

Analysis of the perception of doctors of the Unified Health System about the use of teleconsultation in Campo Grande-MS, Brazil

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THEMATIC ARTICLE

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Abstract *This study aimed to analyze the perception of the use of teleconsultation by physicians of the Unified Health System in Campo Grande-MS, as an auxiliary tool for the care of SUS patients, addressing effectiveness, satisfaction and access to results, directed to physicians of different specialties. Of a total population of 127 professionals, 100 voluntarily participated in the survey. The results demonstrated that teleconsultation was perceived as advantageous, highlighting the exchange of knowledge (44.1%) and the reduction of waiting time (42.5%). Disadvantages included low investment in the operational structure (25.2%) and technical difficulties of communication (23.6%). Teleconsultation proved to be innovative, providing intense exchange of knowledge and reducing waiting time. Although it presents technical challenges, most physicians perceived it as effective and safe.*

Key words *Telemedicine, Remote Consulting, Information Technology, Health Services*

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Introduction

One of the primary objectives and challenges of Health Care Networks (RAS) is to provide adequate and timely care, expanding and democratizing access to health services^{1,2}. To implement a health care model focused on preserving life, it is crucial to expand the scope of Telehealth in order to support the health professionals involved³.

The COVID-19 pandemic represented a global challenge, especially for Education and Health. The growth of initiatives and implementation of actions related to the use of information and communication technologies (ICTs) through Telehealth as a way of offering guidance and care was an essential and strategic step for prevention, surveillance, and monitoring in public health, improving user access to consultations and services, reducing waiting times and qualifying referrals for specialized procedures⁴.

Incorporating Telehealth and the need for the public health system to increase its resolution through PHC favors the knowledge and application of the different modalities of its tools, their applications, and implications, especially when considering the regional disparities in the distribution of health professionals and access to technologies^{5,6}.

In the context of RAS, Teleinterconsulting can be highlighted among Telehealth possibilities, a modality that allows dialogue between general practitioners and specialists about the same patient case⁷.

By allowing the specialist doctor access to the patient's images and information history, analyses are performed, and opinions are issued in real time or asynchronously, using store-and-forward technology⁸. The underlying expectation is that the service will be more effective and quicker, reducing unnecessary referrals to specialists⁹.

In practice, positive Teleinterconsulting experience reports conclude that the Teleinterconsulting model is effective when adopted by professionals working in Emergency Care in the care of severe patients in pandemic situations¹⁰. Another report from the Santa Catarina Telehealth Center showed that most cases could be managed in primary care, which resulted in a significant reduction in the number of referrals to specialists and decreased waiting time for appointments with them¹¹.

In this context, in 2021, Campo Grande-MS implemented a Teleinterconsulting system in the Unified Health System through the TEIAS (Integrated Health Care Territories) program, using

digital communication technologies in which family and community doctors can connect with specialist doctors, seeking a second opinion to assist in the diagnosis or treatment of a patient, in order to promote greater user care resolution. Therefore, the present study aimed to analyze the perception of the teleinterconsulting system used by doctors of the Unified Health System of Campo Grande-MS as an auxiliary tool to improve the care of the Mato Grosso do Sul population.

Materials and methods

This study used two methodologies to analyze health professionals' perceptions of using technologies as a tool to support user care in the public network: a survey of evidence-based literature and exploratory qualitative research.

The evidence-based practice steps were followed for the research framework: problem identification, formulation of the guiding question, search for scientific evidence, evaluation of the evidence and its applicability, implementation of the evidence, and evaluation of the results of change. The construction of the guiding question followed the PICO strategy: P = health professionals, I = teleinterconsulting, C = COVID-19 pandemic, and O = impact and perception of professionals¹².

The literature selection process included original, open-access articles published between 2007 and 2024, available for reading in full in Portuguese and English, found in the following databases: LILACS via the Virtual Health Library (BVS), MEDLINE via PubMed and Scopus, using the combination of the descriptors DeCS and MeSH: (((Telemedicine) AND (Health Services)) AND (Information Technology)) AND (Remote Consultation).

The medical professional's perception tool

The application of an electronic questionnaire focused on the target audience of 127 health professionals (doctors) distributed across the 12 health units in Campo Grande (Mato Grosso do Sul) part of the TEIAS program and the Outpatient Regulation Management, registered in the National Registry of Health Establishments (CNES), in a search made on the website <https://cnes.datasus.gov.br/> on 19.01.2024¹³. All participants signed the Informed Consent Form.

The information collected was directed to a database, where it was analyzed using the R Sta-

tistical Software, with descriptive analyses of the data, including absolute and relative frequencies, means, standard deviations, medians, and minimum and maximum values. The variables were described based on the professional's specialty and the census survey as a whole.

The Research Ethics Committee approved the study under CAAE: 70461323.2.0000.5282.

The difficulty in finding a single questionnaire in the literature applied in the public health service, validated and with the characteristics of this study (teleinterconsulting use) led to the adaptation of two instruments developed and applied to health professionals regarding their perceptions in using technology for patient care and interface with other professionals^{14,15}. One of the questionnaires aimed to analyze the use, effectiveness, and resolution of teleconsulting sessions conducted by the Minas Gerais telecare network in primary health care. This instrument consists of three questions: (1) "Did the teleconsulting avoid the patient being referred?" – the question concerns the patient's referral to other cities and explores the activity's efficiency; (2) "Did the teleconsulting you just completed answer your question?" – the question assesses the quality and resolution of the professional's response; (3) "How satisfied are you with the teleconsulting system?" – the question is linked to the general level of satisfaction of the professional using the system¹⁴.

The other questionnaire was developed to analyze the level of perception and attitudes of health professionals who used the teleconsulting system and whether this system affected the quality of the therapeutic process. Its questions/statements are linked to the following criteria: work method preference, working conditions, advantages and disadvantages of the system, and evaluation of the effectiveness and resolvability of the teleconsulting system¹⁵.

The final questionnaire was prepared using Research Electronic Data Capture (REDCap, <http://redcap.uerj.br/>), a secure web platform for building and managing online databases and surveys, and made available electronically through a link sent by the health manager of the Municipality of Campo Grande-MS, open to receive responses for 30 calendar days. The municipal management sent invitations to participate through email addresses and cell phone numbers available in the database, and the research team did not have direct access to this information.

A message was sent, linked to the questionnaire link, inviting eligible participants. When clicking on the survey link, participants were

directed to the questionnaire, and the first page contained the electronic informed consent form, in which consent should be given by selecting "I agree to participate". Upon agreeing, the participant started completing the questionnaire with demographic data and then specific questions about their perception of using the teleinterconsulting system.

The part of the questionnaire on the professionals' perception included opinions on the advantages and disadvantages of using teleinterconsulting, access to laboratory results or images during the use of teleinterconsulting, comparison of the duration between in-person consultation and teleinterconsulting, the effectiveness of consultations through teleinterconsulting, and reliability of the system regarding data security and connectivity.

The instrument was applied only to the group of medical professionals, and any responses identified as not belonging to the target population, such as responses given by nurses and psychologists, were excluded from the database for the analysis of results.

Teleinterconsulting flow in Campo Grande-MS

All information in the questions was adapted to the term teleinterconsulting, given that it uses Information and Communication Technologies (ICTs) to allow for the exchange of information and opinions between doctors remotely, with or without the physical presence of the patient, to assist in diagnosis, treatment, monitoring, or prevention of diseases. It is presented as another option for health care to promote it and provide better care to the population, as shown in Figure 1.

Results

The survey was sent to the 12 primary health units in Campo Grande-MS, belonging to the TEIAS program (Integrated Health Care Territories), representing a total of 123 family and community doctors and four specialist doctors assigned to the Outpatient Regulation Management, making up a sample of 127 participants.

Some professionals, such as the cardiologist (1), gastroenterologist (3), pulmonologist (1), and orthopedist (1), are registered with the CNES as Family and Community Doctors despite having indicated the specialties above in the questionnaire responses.

Women represented 60.6% of respondents, and the predominant age group was people up to 40 years old (81.8%). Almost all doctors (93.9%) worked in the specialty of “family and community medicine” (data not tabulated).

Table 1 presents the responses regarding the professionals’ perception and the advantages of using the teleinterconsulting system, in which most of the group of family doctors indicated the item “exchange of knowledge” (42.3%) as the main advantage, followed by the items “reduced waiting times in specialized service queues” (41.5%) and “reduced number of referrals for in-person consultations” (36.6%). In the group of other specialist doctors, two items were classified as most advantageous: “reduced number of referrals for in-person consultations” (100%) and “exchange of knowledge between professionals” (100%), followed by the items “better resolution for diagnosis” (75%), “reduced number of referrals for in-person consultations” (75%), “reduced waiting times in specialized service queues” (75%), and “greater efficiency in the

regulation and hierarchization of elective cases” (75%). The general classification shows as the most significant advantages pointed out by professionals (both groups) the “exchange of knowledge between professionals” (44.1%) followed by the items “reduced waiting times in specialized service queues” (42.5%) and “reduced number of referrals for face-to-face consultations” (37.8%).

Analyzing responses regarding the disadvantages of the teleinterconsulting system revealed differences in perception when comparing the two groups of professionals in the sample. Family and community doctors perceive that the most significant disadvantage is “Technical communication difficulties” (42.4%), while other specialist doctors believe it is “Low investment in operational structure” (66.7%). The second most significant disadvantage, which was pointed out by both groups of professionals (family doctors and other specialist doctors), concerns the item “Inability to meet in person to assess the patient” (36.4% and 44.4%, respectively). The general analysis reveals that the most significant disad-

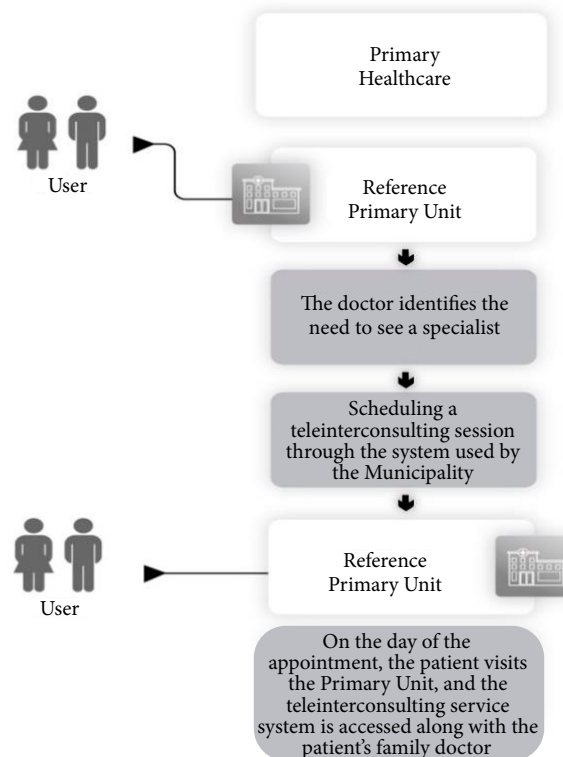


Figure 1. Illustrative flowchart on user care through teleinterconsulting in Campo Grande-MS.

Source: Authors.

vantage pointed out was “Technical communication difficulties” (42.9%) (Table 2).

Another aspect analyzed was the perception regarding the duration of teleinterconsulting. Although, in this case, the number of respondents was lower, the results suggest that this duration is longer than an in-person appointment for both groups compared to family and community doctors and doctors from other specialties (data not tabulated).

Finally, the questions about the teleinterconsulting system analysis regarding its effectiveness, reliability concerning security and data sharing, and reliability concerning stability and connectivity are shown in Table 3. The three questions were presented to the participants and associated with a scale from 0 (zero) to 10 (ten),

where zero is the lowest evaluation and 10 is the highest evaluation. We can observe in the results that the two groups of doctors have a similar perception of the effectiveness, safety, and connectivity of the teleinterconsulting system used by the Municipality of Campo Grande-MS, family and community doctors (average=7.9) and other specialist doctors (average=7.4).

Discussion

Government public policies have highlighted the importance of using technologies to improve care, access, and relationships between professionals in the Unified Health System. This fact can be shown through the Ministry of Health's

Table 1. Advantages of the teleinterconsulting system as perceived by family doctors and other specialist doctors. Campo Grande-MS, 2024.

Brazilian Classification of Occupations (CBO)	Advantages	Frequency (%) ¹
Family and community doctor	Exchange of knowledge between professionals	52 (42.3%)
	Better resolution for diagnosis	38 (30.9%)
	The best resolution for treatment	43 (35.0%)
	Reduced number of referrals for face-to-face consultations	45 (36.6%)
	Reduced waiting times in specialized service queues	51 (41.5%)
	Reduced number of requests for unnecessary tests and medications	21 (17.1%)
	Greater efficiency in the regulation and hierarchization of elective cases	25 (20.3%)
	None of the above options	2 (1.6%)
	Other	2 (1.6%)
² Specialist doctors	Exchange of knowledge between professionals	4 (100.0%)
	Better resolution for diagnosis	3 (75.0%)
	The best resolution for treatment	4 (100.0%)
	Reduced number of referrals for face-to-face consultations	3 (75.0%)
	Reduced waiting times in specialized service queues	3 (75.0%)
	Reduced number of requests for unnecessary tests and medications	1 (25.0%)
	Greater efficiency in the regulation and hierarchization of elective cases	3 (75.0%)
	None of the above options	0 (0.0%)
	Other	0 (0.0%)
Total	Exchange of knowledge between professionals	56 (44.1%)
	Better resolution for diagnosis	41 (32.3%)
	The best resolution for treatment	47 (37.0%)
	Reduced number of referrals for face-to-face consultations	48 (37.8%)
	Reduced waiting times in specialized service queues	54 (42.5%)
	Reduced number of requests for unnecessary tests and medications	22 (17.3%)
	Greater efficiency in the regulation and hierarchization of elective cases	28 (22.0%)
	None of the above options	2 (1.6%)
	Other	2 (1.6%)

¹All percentages were calculated regarding the size of the population of interest in each category (N=123 for Family and community doctors, N=4 for Specialists, and N=127 for total). ² Cardiology, Gastroenterology, Nephrology, and Psychiatry.

ordinance (Ordinance GM/MS No. 3,232/2024) on the SUS Digital Program, which aims to promote digital transformation within the SUS to expand the population's access to its actions and services in order to achieve comprehensive and resolvable healthcare, including the training and continuing education of health workers and professionals¹⁶.

The rapid advancement of ICTs has opened up a range of possibilities in health for professionals and patients in the exchange of real time (or not)¹⁷ information and dialogues in the form of text, voice, and image transmission. In this sense, it gained relevant prominence and urgency during the COVID-19 pandemic, giving Telehealth the status of authorization for use nationwide¹⁸.

Confinement and the characteristics of the COVID-19 pandemic have increased the substantial use of technologies such as telephone, videoconferencing, applications, and virtual reality for telemonitoring, teleconsulting, and virtual visits¹⁹.

Therefore, health managers at all levels started seeking solutions and implementing systems that could assist the population care process in Campo Grande-MS. Records in the literature show more significant use of Telehealth in the South and Southeast regions, indicating the need

for positive induction by local, state, and national governments in other regions to qualify services and empower health teams and professionals²⁰.

Implementing the teleinterconsulting system has stood out as an innovative approach in the health field, as it enables the exchange of information between health professionals, both for diagnostic assistance and therapeutic definition, receiving wide acceptance by medical professionals.

We can observe that such a tool generates a collaborative learning network²¹ through this exchange of information, which is a practice recommended by the SUS when we work on the permanent and continuing education of health professionals²².

The intense exchange of knowledge provided by teleinterconsulting was one of the main advantages perceived by the doctors in this research, corroborating the findings in the literature: 44.1% of professionals stated that this modality enables the rapid and efficient exchange of knowledge between specialists, promoting a more collaborative and comprehensive approach in the treatment of complex clinical cases. An example of this can be seen in interpreting images or electrocardiograms via teleconference between general practitioners and specialists, successfully used in primary care¹⁷.

Table 2. Disadvantages of the teleinterconsulting system in the perception of family doctors and other specialist doctors. Campo Grande-MS, 2024.

Brazilian Classification of Occupations (CBO)	Disadvantages	Frequency (%)
Family and community doctor	Inability to meet in person to assess the patient	12 (36.4%)
	Technical communication difficulties	14 (42.4%)
	Resistance to use by other professionals	4 (12.1%)
	Low investment in operational structure	11 (33.3%)
	None of the above options	5 (15.2%)
	Other	7 (21.2%)
Other specialist doctors	Inability to meet in person to assess the patient	4 (44.4%)
	Technical communication difficulties	4 (44.4%)
	Resistance to use by other professionals	2 (22.2%)
	Low investment in operational structure	6 (66.7%)
	None of the above options	2 (22.2%)
	Other	1 (11.1%)
Total	Inability to meet in person to assess the patient	16 (38.4%)
	Technical communication difficulties	18 (42.9%)
	Resistance to use by other professionals	6 (14.3%)
	Low investment in operational structure	17 (40.5%)
	None of the above options	7 (16.7%)
	Other	8 (19.0%)

Source: Fieldwork based on the online questionnaire applied to doctors in Campo Grande-MS in 2024.

Table 3. Professionals' assessment score regarding the effectiveness of consultations via teleinterconsulting services, the reliability of the teleinterconsulting system, regarding security in data sharing and the system's stability/connectivity according to the Brazilian Classification of Occupations. Campo Grande-MS, 2024.

Brazilian Classification of Occupations (CBO)	Effectiveness		Reliability regarding security		Reliability regarding stability/connectivity	
	Mean (s)	Median	Mean (s)	Median	Mean (s)	Median
		(Vmin; Vmax)		(Vmin; Vmax)		(Vmin; Vmax)
Family and community doctor	7.9 (1.2)	8.0 (6.0; 10.0)	8.1 (1.6)	8.0 (4.0; 10.0)	7.0 (1.3)	7.0 (4.0; 10.0)
Other specialist doctors	7.4 (1.9)	8.0 (3.0; 10.0)	7.6 (2.3)	8.0 (3.0; 10.0)	7.3 (2.2)	8.0 (3.0; 10.0)
Total	7.8 (1.4)	8.0 (3.0; 10.0)	8.0 (1.8)	8.0 (3.0; 10.0)	7.1 (1.5)	7.0 (3.0; 10.0)

s = Standard Deviation; Vmin = Minimum value; Vmax = Maximum value.

Source: Fieldwork based on the online questionnaire applied to doctors in Campo Grande-MS in 2024.

Another highlight was the overall perception of 42.5% of doctors about the significant reduction in waiting time in specialized care queues, and for 37.8%, the reduced number of referrals for in-person appointments as a significant advantage in teleinterconsulting. The findings in the literature corroborate this perception where the application of technologies contributes to greater PHC resolution, reduced number of referrals, and, consequently, fewer waiting queues²³.

Teleinterconsulting uses a working model similar to a support matrix, with the participation of different professionals, including patients when necessary, which produces resolute responses to health demands, benefiting the service management, the team, and the patient²⁴, which can be evidenced by the items "Reduced number of referrals for in-person consultations", mentioned by another 37.8% of professionals, and "Streamlining the diagnostic process", mentioned by 32.3% of doctors. The exchange of information and joint analysis of clinical cases contribute to more precise and assertive diagnoses and more effective and personalized therapeutic plans, directly benefiting the quality of care provided to patients. It shows the possibility of this modality in resolving demands without the need for physical travel.

Immediate remote access to medical advice, treatment, and diagnosis, eliminating the need for individuals to travel long distances, and greater adherence to therapeutic plans have also been highlighted in the literature on the advantages of remote consulting systems in health²⁴⁻²⁷.

The teleinterconsulting system speeds up access to specialists, providing a faster response to patient's needs and, consequently, improving the efficiency of the health system. However, some studies indicate that the willingness to use the system is directly related to the age of professionals – younger professionals are more willing to use technology, and there is no difference between genders¹⁵.

Despite the positive analysis of health professionals regarding teleinterconsulting, some more significant disadvantages can be highlighted are the impossibility of examining the patient in person and collecting reliable information from the patient, technical difficulties, and the patient's advanced age^{15,28}. Our results revealed differences in this type of perception between the two groups but also indicated the following as the most damaging items (global sample): "Technical communication difficulties" (42.9%), "Low investment in operational structure" (40.5%) and "Inability to meet in person to assess the patient" (38.4%). However, regarding the face-to-face aspect, some studies indicate that videoconferencing can visually assess patients and provide visual clues to make comprehensive assessments and empower them to take control of their treatments²⁴.

The availability and access to laboratory and imaging tests for patients during teleinterconsulting sessions by health professionals is something frequently realized. However, it depends on their role when we compare the professions¹⁵. Our study observed similar access between family doctors and other specialist doctors.

Regarding the duration of consultations, when comparing the in-person and virtual methods, studies indicate that primary care health professionals mention that they have longer virtual consultations than traditional methods²⁹. This perception is the same among the two groups of professionals in this study, in which 61.9% indicated the duration item “Longer than an in-person consultation”.

The analysis of the effectiveness of the teleinterconsulting system, reliability concerning security in data sharing and reliability concerning system stability and connectivity presupposes several conditions described in isolation and overlapping.

Final considerations

The exponential growth of internet access for the use of Digital Health needs to be linked to government incentives, with local and regional analyses according to their demands and implementation possibilities, as regional inequalities, the distribution of professionals, and government changes generate fragmentation, lower investments, or disrupted services offered persist in Brazil³⁰⁻³². Furthermore, the needs for care and access to services

are also influenced by social determinants and the need to consider the different settings of access to the Internet and technological equipment, among other aspects^{33,34}.

However, some small and medium-sized municipalities in different regions of the South and Southeast have higher percentages of Telehealth use, indicating the possibility of implementing teleconsultations in locations with fewer specialist professionals, overcoming the barrier of the unequal geographic distribution of doctors in Brazil^{34,35}.

The analysis of teleconsultation effectiveness and reliability also depends on specialization – family medicine specialists classified its effectiveness as superior to other specialist doctors¹⁵. However, in our study, the results for both groups, family doctors (Average 7.9) and other specialist doctors (Average 7.4), had a similar perception of the effectiveness, safety, and connectivity of the teleinterconsulting system used by Campo Grande-MS.

With encouraging results, implementing teleinterconsulting emerges as a powerful tool, enriching medical practice, reducing access barriers and providing substantial benefits for health professionals and patients.

Collaborations

LL Menezes: conception, field research, final draft. MIC Souza: conception, bibliographic survey, final draft. KBF Simas: conception, bibliographic survey, final draft. V Mueller: field research, text formatting. ES Guimarães: bibliographic survey. MCC Berry: final review. DT Marques: field research.

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