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Original Article

Leadership of Primary Health Care nurses in confronting the COVID-19 health crisis*

Liderança dos enfermeiros da Atenção Primária à Saúde no enfrentamento da crise sanitária da COVID-19

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ABSTRACT

Objective: to analyze the leadership practices expressed by Primary Health Care nurses in confronting the COVID-19 health crisis. **Methods:** cross-sectional, descriptive, and correlational study conducted with 69 nurses from the Family Health Strategy. Data collection was carried out through a structured questionnaire on socio-educational profile and the leadership assessment tool, Leadership Practices Inventory, validated for use in Brazil. Statistical analysis utilized Mann-Whitney tests and Spearman correlation. **Results:** exemplary leadership practices were applied by the nurses in the five domains: Model the Way (1); Inspire a Shared Vision (2); Challenge the Process (3); Enable Others to Act (4); Encourage the Heart (5), with a predominance of domains 4 and 5, respectively. A significant positive correlation ($p<0.001$) was observed between the use of these practices and factors such as time working in public health, age, length of residence in the municipality, and participation in leadership courses. **Conclusion:** the results of this research show that nurses utilized leadership practices within Primary Health Care to confront COVID-19 in the five domains. **Contributions to practice:** prior training in leadership was associated with higher performance in the evaluated practices, indicating the importance of investing in the development of management skills for nurses.

Descriptors: Leadership; Primary Health Care; Nursing; COVID-19.

RESUMO

Objetivo: analisar as práticas de liderança expressas por enfermeiros da Atenção Primária à Saúde no enfrentamento da crise sanitária da COVID-19. **Métodos:** estudo transversal, descritivo e correlacional realizado com 69 enfermeiros da Estratégia Saúde da Família. A coleta de dados realizou-se por meio de um questionário estruturado sobre o perfil socioeducacional e do instrumento de avaliação de liderança exemplar, *Leadership Practices Inventory* validado para uso no Brasil. A análise estatística utilizou-se dos testes de Mann-Whitney e correlação de Spearman. **Resultados:** as práticas da liderança exemplar foram aplicadas pelos enfermeiros, nos cinco domínios: trace o caminho; inspire uma visão compartilhada; desafie o processo; capacite os outros a agir; encoraje o coração, com predomínio dos domínios 4 e 5, respectivamente. Foi observada correlação positiva significativa ($p<0,001$) entre o uso dessas práticas e fatores como tempo de trabalho na saúde pública, idade, tempo de residência no município e participação em cursos sobre liderança. **Conclusão:** os resultados desta pesquisa explicitam que os enfermeiros se utilizaram das práticas de liderança dentro da Atenção Primária à Saúde para enfrentamento da COVID-19, nos cinco domínios **Contribuições para a prática:** a formação prévia em liderança associou-se a um desempenho superior nas práticas avaliadas, indicando a importância do investimento no desenvolvimento de competências gerenciais para enfermeiros.

Descritores: Liderança; Atenção Primária à Saúde; Enfermagem; COVID-19.

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Introduction

In the Unified Health System, Primary Health Care (PHC) functions as the cornerstone for care coordination, and the nurse, as an integral member of the Family Health Strategy, plays a dual essential role: both in providing care and in management[1]. Their training, which includes management competencies, positions them as a key figure in organizing work processes and coordinating the multiprofessional team[2-3].

However, the stability of PHC is put to the test in times of health crises. The COVID-19 pandemic represented an unprecedented disruptive event that overwhelmed the system, disrupted care flows, and exposed teams to extreme levels of physical and psychological pressure[4-5]. In this context, nurses' managerial role was amplified, going beyond routine administration to become a central element in the crisis response, as emphasized by the World Health Organization, which considers nursing indispensable for managing health emergencies[6].

Facing the pandemic required nurse leaders to do more than simply apply traditional management tools. It required nurses' ability to lead amidst chaos, manage their teams' fear and stress, communicate complex and often contradictory information, and adapt to real-time protocol changes[7]. Leadership thus became synonymous with resilience, emotional support, and navigating uncertainty, playing a fundamental role in mitigating tension and maintaining team cohesion[8].

Despite recognition of the importance of this role, there remains a need to understand, from the professionals' perspective, which specific leadership practices proved most effective and were consolidated throughout such a prolonged crisis. Analyzing these practices enables us to draw lessons that can strengthen Primary Health Care's preparedness for future public health challenges.

Therefore, the aim of this study is to analyze the leadership practices expressed by Primary Health Care nurses in confronting the COVID-19 health crisis.

Methods

Type of study

This is a cross-sectional, descriptive, and correlational study, conducted following the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE).

Place and population

The study was conducted in a medium-sized municipality located in the western region of Paraná state, Brazil, with an estimated population of 285,415 inhabitants[9]. The municipality's Primary Health Care structure comprises 29 Basic Health Units, which coordinate a total of 80 teams within the Family Health Strategy.

Inclusion and exclusion criteria

Participants were selected based on the following inclusion criteria: being a nurse working in Primary Health Care and having at least three years of experience in the role. The total eligible population in the municipality consisted of 80 nurses. Given the small population size, all professionals were invited to participate without conducting a sample size calculation, and the sample was obtained by convenience. A total of 69 nurses participated, corresponding to a response rate of 86.2%. All participants completed the survey, and there were no losses due to incomplete responses.

Variables

The data collection instrument consisted of two sections. The first was a structured questionnaire designed to gather participants' profiles, exploring sociodemographic variables (age, sex, length of residence), professional variables (length of education, work experience in PHC, highest qualification), and specific leadership training (undergraduate coursework or continuing education).

To assess leadership, the Brazilian validated version of the Leadership Practices Inventory (LPI) was used. The instrument comprises 30 statements related to leadership practices, rated on a Likert scale from 1 to 10 points (1 = Almost never, 2 = Rarely, 3 = Seldom, 4 = Occasionally, 5 = Sometimes, 6 = Sometimes, 7 = Fairly often, 8 = Generally, 9 = Very often, 10 = Almost always). The questions assess five domains of exemplary leadership, which are: Model the Way (guiding and setting examples), Inspire a Shared Vision (appealing to values and holding accountable), Challenge the Process (innovating and initiating change), Enable Others to Act (promoting collaboration) and Encourage the Heart (recognizing and motivating)[10].

Data collection

Data collection occurred entirely online between May and July 2023. Contact with participants was established through institutional channels to ensure standardization and avoid selection bias. First, the official invitation with the research link hosted on the Google Forms platform was sent to the Directorate of Primary Care in the municipality. They, in turn, forwarded the invitation to all PHC nurses through the Digital Information System platform, which is the official communication channel with the professionals. There was no prior in-person contact between the researchers and the nurses or managers of the Basic Health Units.

To link the assessment of leadership practices to the pandemic context, the introductory text of the online form explicitly instructed nurses to answer the LPI questionnaire items based on their professional experiences and behaviors during the COVID-19 health crisis response period.

Upon accessing the survey link, the nurses were directed to the first page, which contained the Informed Consent Form with all the relevant information. Participation was voluntary and anonymous, and access to the data collection instruments was only granted after the participant expressed their agreement with the research terms. All instruments were completed on the same online platform.

Data analysis

The collected data were tabulated in Microsoft Excel® and analyzed using the Jamovi® statistical software®. Initially, a descriptive analysis was performed to characterize the sample, using absolute and relative frequencies for categorical variables, and measures of central tendency and dispersion (mean, standard deviation, quartiles) for numerical variables.

For inferential analysis, the scores from the five domains of the LPI were defined as dependent variables: Model the Way; Inspire a Shared Vision; Challenge the Process; Enable Others to Act; and Encourage the Heart, constituting the five exemplary leadership practices.

The Mann-Whitney test was used to assess the association between these leadership practices and categorical independent variables (gender; degree of education; leadership training; leadership continuing education course). The correlation with numerical independent variables (length of residence in the municipality; length of work in PHC; length of schooling and age) was evaluated using the Spearman coefficient. The significance level adopted in all analyses was $p<0.05$.

Ethical aspects

The study was approved by the Research Ethics Committee of the *Universidade Estadual do Oeste do Paraná*, under Opinion No. 6,028,890/2023, and the Ethical Presentation Certificate 67918223.0.0000.0107, according to the recommendations of Resolution 466/12 from the National Research Ethics Council.

Results

The final sample consisted of 69 nurses, predominantly female (81.2%). Regarding academic

qualifications, 11.6% of participants held only an undergraduate degree (bachelor's) as their highest qualification. However, most pursued further education, with 72.5% holding a specialization degree and 15.9% a master's degree. As for leadership training, 59.4% took courses on the topic during their undergraduate studies, and 62.3% had completed non-mandatory continuing education courses on leadership, even though such training was not required for the position in the municipality.

The average time of professional experience since graduation was 12.8 years, and the average length of service in Primary Health Care was 8.2 years. The participants had an average age of 37.2 years old, and the average length of residence in the municipality was 22.9 years.

Table 1 – Characteristics of the nurses according to numerical variables. Foz do Iguaçu, PR, Brazil, 2023

Variables	Minimum	Mean	Maximum	Standard Deviation
Age	26	37.2	52	7
Time since graduation	4	12.8	25	5.6
Length of residence in the municipality	4	22.9	49	14.3
Length of work in Primary Health Care	3	8.2	22	5.9

The assessment of Leadership Practices showed that Enable Others to Act had the highest average score (M = 53.1), while Inspire a Shared Vision had the lowest (M = 40.4). Table 2 presents the descriptive statistics for all five leadership practices.

Table 2 – Distribution of means, medians, and standard deviations of the five Exemplary Leadership Practices. Foz do Iguaçu, PR, Brazil, 2023

Practices	Mean	Median	Standard Deviation
Model the way	44.3	49	7.5
Inspire a shared vision	40.4	46	11.8
Challenge the process	42.7	46	9.2
Enable others to act	53.1	53	4.1
Encourage the heart	49.6	48	7.2

The frequency analysis of each leadership behavior, detailed in Table 3, reveals which specific practices were most and least utilized by the nurses. It was observed that the most frequent behaviors belonged to the domains "Enable Others to Act" and "Model the Way" with emphasis on the statement "I treat others with dignity and respect," reported by 85.5% of participants. In contrast, the least common practices were "I clearly state my leadership philosophy" and "I talk about future trends that will influence our work," from the domains "Model the Way" and "Inspire a Shared Vision," respectively.

Table 3 – Distribution of the frequency of leadership behavioral statements and their corresponding practice, frequency, and percentage. Foz do Iguaçu, PR, Brazil, 2023

Behavioral statements	Practice	n (%)
5. I treat others with dignity and respect.	Enable	59 (85.5)
11. I keep my promises and commitments.	Model	49(71.0)
4. I develop cooperative relationships with the people I work with.	Enable	48 (69.6)
28. I experiment and take risks, even when there is a chance of failure.	Challenge	47 (68.1)
20. I publicly recognize those who set an example of commitment to shared values.	Encourage	46 (66.7)
14. I praise people when they do a job well.	Encourage	45 (65.2)
30. I show recognition and support to team members for their contributions.	Encourage	45 (65.2)
25. I find ways to celebrate accomplishments.	Encourage	43 (62.3)
9. I actively listen to diverse points of view.	Enable	42 (60.9)
6. I dedicate time and energy to ensuring that the people I work with adhere to adopted principles and standards.	Model	41 (59.4)

(the Table 3 continue in the next page...)

Behavioral statements	Practice	n (%)
27. I speak with genuine conviction about the meaning and larger purpose of the work.	Inspire	41 (59.4)
1. I set a personal example of what I expect from others.	Model	40 (57.9)
10. I make sure people know that I trust their expertise.	Encourage	40 (57.9)
24. I provide plenty of freedom and options for people to decide how to carry out their work.	Enable	39 (56.2)
19. I support decisions that others make on their own initiative.	Enable	39 (56.2)
22. I describe an overall vision of what we aim to achieve.	Inspire	38 (55.1)
15. I ensure others are creatively rewarded for their contributions to the success of a project.	Encourage	37 (53.6)
7. I describe an inspiring image of what the future could be.	Inspire	36 (52.2)
18. I ask "What can we learn?" when things do not go as expected.	Challenge	36 (52.2)
17. I involve people in a common vision to show how their long-term interests can be realized.	Inspire	35 (50.7)
23. I take the necessary steps to ensure we set achievable goals, make concrete plans, and define measurable targets for the projects and programs we work on.	Challenge	34 (49.2)
29. I make others learn new skills and develop themselves to advance in their work.	Enable	33 (47.8)
3. I seek challenging opportunities that test my skills and knowledge.	Challenge	33 (47.8)
16. I ask for feedback on how my actions affect others' performance.	Model	33 (47.8)
12. I ask others to share an exciting dream of the future.	Inspire	32 (46.4)
8. I challenge people to use new and innovative ways to do their work.	Challenge	28 (40.6)
13. I seek innovative ways outside the formal boundaries of the organization to improve what we do.	Challenge	27 (39.1)
21.I build consensus around a common set of values for the management of our organization.	Model	25 (36.2)
2. I talk about future trends that will influence how our work is carried out.	Inspire	24 (34.7)
26. I clearly state my leadership philosophy.	Model	16 (23.1)

When analyzing the influence of leadership training on the LPI scores, a statistically significant association was observed. As detailed in Table 4, both nurses who took leadership courses during their undergraduate studies and those who completed non-mandatory leadership courses after graduation showed significantly higher scores in all five leadership domains. These associations were verified through the Mann-Whitney test, which compared the scores between groups with and without each type of training.

Table 4 – Distribution of categorical variables in relation to the scores of the sum of leadership practices. Foz do Iguaçu, PR, Brazil, 2023

Variable	Scores of the sum*				
	Model (1)	Inspire (2)	Challenge (3)	Enable (4)	Encourage (5)
Gender	0.94485	0.57985	0.68949	0.03784	0.25786
Training level	0.00022	0.00001	0.00076	0.00011	0.00333
Leadership training	<0.0001	<0.0001	<0.0001	0.00023	<0.0001
Non-mandatory leadership course	<0.0001	<0.0001	<0.0001	0.000013	<0.0001

*Mann-Whitney's Test

The Spearman correlation analysis (Table 5) revealed that the length of residence in the municipality showed a positive and significant correlation with the domains "Challenge the Process," "Enable Others to Act," and "Encourage the Heart." Notably, the variables length of work in PHC, professional experience, and age showed positive and significant correlations with all five domains of exemplary leadership.

Table 5 – Correlation table of the scores of the sum of leadership practices with numerical variables. Foz do Iguaçu, PR, Brazil, 2023

Variable	Scores of the sum*				
	Model (1)	Inspire (2)	Challenge (3)	Enable (4)	Encourage (5)
Length of residence					
Coefficient	0.20028	0.10347	0.30154	0.31935	0.30930
p-value	0.0989	0.39752	0.0118	0.0074	0.0097
Length of work in PHC†					
Coefficient	0.34983	0.41687	0.46172	0.27064	0.34587
p-value	0.0032	0.0003	0.0006	0.0245	0.0036
Time since graduation					
Coefficient	0.54239	0.56818	0.67840	0.57113	0.53989
p-value	<0.001	<0.001	<0.001	<0.001	<0.001
Age					
Coefficient	0.46237	0.50540	0.60770	0.39866	0.45455
p-value	<0.001	<0.001	<0.001	<0.001	<0.001

*Spearman correlation test performed; †PHC: Primary Health Care

In positive correlation, the variables increase or decrease together. In contrast, in negative correlation, when one variable increases, the other tends to decrease, and vice versa.

Discussion

The profile of the nurses working in PHC who participated in the research aligns with that found in the national context, with an average age of 37.2 years old, and 65.2% in the age range of 26 to 45 years old, the peak of productivity, reflecting the workforce that was on the front lines and bore the burden of the COVID-19 health crisis. This is a generation of professionals who, although young, had sufficient professional maturity to experience the disintegration of health services and the need to reorganize care in a scenario of extreme uncertainty and pressure[1].

The results demonstrated that professional characteristics such as length of professional experience and age were positively correlated (p<0.001) with the practice of leadership. This correlation assumes even greater relevance in the pandemic scenario. The COVID-19 crisis dissolved established routines and protocols, demanding the ability to adapt and resilience, which is often built through experience. Nurses with more years of practice and, consequently, greater professional maturity, demonstrated a more extensive strategic repertoire for managing volatility, team stress, and making quick decisions under pressure[11-12].

In this context, leadership ceased to be an abstract skill and became a crisis management tool. The strong association between leadership training (whether in undergraduate courses or continuing education) and higher scores in the LPI practices emphasizes this point. The pandemic exposed the need for robust managerial competencies beyond clinical assistance: managing scarce resources, handling emotionally exhausted teams, and effectively communicating complex and high-risk information[13]. The spontaneous search for non-mandatory leadership courses (62.3%) suggests that the nurses themselves recognized this demand and actively sought the necessary knowledge to lead during one of the most challenging times for global health[14].

The strong association found in this study between leadership training (both academic and extracurricular) and higher scores in the evaluated practices supports the concept that leadership is not an innate trait but rather a skill that can be developed and enhanced[15]. The COVID-19 crisis acted as a catalyst that tested this competence in an environment of extreme pressure. In this context, solid training — whi-

ch combines technical foundations, managerial skills, and relational abilities such as empathy — proved to be the foundation for exercising resilient and adaptive leadership, essential for navigating adversity[16].

When analyzing specific leadership practices, the domain "Enable Others to Act" emerged with the highest score, demonstrating alignment with the demands of the pandemic. A centralized leadership model with micro-management would have been ineffective in the face of the complexity and rapid evolution of the pandemic scenario, as the success of the care response depends on agility and decentralization[17]. Nurses needed, by necessity, to trust their teams, delegate tasks, and give autonomy so their subordinates could make decisions[18]. This practice became not a choice of management style but a strategy to ensure the functionality of services.

The second most scored practice, "Encourage the Heart," reveals the human dimension of leadership in times of crisis. Recognition and encouragement during the pandemic went beyond simple praise for good work[15]. They became a mental health intervention for the teams, a way to validate the fear, grief, and exhaustion that everyone felt. In a work environment marked by post-traumatic stress and burnout, the leader's ability to celebrate small victories, acknowledge sacrifice, and cultivate a sense of belonging is crucial to maintaining group cohesion and psychological resilience.

By fostering collaboration, the leader establishes a climate of mutual trust with the team, strengthening communication and interpersonal bonds. Such attributes prove to be of utmost importance for leadership in the pandemic context, as subordinates need a safe space to express their fears and concerns to the leader[18]. These qualities not only promote cooperation but also contribute to the formation of a more cohesive and aligned team in its professional goals.

In the daily routine of the nursing team, interpersonal bonds play a crucial role in enhancing professional performance in providing care. This can be attributed to the fact that the level of group cohesion and synergy directly impacts the organizational climate, which has a significant effect on the quality of care provided[19].

The low score in the "Inspire a Shared Vision" domain should not be interpreted as a leadership deficiency but rather as a strategic and expected adaptation to the acute crisis context. In high-criticality environments, characterized by high morbidity and mortality rates and an imminent risk to the physical and psychological integrity of professionals, the cognitive resources of leadership are mostly allocated to managing contingencies and ensuring operational survival[20]. In this scenario, the feasibility of constructing long-term future visions is severely compromised, and managerial priority shifts from strategic planning to tactical execution[21]. Therefore, the creation of inspiring narratives became a practice incongruent with the immediate reality, explaining its lower frequency in the leadership repertoire of nurses.

From the perspective of critical scenarios, marked by high pressure and perpetual uncertainty, leadership becomes even more prominent and indispensable. Its role is fundamental in guiding nursing teams and ensuring excellence in patient care. The ability to make assertive decisions, communicate effectively, delegate tasks, and provide psychosocial support becomes even more crucial during periods of adversity[22].

Study limitations

A limitation of the study is its purely quantitative approach. Although the study quantifies the occurrence and intensity of leadership practices, it does not delve into the underlying mechanisms or the contextual justifications that motivate them. Thus, the reasons behind choosing one practice over another, the specific barriers encountered, the ethical dilemmas faced, or the reports of success and failure in leading the team during the pandemic period are not explored.

Contributions to practice

The study highlights a significant correlation between prior leadership training and superior performance in the leadership practices evaluated. This presents an opportunity for health managers to prioritize investment in management skills development programs for nurses. This strategy is crucial for strengthening the Primary Health Care response capacity in future crisis scenarios.

Conclusion

It is concluded that the leadership practices analyzed among Primary Health Care nurses took on a predominantly pragmatic and relational character. The high frequency of practices such as "Enable Others to Act" and the low expression of "Inspire a Shared Vision" indicate a strategic reorientation: effective leadership focused on managing contingencies and providing psychosocial support to the team, rather than on long-term goals. This adaptation, forged by the crisis, underscores the importance of developing situational leadership skills in nursing to ensure the resilience of the health system.

Authors' contributions

Conception and design or data analysis and interpretation: Silva GK, Almeida ML. Writing of the manuscript and relevant critical review of the intellectual content; final approval of the version to be published and responsibility for all aspects of the manuscript to ensure that the issues related to the accuracy or integrity of any of its parts are properly investigated and resolved: Silva GK, Rocha-Brischiliari SC, Costa MC, Scherer KES, Almeida ML.

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