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Original Article

Working conditions and health risks among professionals of the Family Health Strategy in the post-Covid-19 period

Condições de trabalho e riscos à saúde de profissionais da estratégia saúde da família pós-Covid-19
Condiciones de trabajo y riesgos para la salud de los profesionales de la Estrategia Salud de la Familia tras la Covid-19

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ABSTRACT

Background and Objectives: The working conditions and specific risks faced by Family Health Strategy (FHS) professionals in the post-Covid-19 pandemic context have posed unprecedented challenges and intensified pressure on health services. This study aimed to evaluate the working conditions and specific risks faced by FHS professionals in the current scenario following the Covid-19 pandemic. **Methods:** This is a cross-sectional, quantitative study conducted with nurses, doctors, and nursing technicians. A questionnaire was administered to collect sociodemographic data, labor market information, and job characteristics. **Results:** The sample included 135 participants: 34.8% were nurses, 28.1% were doctors, and 37.2% were nursing technicians. Among the respondents, 41.5% considered their working conditions good, while 40% rated them as fair; 78.5% perceived the work environment as exhausting. The main stress factors identified were stress (65.2%), high demand for care (51.1%), work overload (50.4%), professional devaluation (50.4%), and mental fatigue (38.5%). Physical agents were identified as the primary source of risk, accounting for 83% of occurrences. Regarding workplace accidents, 11.1% reported typical accidents involving sharps. **Conclusion:** The findings underscore the urgent need for measures to improve working conditions, mitigate health risks for workers, and promote the well-being of Family Health Strategy professionals, ensuring the sustainability of public health and the quality of care provided to the population.

Keywords: Primary Health Care. National Health Strategies. Working Conditions. Occupational Risks.

RESUMO

Justificativa e Objetivos: As condições de trabalho e os riscos específicos enfrentados pelos profissionais da Estratégia Saúde da Família (ESF) no contexto pós-pandemia de Covid-19 trouxeram desafios inéditos e intensificaram a pressão sobre os serviços de saúde. Este estudo teve como objetivo avaliar as condições de trabalho e os riscos específicos enfrentados pelos profissionais da ESF no cenário atual, após a pandemia de Covid-19. **Métodos:** Trata-se de um estudo transversal e quantitativo com enfermeiros, médicos e técnicos de enfermagem. Foi aplicado um questionário contendo dados sociodemográficos, informações sobre o mercado de trabalho e características dos empregos. **Resultados:** A amostra foi composta por 135 participantes, sendo 34,8% enfermeiros, 28,1% médicos e 37,2% técnicos de enfermagem. Dos entrevistados, 41,5% consideram as condições de trabalho boas, enquanto 40% as avaliam como regulares; 78,5% consideram o ambiente desgastante. Os principais fatores de desgaste identificados foram: estresse (65,2%), elevada demanda de atendimento (51,1%), sobrecarga de trabalho (50,4%), desvalorização profissional (50,4%) e cansaço mental (38,5%). Os agentes físicos foram apontados como a principal fonte de risco, com 83% das ocorrências. Quanto aos acidentes de trabalho, 11,1% relataram acidentes típicos com materiais perfurocortantes. **Conclusão:** Os resultados ressaltam a necessidade urgente de medidas para melhorar as condições de trabalho, reduzir os riscos à saúde dos trabalhadores e promover o bem-estar dos profissionais da Estratégia Saúde da Família, garantindo a sustentabilidade da saúde pública e a qualidade do atendimento à população.

Descritores: Atenção Primária à Saúde; Estratégias de Saúde Nacionais; Condições de Trabalho; Riscos Ocupacionais.

RESUMEN

Justificación y Objetivos: Las condiciones de trabajo y los riesgos específicos a los que se enfrentan los profesionales de la Estrategia Salud de la Familia (ESF) en el contexto posterior a la pandemia de Covid-19 han planteado desafíos sin precedentes e intensificado la presión sobre los servicios de salud. Este estudio tuvo como objetivo evaluar las condiciones de trabajo y los riesgos específicos enfrentados por los profesionales de la Estrategia Salud de la Familia en el escenario actual tras la pandemia de Covid-19. **Métodos:** Se trata de un estudio cuantitativo y transversal realizado con enfermeros/as, médicos/as y técnicos/as de enfermería. Se administró un cuestionario que recopilaba datos sociodemográficos, información sobre el mercado laboral y características de los empleos. **Resultados:** La muestra estuvo compuesta por 135 participantes: el 34,8% eran enfermeros/as, el 28,1% médicos/as y el 37,2% técnicos/as de enfermería. De los entrevistados, el 41,5% consideró que las condiciones de trabajo eran buenas, mientras que el 40% las calificó como regulares; el 78,5% percibió el entorno laboral como estresante. Los principales factores de desgaste identificados fueron el estrés (65,2%), alta demanda de atención (51,1%), sobrecarga laboral (50,4%), desvalorización profesional (50,4%) y fatiga mental (38,5%). Los agentes físicos se identificaron como la principal fuente de riesgo, representando el 83% de los casos. En cuanto a los accidentes laborales, el 11,1% refirió accidentes típicos con materiales punzocortantes. **Conclusión:** Los resultados destacan la urgente necesidad de implementar medidas para mejorar las condiciones laborales, reducir los riesgos para la salud de los trabajadores y promover el bienestar de los profesionales de la Estrategia Salud de la Familia, asegurando la sostenibilidad de la sanidad pública y la calidad de la atención a la población.

Palabras Clave: Atención Primaria de Salud. Estrategias de Salud Nacionales. Condiciones de Trabajo. Riesgos Laborales.

INTRODUCTION

The Family Health Strategy (FHS), a Brazilian Primary Health Care (PHC) policy, is responsible for coordinating care for families, individuals, and communities, as well as organizing the Health Care Network (HCN). Based on the concept of a health territory, it is considered one of the main initiatives of Brazil's Unified Health System (SUS) and is essential for health promotion and the prevention of risks, injuries, and diseases in communities. This strategy expands access to health services, promotes health surveillance, and ensures comprehensive care for the population through a multidisciplinary team composed essentially of nurses, physicians, nursing technicians, and community health workers.¹⁻³ In this context, the FHS constitutes a central model of PHC within the SUS and, due to its work structure, may be associated with different occupational exposures and perceptions of work-related strain among professional categories. Therefore, it becomes relevant to assess working conditions and health risks in the post-Covid-19 scenario.

With the advent of the Covid-19 pandemic, FHS teams were on the front line in combating the virus, playing a fundamental role in the care and monitoring of infected individuals, as well as in case control and the guidance of the population served. Teamwork within the FHS and its leading role were key elements in the implementation of effective actions to control the pandemic.³⁻⁵

The pandemic overloaded health systems and, particularly, the work of PHC professionals, who were immediately and dramatically on the front line of community care. These professionals had to adapt their practices to deal with new demands, while also facing an exhausting workload, accompanied by a sense of lack of protection at work and limited institutional support for teams and health units.⁶⁻⁷

The emergence of the Covid-19 pandemic substantially worsened the working conditions of health professionals, who were already facing intense job insecurity and a reduction of rights in the pre-pandemic period. After four decades of attacks on workers' rights resulting from neoliberal policies, the pandemic further worsened this scenario, increasing injustices, discrimination, social exclusion, and avoidable suffering.⁸

In addition to the worsening of working conditions, Covid-19 revealed characteristics of a pandemic marked by class, gender, and racial inequalities, such as the exacerbation of social eugenics, racism, gender oppression, xenophobia, homophobia, and sexism. The "capital pandemic" proved to be more devastating as it affected the bodies of the working class.⁹ This scenario brought new challenges and intensified the difficulties

faced by health professionals, who, in addition to being overworked, began to deal with high physical and emotional risks due to increased demand, psychosocial strain, scarcity of resources, and exposure to occupational hazards.

In this context, it is necessary to assess the working conditions and the risks to which these workers are exposed in the post-pandemic period, in order to propose measures that improve the work environment, preserve professionals' health, and ensure effective care for the population. Thus, this study aimed to assess the working conditions and specific risks faced by FHS professionals in the current post-Covid-19 pandemic scenario.

METHODS

This research used a cross-sectional and quantitative design, based on the framework of the Sociology of Professions.¹⁰ The study included professionals from 79 Family Health Teams (FHTs), distributed across 38 Family Health Centers in the municipality of Sobral, Ceará. Each team is composed, at a minimum, of one physician, one nurse, one nursing assistant and/or nursing technician, and one Community Health Worker (CHW).

However, the study focused only on professionals who work directly in the day-to-day clinical practice of the FHS: nurses, physicians, and nursing technicians. The inclusion of these professionals is justified by the specialized nature of their roles in the clinical care of families, individuals, and communities. These functions require higher education and/or technical training, whose validity must be scientifically proven and socially reliable.

The study population consisted of 323 professionals, including 89 nurses, 159 nursing technicians, and 75 physicians. The sample size was calculated considering an absolute margin of error of 5%, a standard deviation of 2, and a 95% confidence coefficient, resulting in a required sample of 119 professionals. After completing the questionnaire, the final sample consisted of 135 professionals (47 nurses, 38 physicians, and 50 nursing technicians).

For inclusion in the study, participants had to have been working in their current service for at least one year, ensuring familiarity with the work process and a bond with the team, families, and the territory, as well as having worked during the Public Health Emergency of National Importance (PHEIC). Professionals on medical leave, maternity leave, or absent for any other reason during the data collection period were excluded from the study.

Data collection was carried out between September and November 2023 using a digital questionnaire on the Google Forms® platform, which was sent to

professionals via WhatsApp®. The questionnaire addressed the working conditions and health risks of the professionals.

The data were analyzed using descriptive and inferential statistics. Initially, absolute and relative frequencies were calculated for categorical variables. To assess possible associations between professional categories (nurses, physicians, and nursing technicians) and the investigated variables, Pearson’s chi-square test was applied. When expected frequencies were lower than five in more than 20% of the cells, Fisher’s exact test was used.

For multiple-response variables, each factor was analyzed individually (presence/absence) in relation to professional category. In addition to statistical significance, effect size was calculated using Cramér’s V, allowing the magnitude of the observed associations to be estimated. The interpretation of effect size followed conventional criteria, with values close to 0.10 considered weak effects, 0.30 moderate effects, and 0.50 or higher strong effects.¹¹

In all analyses, a 5% significance level ($p < 0.05$) was adopted. Statistical analyses were performed using the Statistical Package for the Social Sciences software, version 25.0. (IBM SPSS Statistics®, New York, USA).

In compliance with the current ethical standards for research involving human subjects (Resolution No. 466/2012 of the National Health Council), the study was approved by the Scientific Committee of the Municipal Health Department of Sobral (Opinion No. 067/2023) and by the Human Research Ethics Committee of the

State University Vale do Acaraú, under Opinion No. 6,279,259/2023 (CAAE: 68318523.0.0000.5053). Before answering the questionnaire, the professionals signed the Free and Informed Consent Form.

RESULTS

The responses of 135 FHS professionals (physicians, nurses, and nursing technicians) regarding working conditions and health risks in the post-Covid-19 period were analyzed. Working conditions were predominantly assessed by participants as good (41.5%) and fair (40.0%).

A statistically significant difference was observed in the evaluation of working conditions among the professional categories ($\chi^2 = 27.91$; $p < 0.001$). Among physicians, positive evaluations of working conditions predominated, with a higher proportion rating them as good (44.7%) and great (31.7%). Among nursing technicians, the predominant rating was fair (54.0%), whereas among nurses there was a more balanced distribution between fair (38.2%) and good (34.2%) (Table 1).

Regarding the perception of occupational strain, 78.5% of professionals considered the work to be strenuous, with significant differences among professional categories ($\chi^2 = 13.65$; $p = 0.001$). This perception was more frequent among nursing technicians (92.0%) and physicians (85.0%) compared with nurses (58.8%) (Table 1).

Table 1. Working conditions according to professional category. Sobral, 2023. (N = 135).

Variables	Nurse N (%)	Physician N (%)	Nursing technician N (%)	Total N (%)	χ^2	p-value
Working conditions					27.91	<0.001*
Poor	3 (6.3)	–	–	3 (2.2)		
Regular	18 (38.2)	9 (23.6)	27 (54.0)	54 (40.0)		
Good	16 (34.2)	17 (44.7)	23 (46.0)	56 (41.5)		
Great	9 (19.2)	12 (31.7)	–	21 (15.6)		
Excellent	1 (2.1)	–	–	1 (0.7)		
Consider work to be strenuous					13.65	0.001*
Yes	28 (58.8)	32 (85.0)	46 (92.0)	106 (78.5)		
No	17 (41.2)	6 (15.0)	4 (8.0)	29 (21.5)		

Abbreviation: Values expressed as absolute frequency and percentage. *Pearson’s chi-square test.

Stress was the most frequently reported strain factor among professionals (65.2%), with the highest proportion among nurses (76.6%), followed by nursing technicians (62.0%) and physicians (55.3%). High demand for care (51.1%) and work overload (50.4%) were also frequently reported, with demand being most commonly reported among physicians (68.4%). Professional devaluation stood out among nurses (76.6%) and nursing technicians (64.0%), while mental fatigue was reported by 38.5% of participants, mainly among nursing technicians (46.0%).

A statistically significant association was observed between professional category and some occupational strain factors, including high demand for care ($p = 0.027$), professional devaluation ($p < 0.001$), job instability ($p < 0.001$), pressure from supervisors ($p < 0.001$), high responsibilities ($p = 0.004$), working hours ($p = 0.001$), team conflicts ($p = 0.043$), and insufficient rest time ($p = 0.006$). No statistically significant differences were observed between the categories regarding stress, workload overload, mental fatigue, and exhaustion (Table 2).

Table 2. Occupational strain factors in the workplace according to professional category. Sobral, 2023. (N = 135).

Variables	Nurse	Physician	Nursing technician	Total	χ^2	p-value
	N (%)	N (%)	N (%)	N (%)		
Occupational strain factors in the workplace (multiple responses)						
Stress	36 (76.6)	21 (55.3)	31 (62.0)	88 (65.2)	4.67	0.097*
High demand for care	24 (51.1)	26 (68.4)	19 (38.0)	69 (51.1)	7.21	0.027*
Work overload	22 (46.8)	19 (50.0)	27 (54.0)	68 (50.4)	0.60	0.740*
Professional devaluation	36 (76.6)	-	32 (64.0)	68 (50.4)	45.21	<0.001*
Mental fatigue	16 (34.0)	13 (34.2)	23 (46.0)	52 (38.5)	1.79	0.408*
Job instability	14 (29.8)	1 (2.6)	19 (38.0)	34 (25.2)	14.87	<0.001*
Fatigue	8 (17.0)	4 (10.5)	11 (22.0)	23 (17.0)	2.14	0.343*
Pressure from supervisors	18 (38.3)	-	5 (10.0)	23 (17.0)	17.32	<0.001*
High responsibilities	14 (29.8)	1 (2.6)	4 (8.0)	19 (14.1)	11.06	0.004*
Working hours	1 (2.1)	9 (23.7)	2 (4.0)	12 (8.9)	13.86	0.001*
Team conflicts	7 (14.9)	1 (2.6)	2 (4.0)	10 (7.4)	6.31	0.043*
Insufficient rest time	2 (4.3)	7 (18.4)	-	9 (6.7)	10.18	0.006*

Abbreviation: Values expressed as absolute frequency and percentage. Multiple-response variables allow more than one option per participant. *Pearson's chi-square test.

Regarding occupational risks, physical agents were the most frequently reported by professionals (83.0%), followed by biological agents (72.6%) and factors related to work organization (72.6%). Chemical agents were less frequent in the sample (7.4%). Regarding occupational accidents, 11.1% of participants reported typical accidents involving sharps, while 2.2% mentioned commuting accidents. No statistically significant differences were observed among professional categories regarding the types of

occupational accidents experienced ($p = 0.180$) (Table 3).

On the other hand, statistically significant differences were identified among professional categories regarding exposure to occupational risks, including biological agents ($\chi^2 = 11.11$; $p = 0.004$), physical agents ($\chi^2 = 25.70$; $p < 0.001$), chemical agents ($\chi^2 = 14.71$; $p < 0.001$), and factors related to work organization ($\chi^2 = 8.73$; $p = 0.012$) (Table 3).

Table 3. Types of occupational risks and workplace accidents according to professional category. Sobral, Ceará, 2023. (N = 135).

Variables	Nurse	Physician	Nursing technician	Total	χ^2	p-value
	N (%)	N (%)	N (%)	N (%)		
Types of risk						
Biological agents	38 (28.1)	32 (23.7)	28 (20.7)	98 (72.6)	11.11	0.004*
Physical agents	29 (21.5)	33 (24.2)	50 (37.0)	112 (83.0)	25.70	<0.001*
Chemical agents	9 (6.7)	1 (0.7)	-	10 (7.4)	14.71	<0.001*
Work organization	27 (20.0)	32 (23.7)	39 (28.9)	98 (72.6)	8.73	0.012*
Types of occupational accidents experienced						
Commuter	1 (0.7)	-	2 (1.5)	3 (2.2)	-	0.180**
Typical (sharps-related)	3 (2.2)	3 (2.2)	10 (7.4)	15 (11.1)	-	
Did not answer	-	-	1 (0.7)	1 (0.7)	-	

Abbreviation: Values expressed as absolute frequency and percentage. *Pearson's chi-square test. **Fisher's exact test.

In addition to statistical significance, the effect size was estimated using Cramer's V, allowing the magnitude of the observed associations to be assessed. A moderate association was found between professional category and the evaluation of working conditions ($V = 0.32$), as well as regarding the perception of occupational strain ($V = 0.32$).

Among the occupational risks, the strongest magnitude of association was observed for exposure to

physical agents ($V = 0.44$), indicating a moderate to strong relationship between this variable and professional category. For the other assessed risks, the magnitudes ranged from weak to moderate, including biological agents ($V = 0.29$), chemical agents ($V = 0.33$), and factors related to work organization ($V = 0.25$) (Table 4).

Table 4. Effect size of the association between professional category and working conditions, perception of burnout and occupational risks. Sobral, Ceará, 2023.

Variables	χ^2	p-value	Cramer's V	Magnitude
Working conditions	27.91	<0.001	0.32	Moderate
Strenuous work	13.65	0.001	0.32	Moderate
Biological agents	11.11	0.004	0.29	Weak-moderate
Physical agents	25.70	<0.001	0.44	Moderate-strong
Chemical agents	14.71	<0.001	0.33	Moderate
Work organization	8.73	0.012	0.25	Weak-moderate

Abbreviation: Effect size interpreted according to Cramer's V criteria (weak ≈ 0.10 ; moderate ≈ 0.30 ; strong ≥ 0.50).

DISCUSSION

This study revealed that, in the post-Covid-19 pandemic scenario, FHS professionals face challenging working conditions, with a widespread perception of an exhausting work environment. Among the main factors identified are stress, the high demand for care, and work overload. The most frequent occupational risks include exposure to physical, biological, and organizational hazards, as well as reports of accidents involving biological materials. Although some professionals consider their working conditions satisfactory, the results indicate that pressure in the work environment compromises both workers' health and the quality of care provided, highlighting the need for interventions to promote structural and organizational improvements in the FHS.

The world of work, understood as the involvement of human beings with the content of and relationships within labor, does not remain stable over time. In general, it is influenced by changes in production systems and by the way regulations are established for the functioning of the labor market.¹² This situation was intensified during the Covid-19 pandemic, whose effects continue to reverberate to this day, especially in the service sector, such as healthcare. In the context of the FHS, these impacts are even more evident due to the decentralized work model, which requires frequent travel and work in communities with infrastructure that is often insufficient to meet the needs of both workers and the population.^{13,14}

In the healthcare sector, work in primary care presents challenges that directly impact professionals' quality of life and job satisfaction. High workloads, repetitive tasks, unhealthy conditions, and pressure for greater productivity can compromise the care provided to families, individuals, and communities. In the FHS, these conditions are worsened by diverse practices and specific territorial demands, which can contribute to physical, mental, and emotional exhaustion, as well as conditions such as fatigue and burnout, especially when professionals hold multiple jobs.^{15,16}

Excessive emotional demands are also relevant factors contributing to burnout in the FHS.¹⁷ Complex situations, such as caring for individuals in pain or distress, expose professionals to a mentally demanding environment, which can contribute to emotional exhaustion. In addition, heavy workloads have been associated with physical, mental, and emotional exhaustion, which are characteristic of occupational strain.^{18,19}

The organization of work in the FHS represents another critical issue, involving intense emotional demands and a lack of institutional support. The lack of constructive feedback, teamwork, and opportunities for professional growth can intensify feelings of

undervaluation and frustration among workers, harming not only their health but also the quality of care provided to the population. In addition, the complex situations faced in daily practice, such as dealing with patients in distress, expose professionals to high levels of stress and emotional strain, which reinforces the importance of psychological support and collective support strategies.²⁰ Since teamwork is essential in this context, the absence of effective collaboration and communication can lead to feelings of isolation and frustration. In addition, the lack of constructive feedback can undermine workers' sense of value and recognition.^{19,20}

Other factors that may be associated with occupational strain in PHC include low wages, long working hours, lack of autonomy, and limited opportunities for professional growth.²¹ It is possible to assume that such factors do not manifest uniformly across different professional categories. For example, professional undervaluation was reported significantly more often by nurses and nursing technicians compared to physicians, among whom this factor was not mentioned. Similarly, job instability was more frequently reported among nursing technicians and nurses, whereas only 2.6% of physicians reported this factor. These differences may reflect distinct employment conditions, levels of autonomy, and professional recognition across categories.^{5,19} Furthermore, violence in the workplace is a constant concern. In a study conducted in Family Health Units in Brazil, verbal aggression was identified as the most common type of violence faced by healthcare professionals.²²

The occupational risks identified in this study highlight the need for measures to protect FHS professionals. Exposure to physical agents, such as heat, cold, and poor ventilation, and to biological agents, including the handling of sharps, is exacerbated by inadequate personal protective equipment (PPE) and deficient infrastructure. These factors place workers in vulnerable situations, which can be mitigated through investments in high-quality PPE, biosafety training, and improvements in working conditions.^{6,23} During the Covid-19 pandemic, already precarious working conditions were further worsened, including shortages of PPE, lack of hospital beds, and precarious employment contracts, which placed unsustainable pressure on healthcare professionals.²⁴

Finally, the pandemic also exposed inequalities of class, gender, and race, which amplify the vulnerability of healthcare workers. Stigmatization, discrimination, and job precarity, often exacerbated in crisis contexts, highlight the need for public policies that promote equity and social protection in the workplace. Such policies are essential to ensure the sustainability of the public healthcare system and the quality of care provided to the population.²⁵

This study has some limitations that should be considered when interpreting the results. The cross-sectional design prevents the identification of causal relationships between working conditions and their impact on professionals' health. Consequently, the interpretations presented throughout the discussion are framed as explanatory hypotheses based on the literature and observed data patterns, rather than as definitive conclusions about the determinants of poor working conditions and the identified health risks. Longitudinal studies are necessary to establish causal relationships. In addition, the sample was selected using a non-probabilistic method, which may limit the generalizability of the findings to other regions or FHS contexts.

Another factor to highlight is the use of a self-reported questionnaire, which is subject to response and perception bias. In addition, the study included only physicians, nurses, and nursing technicians, not covering other FHS professionals, such as community health agents. Finally, the research was conducted in a single municipality, which may not reflect the reality of other locations. Despite these limitations, the study offers relevant contributions to the understanding of working conditions and occupational risks faced by FHS professionals in the post-Covid-19 pandemic context.

The findings highlight critical factors such as work overload, exposure to physical and biological risks, and the impact of the work environment on workers' mental health. These findings may support managers and policymakers in implementing measures to improve working conditions, reduce occupational risks, and strengthen PHC, ensuring more effective and sustainable care for the population.

As demonstrated, the challenges faced by FHS professionals are amplified in public health crisis situations, such as pandemics, which increase the demand for health services and expose the fragility of working conditions. This study revealed that, although a significant proportion of professionals rate their working conditions as good or fair, factors such as work overload, stress, and professional undervaluation are prevalent, compromising both workers' health and the quality of services provided.

It is essential that managers and health policy decision-makers implement concrete measures to improve working conditions in the FHS. Investments in infrastructure, continuing education, and preventive strategies are essential to promote a safer, healthier, and more valued work environment for professionals. These actions will not only benefit workers but also contribute to the quality of care provided to the population.

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AUTHORS' CONTRIBUTIONS

Francisco Rosemiro Guimarães Ximenes Neto project conception and administration, manuscript writing, and approval of the final version. **Antônio Ademar Moreira Fontenele Júnior** project conception and administration, manuscript writing, and approval of the final version. **Eliany Nazaré Oliveira** critical review of the manuscript and approval of the final version. **Maria Helena Machado**: critical review of the manuscript and approval of the final version. **Luciano Garcia Lourenção** critical review of the manuscript and approval of the final version.

All authors approved the final version to be published and are responsible for all aspects of the work, including ensuring its accuracy and integrity.

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