ORIGINAL ARTICLE

OBJN
Online Brazilian Journal of Nursing
ISSN: 1676 - 4285 | www.objnursing.uff.br

Submission: 10-Sep-2025
Approved: 10-Oct-2025

EFFECTS OF TELEHEALTH TRAINING IN PRIMARY CARE ON CARDIOLOGY REFERRALS: A RETROSPECTIVE STUDY

EFEITOS DA CAPACITAÇÃO EM TELESSAÚDE NA ATENÇÃO PRIMÁRIA SOBRE OS ENCAMINHAMENTOS EM CARDIOLOGIA: ESTUDO RETROSPECTIVO

Núria Ananda P. Giacomelli Pereira[1,2] ORCID: 0000-0002-7946-4291
Bruno Cardoso Dantas[3] ORCID: 0000-0001-6784-5946
Lucas Santos Lopes[2] ORCID: 0000-0002-9262-7526
Carolina Neves Dias de Andrade[2] ORCID: 0000-0002-8354-2619
Magda Guimarães de Araújo Faria[2] ORCID: 0000-0001-9928-6392

[1] Municipal Secretariat of Public Health. Campo Grande, MS, Brazil
[2] Rio de Janeiro State University. Rio de Janeiro, RJ, Brazil
[3] Federal University of Campina Grande. Campina Grande, PB, Brazil

How to cite: Pereira NAPG, Dantas BC, Lopes LS, Andrade CND, Faria MGA. Effects of telehealth training in primary care on cardiology referrals: a retrospective study. Online Braz J Nurs. 2025;24(Suppl 2):e20256885. https://doi.org/10.17665/1676-4285.20256885

RESUMO

Objetivo: Avaliar o impacto da qualificação em telessaúde de médicos da Atenção Primária à Saúde (APS) na resolutividade de atendimentos em doenças cardiovasculares. **Método:** Trata-se de pesquisa quantitativa, observacional e retrospectiva, com dados de sistemas de teleatendimentos e encaminhamentos de uma capital do Centro-Oeste, entre 2023 e 2024. Foram analisadas frequências, medidas de tendência central e dispersão, além da aplicação do teste do qui-quadrado de Pearson. **Resultados:** Participaram 113 médicos capacitados em telessaúde e 229 pacientes atendidos por teleinterconsulta em cardiologia. Verificou-se associação significativa entre profissionais do sexo feminino e o uso da teleinterconsulta. Antes da implantação, 89 pacientes tinham histórico de encaminhamentos presenciais, número reduzido para 60 após o teleatendimento, configurando queda de 73,8%. A capacitação médica esteve diretamente vinculada a essa redução. As principais demandas incluíram hipertensão arterial primária (43,3%), insuficiência cardíaca (14,2%) e arritmias (9,8%). **Conclusão:** A qualificação em telessaúde é estratégia efetiva para aumentar a resolutividade da APS no cuidado cardiovascular, reduzindo encaminhamentos desnecessários. A teleinterconsulta fortalece a gestão clínica e contribui para otimizar o manejo de hipertensão, insuficiência cardíaca e arritmias, favorecendo a redução da morbimortalidade por doenças cardiovasculares.

Descritores: Telessaúde; Educação Continuada; Atenção Primária à Saúde; Encaminhamento e Consulta; Doenças Cardiovasculares.

ABSTRACT

Objective: To evaluate the impact of telehealth qualification for Primary Health Care (PHC) physicians on the resolution capacity of cardiovascular disease care. **Method:** This is a quantitative, observational, and retrospective study using data from telehealth and referral systems from a state capital in the Midwest region [of Brazil], between 2023 and 2024. Frequencies, measures of central tendency, and dispersion were analyzed, in addition to the application of Pearson's chi-squared test. **Results:** Participants included 113 physicians trained in telehealth and 229 patients who received cardiology teleconsultations. A significant association was found between female professionals and the use of teleconsultation. Prior to implementation, 89 patients had a history of in-person referrals, a number that decreased to 60 after teleconsultation, representing a 73.8% drop. Physician training was directly linked to this reduction. The main demands included primary hypertension (43.3%), heart failure (14.2%), and arrhythmias (9.8%). **Conclusion:** Telehealth qualification is an effective strategy to increase the resolution capacity of PHC in cardiovascular care, reducing unnecessary referrals. Teleconsultation strengthens clinical management and contributes to optimizing the management of hypertension, heart failure, and arrhythmias, thereby favoring a reduction in morbidity and mortality from cardiovascular diseases.

Descriptors: Telehealth; Continuing Education; Primary Health Care; Referral and Consultation; Cardiovascular Diseases.

Corresponding author:
Magda Guimarães de Araujo Faria
Email: magda.faria@uerj.br

Publisher:
Escola de Enfermagem Aurora de Afonso Costa – UFF
Rua Dr. Celestino, 74 – Centro, CEP: 24020-091 – Niterói, RJ, Brazil
Journal email: objn.cme@id.uff.br

What is already known:

- Telehealth has proven to be a strategic tool in supporting clinical management in Primary Health Care (PHC).
- Cardiovascular diseases represent one of the main causes of morbidity and mortality, requiring greater resolution capacity in PHC.
- Gaps still exist regarding the direct impact of professional telehealth training on the reduction of in-person referrals.

What this article adds:

- The qualification of physicians in telehealth reduced in-person referrals to cardiology by 73.8%.
- The use of teleconsultation increased the resolution capacity in the care of hypertension, heart failure, and arrhythmias.
- The results show that professional training strengthens PHC and contributes to the reduction of cardiovascular morbidity and mortality.

INTRODUCTION

The definition of the term telehealth was established by the World Health Organization (WHO) as the use of Information and Communication Technologies (ICT) for the provision of health services by professionals in the field, promoting the exchange of information for the purposes of diagnosis, treatment, and prevention of diseases, as well as research, evaluations, and continuing education for health professionals, thereby fostering the health promotion of the general population[1].

The broad scope and flexibility of digital technologies, adapting to the health needs of each social context, provide innovative solutions for health service delivery and open significant opportunities for their use. Furthermore, the use of telehealth can bring benefits demonstrated by scientific evidence, such as expanding and facilitating access to healthcare, reducing travel costs for patients and health professionals, and improving adherence and the quality of care provided[2-5].

Among the teleassistance resources available to provide diagnostic or therapeutic advice electronically, we can highlight teleconsultation, which involves the interaction between a health professional and a patient[6], and tele-interconsultation, which allows for communication between general practitioners and specialists[5].

In Primary Health Care (PHC), telehealth has emerged as a transformative tool in modern health, particularly in optimizing the referral process from primary to specialized care. By utilizing digital platforms for consultations, telehealth demonstrates significant potential in reducing unnecessary referrals, improving resource allocation, and increasing the overall efficiency of health systems[7].

In this regard, the training of health professionals and the development of skills and competencies are essential factors for the efficient management of care in PHC, which influences the provision of management practices, the continuing education of the team, and, consequently, the quality of care actions[8].

One of the main points of convergence between telehealth actions and the improvement of care quality is matrix support, whose actions evidenced in the literature range from continuing education to tele-interconsultations[5,9].

This type of action is extremely effective, especially in increasing the resolution capacity of actions targeting non-communicable diseases (NCDs), of which cardiovascular diseases (CVDs) represent the main cause of premature morbidity and mortality globally[10]. Among the modifiable risk factors, arterial hypertension stands out as the most relevant for the development of CVD and for mortality, particularly in the Americas, and it is estimated that high blood pressure is responsible for more than half of the cardiovascular events in this population[11].

Furthermore, the containment of NCDs is part of the Sustainable Development Goals (SDGs), establishing a target by 2030 to reduce by one-third the premature mortality from non-communicable diseases through prevention and treatment, and to promote mental health and well-being, based on the indicator of the mortality rate attributed to cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases[12].

Despite the high incidence of morbidity and mortality from CVDs, approximately 80% of cases can be timely and effectively prevented by primary health care[13]. Thus, the need for professional engagement in this context is reinforced, through the provision of professional qualification actions for the use of telehealth tools and the dissemination of actions for early treatment[14].

The use of telehealth in primary care for the treatment of CVDs, especially hypertension, has progressively expanded. A systematic review identified 38 interventions conducted in the United States, many of which adopted team-based care involving different health professionals. Among the strategies employed, remote patient monitoring and videoconferencing stood out, showing superior clinical outcomes, such as better blood pressure control, compared to in-person care. Moreover, telehealth contributes to enhancing patient communication and engagement, consolidating itself as a relevant complementary resource to traditional methods in CVD management[15].

Thus, the integration of telemedicine across different levels of health care has been recognized by professionals and researchers as a promising strategy for comprehensive assistance in cardiological care within PHC[16]. Therefore, the objective of this study is to evaluate the impact of telehealth qualification for PHC physicians on the resolution capacity of care for cardiovascular diseases. To this end, the hypothesis was that telehealth qualification of PHC physicians would increase the resolution capacity for cardiovascular cases managed in primary care.

METHOD

Study design

This is a quantitative, observational study with a retrospective design. This article used the parameters suggested by the Strengthening the Reporting of Observational studies in Epidemiology (STROBE) statement for reporting observational research findings.

Population and Sampling

The study included 113 medical professionals working in PHC in a municipality in the Midwest region of Brazil who were trained in the use of a Telehealth system. It is noteworthy that the municipality in question has a territorial area of approximately 8,082.327 km², with a resident population

of 898,100 people and a demographic density of 111.11 inhabitants/km²[17]. Its PHC structure includes 74 health units and 86.75% coverage by family health teams[18], with 326 medical professionals working in PHC. Thus, a proportion of 34.7% of professionals participated in the study, which confers a 90% confidence level and a 5% margin of error. Additionally, 229 patients who underwent cardiology tele-interconsultation also participated. The entire dataset was obtained through the analysis of secondary data pertaining to the period from January 2023 to December 2024.

Data Source

The data analyzed in this study were obtained from records from the computerized system for telehealth services and health referrals, implemented in a state capital in the Midwest region of Brazil. The database was provided by the Municipal Health Secretariat, which is responsible for managing the system, and includes coded variables describing the sociodemographic profile of users (such as sex, age, and service unit), as well as the professional profile of the physicians (including sex, age, type of practice unit, and participation in training). Furthermore, the dataset includes detailed information on the use of the tele-interconsultation system, such as request history, specialty involved (with an emphasis on telecardiology), and records of in-person referrals made before and after the professionals' training. The use of secondary records from official health information systems lends greater reliability and comprehensiveness to the analysis, allowing for the evaluation of the impact of institutional interventions, such as physician training, on the dynamics of telemedicine service use and the profile of referrals made within the municipal health network.

Data Collection and Analysis Procedures

Data collection was performed by extracting electronic records from the municipal telehealth and referral system, under authorization from the Municipal Health Secretariat. The collection period covered June and July 2025, encompassing all available records related to the trained physicians and the patients who received cardiology tele-interconsultation in the studied municipality. The extracted data were organized into electronic spreadsheets, containing coded variables related to the sociodemographic profile of the patients (sex, age, service unit, history of cardiology consultations) and the professional profile of the physicians (sex, age, type and unit of practice, participation in training, history of system requests). The information was anonymized prior to analysis, ensuring the confidentiality and privacy of the participants. Data analysis was conducted in two main stages. First, a descriptive analysis was performed, calculating absolute and relative frequencies for categorical variables, and measures of central tendency and dispersion (mean, standard deviation, minimum and maximum values) for numerical variables. Subsequently, a bivariate analysis was conducted to identify associations between the use of tele-interconsultation after physician training and sociodemographic and professional variables. For comparisons between groups, Pearson's chi-squared test was used for categorical variables, considering a significance level of 5% ($p<0.05$). The analyses were performed using statistical analysis tools and electronic spreadsheets. This procedure allowed for the evaluation of the impact of physician training on changes in clinical conduct, especially regarding the adoption of tele-interconsultation and the reduction of in-person referrals to the cardiology specialty, as well as identifying possible factors associated with greater adherence to the use of telemedicine in the municipal health network.

Ethical Aspects

The conduct of this study was preceded by obtaining institutional authorization from the Municipal Secretariat of Public Health of Campo Grande, Mato Grosso do Sul, Brazil. The research protocol was submitted for review by a Research Ethics Committee and was approved in accordance with the current ethical regulations in the country. Considering that the investigation exclusively used secondary data, without the direct involvement of human beings or the collection of identifiable information, the committee approved the waiver of the requirement for an informed consent form (ICF), as provided for in the resolutions of the National Health Council, under opinion n. 7.621.352.

RESULTS

The results obtained from the analyses performed are presented below, highlighting the main findings and their implications for the study. The sociodemographic data of the trained physicians can be observed in Table 1.

Table 1 - Sociodemographic analysis of physicians trained in telehealth. Mato Grosso do Sul, MS, Brazil, 2025

Category	n	%
Sex		
Female	75	66.4
Male	38	33.6
Age		
Mean	34.1	NA
Minimum	25	NA
Maximum	65	NA
Age range		
21-30	48	42.5
31-40	42	37.2
41-50	15	13.3
51-60	4	3.5
61+	4	3.5
Type of unit		
FHU*	95	84.1
Recently transformed into FHU	11	9.7
Prison system	5	4.4
Home care	2	1.8

Note: FHU: Family Health Unit
Source: prepared by the authors, 2025.

Following the physician training, the association between the use of cardiology tele-interconsultation and the professionals' characteristics, specifically sex and age range, was evaluated. For this, bivariate analyses were performed using Pearson's chi-squared test. Regarding sex, the Pearson's chi-squared test yielded: $\chi^2=4.29$; $p=0.0384$, which means there is a significant association regarding the adoption of tele-interconsultation by female professionals. Similarly, the analysis by age range shows the distribution of physicians using tele-interconsultation across different age groups. Regarding age range, the Pearson's chi-squared test

yielded: χ^2=3.73; p=0.4441, which leads us to a non-significant association; that is, age does not influence the adoption of tele-interconsultation. Table 2 presents the usage profile of the tele-interconsultation tool after the training.

Table 2 - Use of the tele-interconsultation tool after training. Mato Grosso do Sul, MS, Brazil, 2025

Category	Tool utilization	
	Yes	No
Sex		
Female	58 – 51.3%	17 – 15%
Male	36 – 31.9%	2 – 1.8%
Age range		
21-30	11 – 9.73%	37 – 32.7%
31-40	5 – 4.4%	37 – 32.7%
41-50	3 – 2.6%	12 – 10.6%
51-60	0	4 – 3.5%
61+	0	4 – 3.5%

Source: prepared by the authors, 2025.

The data related to the sociodemographic aspects of the users seen by the cardiology tele-interconsultation service can be observed below in Table 3.

Table 3 - Sociodemographic analysis of users seen by cardiological teleconsultation. Mato Grosso do Sul, MS, Brazil, 2025

Category	n	%
Sex		
Female	133	58.1
Male	96	41.9
Age		
Mean	62.5	NA
Minimum	8.0	NA
Maximum	97	NA
Age range		
21-30	14	6.1
31-40	15	6.6
41-50	39	17.0
51-60	161	70.3
61+	14	6.1
SISREG cardiology history		
Yes	117	51.1
No	112	48.9

Source: prepared by the authors, 2025.

A total of 229 medical records of patients who underwent cardiology tele-interconsultation were analyzed. Of these, only 60 required in-person referral after the teleconsultation; in other words, 73.8% of the cases were resolved by tele-interconsultation (or 'the tele-interconsultation demonstrated a 73.8% resolution rate'). Pearson's chi-squared test (χ^2=7.80; p=0.0052) revealed a significant association between physician training and the reduction of in-person referrals.

Regarding the reasons recorded at the time of scheduling the tele-interconsultation, it is noted that primary arterial hypertension was the most prevalent condition among users, present in 43.3% of cases. Following this, heart failure was observed, accounting for 14.2% of the consultations, and other cardiac arrhythmias, which corresponded to 9.8% of the consultations.

DISCUSSION

The profile of the physicians trained in telehealth was predominantly female, converging with a growing profile of female physicians[19-20] working in PHC[19]. Furthermore, the sample, composed of a young population, is aligned with current findings[19-21].

The qualification of health professionals in telehealth is fundamental to ensuring effectiveness and safety in remote care. Adequate training contributes to better clinical outcomes, greater patient satisfaction, and the integration of digital technologies into healthcare, provided that the challenges imposed by inadequate infrastructure and the absence of digital literacy among professionals and users are overcome[22].

The use of telehealth by PHC professionals is often associated with contextual factors related to the organization of the local health system and health service, such as structure and institutional support for training[23]. In this regard, telehealth assists in the enhancement of PHC, expanding access and reducing costs by decreasing in-person consultations, contributing to user satisfaction and treatment adherence[24].

Regarding the management of CVDs in PHC, telehealth is an essential tool, as it increases treatment adherence, reduces re-hospitalizations, and streamlines care. However, for its potential to be fully realized, it is necessary to overcome legislative challenges, technological barriers, and resistance from patients and professionals[25].

The use of tele-interconsultation for CVD care in PHC is already recognized as a successful experience in various parts of the world. An Italian project aimed at this purpose conducted over 2,000 tele-interconsultations, enabling immediate responses in 96% of cases and reducing the need for cardiology consultations by 54%[26]. Joint teleconsultations can promote continuity of care for patients at the interface of primary and secondary care and enhance medical decision-making through joint analysis, which contributes to precise diagnoses and more effective therapeutic plans[5,27]. Moreover, similar results were observed in Indonesia, where the satisfaction rate was over 95% and the early hospitalization rate increased for indicated patients[28].

The use of telehealth tools like tele-interconsultation can be a differentiator in treatment adherence, especially in cardiology, where geographical barriers and users' own mobility are often impediments to care delivery[29]. These findings reflect the substantial reduction in the need for in-person referrals, indicating greater resolution capacity in PHC and greater effectiveness of telehealth use as a tool to support specialized care. Therefore, teleconsultation and tele-interconsultation can result in better clinical skills and fewer referrals, without any apparent negative effects for patients[16,30], serving as an effective strategy for the collaborative management of clinical cases, including complex ones, by promoting an agile exchange of knowledge, especially in synchronous communication with immediate feedback[5].

Regarding the prevalence of CVDs, the analyzed sample follows the global trend of high prevalence of systemic arterial hypertension (SAH). It is estimated that SAH affects at least 33% of the world's population, and more than 75% of these individuals live in low- and middle-income countries[31]. In Latin American and Caribbean countries, it is estimated that high blood pressure is responsible for more than half of cardiovascular events and approximately 17% of all deaths[11].

Furthermore, CVDs impose a significant economic and health burden, leading to social and productivity losses. The implementation of public policies and effective strategies for the prevention, treatment, and management of CVDs can change this scenario[32], especially in PHC, due to its capillarity, ensuring access and medical care closer to home[29,33]. In this context, telehealth demonstrates its importance for the therapeutic management of these users, particularly in PHC.

Considering the characteristics common to a cross-sectional study, the findings have limitations, given that the sample does not represent the entirety of professionals working in the primary health care network and that they may not have used telehealth resources due to a lack of resources, such as equipment and internet. Another limitation is related to the analysis of secondary data, which may have been compromised by the quality and completeness of the records, as these data were produced for clinical purposes and not for research. This can lead to incomplete fields, typographical errors, and variability between units.

CONCLUSION

The study allowed for the identification of the effective relationship between continuing education, telehealth, and the reduction of referrals related to cardiovascular conditions in primary care. The significant reduction in in-person referrals to cardiology after tele-interconsultations reinforces Telehealth's capacity to broaden the resolution capacity of PHC, contributing to the continuous and timely care of high-prevalence chronic conditions, such as arterial hypertension and heart failure. The results reinforce the importance of public policies that consolidate Digital Health as a structuring tool in cardiovascular disease care and that invest in the permanent training of professionals as a central axis for strengthening PHC.

ACKNOWLEDGMENTS

We thank the Municipal Secretariat of Health of Campo Grande – MS for providing the data for our analysis.

CONFLICT OF INTERESTS

The authors declare no conflict of interests.

REFERENCES

1. World Health Organization. Future of digital health systems: report on the WHO symposium on the future of digital health systems in the European region: Copenhagen, Denmark, 6–8 February 2019 [Internet]. Copenhagen: WHO Regional Office for Europe; 2019 [cited 2025 Jun 25]. Available from: https://iris.who.int/handle/10665/329032
2. Caetano R, Silva AB, Guedes ACCM, Paiva CCN de, Ribeiro G da R, Santos DL, et al. Challenges and opportunities for telehealth during the COVID-19 pandemic: ideas on spaces and initiatives in the Brazilian context. Cad Saude Publica. 2020;36(5):e00088920. https://doi.org/10.1590/0102-311X00088920
3. Cardoso N de O, Tagliapietra K da R, Salvador EZ, Machado W de L. Adherence to online psychotherapy during the COVID-19: a scoping review. Psico-USF. 2023;28(1):117-132. https://doi.org/10.1590/1413-82712023280110
4. Lisboa KO, Hajjar AC, Sarmento IP, Sarmento RP, Gonçalves SHR. A história da telemedicina no Brasil: desafios e vantagens. Saúde Soc. 2023;32(1):e210170pt. https://doi.org/10.1590/S0104-12902022210170pt
5. Menezes LL de, Souza MI de C de, Simas KB da F, Mueller V, Guimarães E dos S, Berry MC de C, et al. Analysis of the perception of doctors of the Unified Health System about the use of teleconsultation in Campo Grande-MS, Brazil. Cien Saude Colet. 2024;29(11):e03352024. https://doi.org/10.1590/1413-812320242911.03352024
6. Pan American Health Organization. Teleconsultations during a pandemic [Internet]. Washington (DC): OPAS; 2020 [cited 2025 Jun 20]. Available from: https://iris.paho.org/handle/10665.2/52006
7. Catapan S de C, Bruckmann G, Nilson LG, Caffery LJ, Kelly JT, Calvo MCM, et al. Increasing primary care capacity and referral efficiency: A case study of a telehealth centre eConsult service in Brazil. J Telemed Telecare. 2025;31(7):1014-1023. https://doi.org/10.1177/1357633X241235426
8. Bakerjian D, Edwards JJ, Cachu AM, Kwan J. Enhancing Primary Care by Investing in Interprofessional Education: The SPLICE Project. Nurs Adm Q. 2025;49(1):5-17. https://doi.org/10.1097/NAQ.0000000000000667
9. Belber GS, Vasconcelos RO, Agreli HLF, Haddad AE, Peduzzi M, Leonello VM. Telehealth use in primary healthcare collaborative interprofessional practice: protocol for a scoping review. BMJ Open. 2023;13(3):e069163. https://doi.org/10.1136/bmjopen-2022-069163
10. World Health Organization. World health statistics 2023: monitoring health for the SDGs, sustainable development goals [Internet]. Geneva: WHO; 2023 [cited 2025 Jun 25]. Available from: https://www.who.int/publications/i/item/9789240074323
11. Institute for Health Metrics and Evaluation. GBD Compare: Global, both sexes, all ages, 2021, DALYs [Internet]. Seattle: IHME; 2025 [cited 2025 Jun 20]. Available from: http://vizhub.healthdata.org/gbd-compare
12. United Nations. General Assembly. Transforming our world: the 2030 Agenda for Sustainable Development [Internet]. New York: United Nations; 2015 [cited 2025 Jun 27]. Available from: https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf
13. Bonfim S, Massago M, de Carvalho Dutra A, Arruda MHB, Oliveira FS, Thomaz ÉBAF, et al. Hospitalizations for Cardiovascular Diseases Sensitive to Primary Health Care in Paraná State, Brazil: A Bayesian Spatiotemporal Model. Ann Fam

Med. 2024;22(2):140-148. https://doi.org/10.1370/afm.3083
14. Graever L, Mafra PC, Figueira VK, Miler VN, Sobreiro JDSL, Silva GP de C da, et al. Telehealth Support From Cardiologists to Primary Care Physicians in Heart Failure Treatment: Mixed Methods Feasibility Study of the Brazilian Heart Insufficiency With Telemedicine Trial. JMIR Cardio. 2025;9:e64438. https://doi.org/10.2196/64438
15. Jackson TN, Sreedhara M, Bostic M, Spafford M, Popat S, Lowe Beasley K, et al. Telehealth Use to Address Cardiovascular Disease and Hypertension in the United States: A Systematic Review and Meta-Analysis, 2011-2021. Telemed Rep. 2023;4(1):67-86. https://doi.org/10.1089/tmr.2023.0011
16. Maria ARJ, Serra H, Castro MG, Heleno B. Telemedicine as a tool for continuing medical education. Fam Pract. 2023;40(4):569-574. https://doi.org/10.1093/fampra/cmad085
17. Instituto Brasileiro de Geografia e Estatística. Cidades: Campo Grande, MS [Internet]. Rio de Janeiro: IBGE; 2025 [cited 2025 Jun 25]. Available from: https://www.ibge.gov.br/cidades-e-estados/ms/campo-grande.html
18. Resende APG de L, Geniole LAI, Abdo T de FC, Galeano AG, Pereira G de A, Justino LCL. Expansion of Primary Health Care coverage in Campo Grande, Mato Grosso do Sul, Brazil (2013-2023). Cien Saude Colet. 2024;29(11):e04032024. https://doi.org/10.1590/1413-812320242911.04032024
19. Barbosa S de P, Coelho KA, Carvalho LM de, Sarria B, Santos RC dos, Cavalcante RB. Aspectos que Compõem o Perfil dos Profissionais Médicos da Estratégia Saúde da Família: o Caso de um Município Polo de Minas Gerais. Rev Bras Educ Med. 2019;43(1 suppl 1):395-403. https://doi.org/10.1590/1981-5271v43suplemento1-20180177
20. Scheffer M. Demografia médica no Brasil 2025 [Internet]. Brasília: Ministério da Saúde; 2025 [cited 2025 Jun 25]. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/demografia_medica_brasil_2025.pdf
21. Franco CM, Giovanella L, Bousquat A. Doctors' Work in Primary Health Care in remote rural municipalities: where is the territory? Cien Saude Colet. 2023;28(3):821-836. https://doi.org/10.1590/1413-81232023283.12992022
22. Beheshti L, Kalankesh LR, Doshmangir L, Farahbakhsh M. Telehealth in Primary Health Care: A Scoping Review of the Literature. Perspect Health Inf Manag. 2022;19(1):1n. PMCID: PMC9013222
23. Sarti TD, Almeida APSC. Incorporação de telessaúde na atenção primária à saúde no Brasil e fatores associados. Cad Saude Publica. 2022;38(4):PT25222 1. https://doi.org/10.1590/0102-311XPT252221
24. Kumar M, Pandey KM. Analysing the Impact and Efficacy of Telemedicine through Data Analysis. International Journal of Preventive Medicine and Health (IJPMH). 2025;5(1):10-15. http://dx.doi.org/10.54105/ijpmh.F1046.0501124
25. Saifan AR, Oleimat B, Shhadeh AFA, Al-Yateem N. Telemedicine and cardiovascular diseases. Jordan Journal of Applied Science - Natural Science Series. 2023;17:48-50. https://doi.org/10.35192/jjoas-n.v17i1.1553
26. Cainelli L, Moretti M, Bonmassari R. Efficacia del teleconsulto tra la cardiologia ospedaliera e la medicina del territorio nei percorsi di cura delle malattie cardiovascolari: il progetto trentino "Cardiologia in linea". G Ital Cardiol (Rome). 2023;24(6):432-435. https://doi.org/10.1714/4041.40202
27. Maria ARJ, Serra H, Castro MG, Heleno B. Interaction at the primary-secondary care interface: Patients' and physicians' perceptions of teleconsultations. Digit Health. 2022;8:20552076221133698. https://doi.org/10.1177/20552076221133698
28. Mappangara I, Qanitha A, Uiterwaal CSPM, Henriques JPS, de Mol BAJM. Tele-ECG consulting and outcomes on primary care patients in a low-to-middle income population: the first experience from Makassar telemedicine program, Indonesia. BMC Fam Pract. 2020;21(1):247. https://doi.org/10.1186/s12875-020-01325-4
29. Almeida APSC, Nunes BP, Duro SMS, Lima R de CD, Facchini LA. Falta de acesso e trajetória de utilização de serviços de saúde por idosos brasileiros. Cien Saude Colet. 2020;25(6):2213-2226. https://doi.org/10.1590/1413-81232020256.27792018
30. Blank L, Baxter S, Woods HB, Goyder E, Lee A, Payne N, et al. Referral interventions from primary to specialist care: a systematic review of international evidence. Br J Gen Pract. 2014;64(629):e765-e774. https://doi.org/10.3399/bjgp14X682837
31. World Health Organization. Global report on hypertension: the race against a silent killer. Geneva: WHO; 2023 [cited 2025 Jun 27]. Available from: https://www.who.int/publications/i/item/9789240081062
32. Bandeira TFG de S, Mosegui GBG, Vianna CM de M, López AJG. Estimated Loss of Productivity Attributed to Cardiovascular Diseases in South America. Arq Bras Cardiol. 2024;121(3):e20230521. https://doi.org/10.36660/abc.20230521
33. Molano Casimiro FJ, González Correa M, Romero Reyes MJ. Utilidad de la teleconsulta en cardiología. Semergen. 2024;50(6):102195. https://doi.org/10.1016/j.semerg.2024.102195

AUTHORSHIP CONTRIBUTIONS

Study conception: Pereira NAPG, Faria MGA.
Data acquisition: Pereira NAPG.
Data analysis: Pereira NAPG, Dantas BC, Lopes LS, Andrade CND, Faria MGA.
Data interpretation: Pereira NAPG, Dantas BC, Lopes LS, Andrade CND, Faria MGA.
All authors are responsible for the textual drafting and critical review of the intellectual content, for the final published version, and for all ethical, legal, and scientific aspects related to the accuracy and integrity of the study.