health professionals and those who were single or divorced were less likely to use these preventive measures in their homes. The marital status variable also remained associated with food hygiene, i.e., single/divorced HCWs were less likely to practice food hygiene as a form of prevention against Covid-19.

Table 1 – Association of sociodemographic and individual variables with hand hygiene and environmental cleanliness used in family living by health professionals against Covid-19, Campina Grande, PB, Brazil, 2020 (n=229)

Variables	Hand hygiene		p-value	Cleaning the Environment		p-value
	Yes n (%)	No n (%)		Yes n (%)	No n (%)	
Gender			0,201			0,020**
Male	50 (89,3)	6 (10,7)		42 (75,0)	14 (25,0)	
Female	164 (94,8)	9 (5,2)		152 (87,9)	21 (12,1)	
Age group			0,141			0,230
18 to 30 years old	74 (89,2)	9 (10,8)		68 (79,5)	17 (20,5)	
31 to 59 years old	135 (95,7)	6 (4,3)		123 (87,2)	18 (12,8)	
≥ 60 years old	5 (100,0)	0 (0,0)		5 (100,0)	0 (0,0)	
Marital status			0,030*			0,040**
Single/Divorced	102 (90,1)	12 (9,9)		97 (80,2)	24 (19,8)	
Married/Stable Union	105 (97,2)	3 (2,8)		97 (89,8)	11 (10,2)	
Professional category			0,451			0,640
Doctor	75 (89,3)	9 (10,7)		71 (84,5)	13 (15,5)	
Nursing professional	93 (95,9)	4 (4,1)		81 (83,5)	16 (16,5)	
Physiotherapist	37 (94,9)	2 (5,1)		35 (89,7)	4 (10,3)	
Psychologist	1 (100,0)	0 (0,0)		1 (100,0)	0 (0,0)	
Odontologist	2 (100,0)	0 (0,0)		2 (100,0)	0 (0,0)	
Another	6 (100,0)	0 (0,0)		4 (66,7)	2 (33,3)	
Are there elderly people or people in a risk group for Covid-19 living with you?			0,553			0,404
Yes	88 (94,6)	5 (5,4)		81 (87,1)	12 (12,9)	
No	126 (92,6)	10 (7,4)		113 (83,1)	23 (16,9)	
Have you been diagnosed with Covid-19?			0,352			0,101
Yes	49 (90,7)	5 (9,3)		42 (77,8)	12 (22,2)	
No	165 (94,3)	10 (5,7)		152 (86,9)	23 (13,1)	

*Fisher's Exact Test; **Pearson's Chi-square test.

Table 2 – Association of sociodemographic and individual variables with food hygiene and use of cloth mask used in family living by health professionals against Covid-19, Campina Grande, PB, Brazil, 2020 (n=229)

Variables	Food hygiene		p-value	Use of fabric mask		p-value*
	Yes n (%)	No n (%)		Yes n (%)	No n (%)	
Gender			< 0,001*			< 0,001*
Male	31 (55,4)	25 (44,6)		22 (39,3)	34 (60,7)	
Female	137 (79,2)	36 (20,8)		103 (59,5)	70 (40,5)	
Age group			0,092			0,157
18 to 30 years	55 (66,3)	28 (33,7)		39 (47,0)	44 (53,0)	
31 to 59 years	108 (76,6)	33 (23,4)		82 (58,2)	59 (41,8)	
≥ 60 years	5 (100,0)	0 (0,0)		4 (80,0)	1 (20,0)	
Marital Status			< 0,001*			0,105
Single/Divorced	79 (65,3)	42 (34,7)		60 (49,6)	61 (50,4)	
Married/Stable Union	89 (82,4)	19 (17,6)		65 (60,2)	43 (39,8)	
Category professional			0,031**			0,090
Doctor	61 (72,6)	23 (27,4)		39 (46,4)	45 (53,6)	
Nursing professional	78 (80,4)	19 (19,6)		59 (60,8)	38 (39,2)	
Physiotherapist	24 (61,5)	15 (38,5)		24 (61,5)	15 (38,5)	
Psychologist	1 (100,0)	0 (0,0)		1 (100,0)	0 (0,0)	
Odontologist	0 (0,0)	2 (100,0)		0 (0,0)	2 (100,0)	
Another	4 (66,7)	2 (33,3)		2 (33,3)	4 (66,7)	
Are there elderly people or people in a risk group for Covid-19 living with you?			0,945			0,733
Yes	68 (73,1)	25 (26,9)		52 (55,9)	41 (44,1)	
No	100 (73,5)	36 (26,5)		73 (53,7)	63 (46,3)	
Have you been diagnosed with Covid-19?			0,200			0,631
Yes	36 (66,7)	18 (33,3)		31 (57,4)	23 (42,6)	
No	132 (75,4)	43 (24,6)		94 (53,7)	81 (46,3)	

*Pearson's Chi-square test; **Fisher's exact test;

Table 3 – Odds ratios by logistic regression for environmental cleanliness, food hygiene, and use of cloth mask used in family living against Covid-19. Campina Grande, PB, Brazil, 2020

Variables	Cleaning the Environment		Food hygiene		Use of fabric mask	
	OR IC95%	p-value	OR IC95%	p-value	OR IC95%	p-value
Male gender	0,45		0,37		0,46	
	0,21-0,97	0,040*	0,19-0,71	0,003*	0,24-0,85	0,010*
Single/divorced	0,50		0,42		0,70	
	0,23-1,08	0,080	0,22-0,80	0,008*	0,41-1,20	0,190

OR: odds ratio; IC95%: Confidence interval of 95%; *p ≤ 0,05

DISCUSSION

This study aimed to evaluate the non-pharmacological measures (MNF) for the prevention of Covid-19 used by PHC health professionals in family life, as well as factors associated

with adherence to these measures in the first year of the current pandemic in Brazil.

It was observed that the main preventive MNFs used by PHC providers in their familiar environment were hand hygiene, environmental cleanliness, food hygiene and use of cloth masks.

In the absence of effective treatment or the unavailability of vaccines for the entire population, MNF have become the basis of the response to Covid-19 pandemic control. Social isolation, the use of masks, and hand washing are among the measures aimed at reducing virus transmission.⁸ It was observed in the present study that most of the professionals reported adherence to the main prevention measures for Covid-19.

It is noteworthy that although self-reported adherence to MNFs was the response of more than 90% of the professionals, it did not include 100% of the 229 respondents. A percentage of almost 5% of the participants mentioned not having adhered. This finding is even higher when compared to a study of 183 health care professionals in Ethiopia, which showed that the overall preventive practice regarding COVID-19 was 68.3%.⁹

Moreover, this aspect is more relevant when considering disturbing evidence on the risks of Covid-19 among health care workers and their families in the early months of 2020, with an estimated three times higher risk of Covid-19 among family members of frontline workers in analyses adjusted for sex, age, color/race, socioeconomic class, and comorbidities.¹⁰ This highlights the importance and need for interventions aimed at improving the resilience and mental health of health care workers, involving communication with family members, strengthening protective measures, reducing workload, and providing health education in order to mitigate the stressful experience of the pandemic.¹¹

The literature has focused on problems that affect health professionals who work at the hospital level, neglecting the importance of primary care services that, as the “gateway” of patients to the health system, allow that PHC professionals are exposed to the risk of contamination by the new coronavirus. Although in the initial moment of the pandemic, hospital services have acquired greater visibility, because they care for patients in serious condition, one cannot fail to take into account the importance of outpatient services and PHC.¹²

Regarding MNFs, hand hygiene was the most practiced. This is considered one of the most effective, simple, and low-cost procedures against cross-transmission of Covid-19, whether in the home or in the health care setting, although it is still a neglected practice worldwide.¹³

Despite clear recommendations, adherence to hand hygiene has been found to be low among health care workers in developing countries such as Nigeria, for reasons that include the absence of hand washing stations or the unavailability of alcohol-based hand care products.⁷ PHC is the ideal setting for health education campaigns on hygiene and disease transmissibility such as Covid-19, because the moment the workers themselves promote these actions, they also strengthen their home practice. Adherence to hand washing depends on behavioral considerations that have not yet been properly evaluated, considering that part of this behavior is automatic, habitual, cultural, or determined by various stimuli.¹⁴

It was observed that PHC health professionals also more frequently adopted cleaning the environment as MNF. The

recommendation is that cleaning and disinfection of surfaces or environments should be routinely performed, especially in households where individuals diagnosed with Covid-19 and people who are routinely exposed to SARS-CoV-2, such as health care workers, or who have people in the risk group.¹⁴ This justification refers to the active permanence of SARS-CoV-2 for days on surfaces such as plastic and metals.¹⁵

Data analysis showed that being a male health care worker and single/divorced is associated with a lower chance of adopting measures for cleaning the home environment and food hygiene. It is considered that work and family-related factors differ between men and women,¹⁶ which makes gender an important factor in Covid-19 prevention.

Another prevention MNF associated with sex was the adoption of cloth mask use. Although the cloth mask is not indicated for healthcare professionals in the clinical setting, use in the home environment is recommended, except for symptomatic individuals, in whom the use of the surgical mask is recommended.⁷ Lower adherence to the use of cloth masks by men in their household was also observed in a survey¹⁷ that showed lower adherence to mask use by individuals aged 18-24 years in all settings.

Transmission within families remains a concern, as pointed out by research,¹⁸ where 66% of cases diagnosed in Hong Kong were transmitted between family members. In Brazil, the governmental determination of the use of masks by the public depended on the epidemiological behavior of Covid-19 in each region and according to the reality of each state.

It is also known that the use of proper precautions at work can help minimize the risk and exposure to Covid-19 patients and, in turn, can also protect the families of health care workers. In times of pandemic, a healthcare worker's family is key to keeping mental health preserved while facing the uncertainty surrounding the Covid-19 crisis in the healthcare system.

The limitation of the study relates to online data collection that may bring difficulties, as potential participants may be restricted in accessing and using the internet. However, this problem did not interfere with the results, since the study managed to include a representative number of PHC health professionals from the region.

CONCLUSION

The data found on the main MNFs against Covid-19 show that strengthening continuing and continuing education is essential at all levels of health care, especially in primary care, in order to improve information and the development of potential for a change in attitudes and behaviors among health care workers regarding the main prevention strategies against Covid-19.

In addition, the development of support programs for health care professionals and emotional support for their families is recommended to reduce negative consequences such as fear of contamination, anxiety, and uncertainty.

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