

Quality of teleconsulting response provided by Maranhão telehealth state center

Qualidade das respostas das teleconsultorias do núcleo estadual de telessaúde do Maranhão

Calidad de las respuestas de las teleconsultas del centro estatal de telesalud de Maranhão

RESUMO

Objetivo: Avaliar a qualidade das respostas das teleconsultorias realizadas pelo Núcleo de Telessaúde Estadual do Maranhão, demandadas pelos profissionais de saúde da Atenção Básica. Métodos: Estudo descritivo e analítico, com abordagem quantitativa da amostra (n = 653) teleconsultorias respondidas no período de janeiro de 2017 a dezembro de 2018. A qualidade das respostas foi aferida por auditoria. A resolubilidade da resposta e a satisfação do solicitante foram verificadas por meio de um questionário integrado à teleconsultoria. Resultados: Agentes comunitários de saúde e enfermeiros solicitaram 67,1% das teleconsultorias avaliadas. Dentre os temas consultados, o relativo a problemas gerais ou inespecíficos, foi o mais frequente. 88% dos solicitantes tiveram suas dúvidas totalmente esclarecidas; 98,2% declararam estarem satisfeitos ou muito satisfeitos. 85% das respostas foram classificadas entre boa, muito boa e excelente. Houve associação significativa entre a qualidade da resposta e o grau de satisfação do solicitante (p=0,001). Conclusão: A qualidade das respostas das teleconsultorias e o grau de satisfação dos solicitantes apresentaram índices altos. As teleconsultorias avaliadas fornecem subsídios para que políticas públicas educacionais possam ser instituídas.

DESCRIPTORES: Telemedicina; Atenção Primária à Saúde; Consulta Remota; Brasil.

ABSTRACT

Objective: To evaluate the quality of teleconsultations responses provided by Maranhão Telehealth State Center, demanded by Primary Care health professionals. Methods: Descriptive and analytical study with quantitative approach of the sample (n = 653) teleconsultations answered from January 2017 to December 2018. The quality of responses was assessed by audit. The resolvability of the answer and the requester's satisfaction were verified through a questionnaire integrated to the teleconsultation. Results: Community health agents and nurses requested 67.1% of the teleconsultations evaluated. Among the topics consulted, the one related to general or non-specific problems was the most frequent. 88% of applicants had their doubts fully clarified; 98.2% declared being satisfied or very satisfied. 85% of responses were classified as good, very good and excellent. There was a significant association between the quality of the response and the applicant's degree of satisfaction (p=0.001). Conclusion: The quality of the teleconsultations responses and the degree of satisfaction of the applicants showed high rates. The evaluated teleconsultations provide subsidies so that public educational policies can be instituted.

DESCRIPTORS: Telemedicine; Primary Health Care; Remote Consultation; Brazil.

RESUMEN

Objetivo: Evaluar la calidad de las respuestas de teleconsultas realizadas por el Núcleo de Telesalud Estadual de Maranhão, demandadas por profesionales de salud de la Atención Básica. Métodos: Estudio descriptivo y analítico, con enfoque cuantitativo de la muestra (n = 653) teleconsultas respondidas desde enero de 2017 a diciembre de 2018. La calidad de las respuestas fue medida por la auditoria. La solubilidad de las respuestas y la satisfacción del solicitante fueron verificadas por medio de una prueba integrada a las teleconsultas. Resultados: Agentes comunitarios de la salud y enfermeros solicitaron 67,1% de las teleconsultas evaluadas. Dentro de los temas consultados, el relativo a problemas generales o inespecíficos, fue el más frecuente. 88% de los solicitantes tenían sus dudas totalmente aclaradas; 98,2% declararon estar satisfecho. 85% de las personas fueron clasificadas de buena, muy buena y excelente. Hubo asociación significativa entre la calidad de las respuestas y el grado de satisfacción del solicitante (p=0,001). Conclusión: La calidad de las respuestas de las teleconsultas y el grado de satisfacción de los solicitantes presentaron índices altos. Las teleconsultas evaluadas proporcionan subsidios para que las políticas públicas educacionales puedan ser instituídas.

DESCRIPTORES: Telemedicina; Atención Primaria de Salud; Consulta Remota; Brasil.

RECEBIDO EM: 31/08/2022 APROVADO EM: 01/10/2022

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INTRODUCTION

Telessaúde Brasil Redes is a program of the Ministry of Health (MH) that seeks to integrate teaching and service through the use of tools and Information and Communication Technologies (ICTs), with the objective of qualifying Primary Health Care (PHC) in the Unified Health System (SUS).^{1,2}

The implementation of the Program began in 2007 as a Pilot Project in nine of the 27 Brazilian states and was later expanded and transformed into a national Program.³

The activities of Telessaúde Brasil Redes are carried out through Telehealth Centers (NTS - Núcleos de Telessaúde) that can be state, inter-municipal or regional, where diagnostic and/or therapeutic support services are offered with an emphasis on the educational character of their actions through the production of teleconsultations.²

The Brazilian Ministry of Health defines teleconsulting as: consultation registered and carried out between workers, professionals and managers in the health area, through two-way telecommunication instruments, in order to clarify doubts about clinical procedures, health actions and issues related to the work process, which may be synchronous or asynchronous.⁴

Synchronous teleconsulting is carried out in real time, through chat and tools for voice and video interaction. In the asynchronous format, it is carried out by sending questions to the national platform or to the Telehealth Centers' own platform.

The flow of an asynchronous teleconsultation can be described as follows: the duly registered requesting professional accesses the telehealth platform and describes his/her questioning. The doubt inserted in the platform is received by the teleregulator professional who analyzes it and forwards it to the teleconsultant. Once the demand has been received, the teleconsultant may choose to return the question to the teleregulator, if they feel unable to respond or send the answer directly to the requesting professional.⁵

The National Telehealth Brasil Redes Program (Programa Nacional Telessaúde Brasil Redes) has a protocol 6 that guides the construction of the teleconsulting response. According to the protocol, the content of the response must be prepared in an objective, structured and language appropriate to the applicant, providing access to information based on the best available scientific evidence, and more up-to-date on the subject demanded, in the context of SUS and PHC.

The Telehealth Center of the Univer-

sity Hospital of the Federal University of Maranhão (NTS HU-UFMA) began its activities as a Technical-Scientific Center for the State of Maranhão of the Telehealth Brasil Redes Program in 2014, starting to offer asynchronous teleconsultations for the municipalities covered.⁷ In Maranhão, the Program was implemented in 55 municipalities, 280 UBS, serving 376 Family Health Strategy (FHS) teams, with 3,532 professionals registered on the Telehealth platform. It exceeded the mark of 27,000 (twenty-seven thousand) teleconsultations answered, which, according to the Results Monitoring and Evaluation System (SMART - Sistema de Monitoramento e Avaliação dos Resultados) of the Ministry of Health, was one of the largest Telehealth Centers in Brazil when considering the number of teleconsultations answered.

The expansion in the application of Telehealth resources, an innovation with the potential to induce changes in work practices and in the organizational structures of health services, imposes the need for a permanent process of evaluation of their activities. In this sense, the HU-UFMA NTS developed an application called the Teleconsulting Monitoring and Management System (SMGT - Sistema de Monitoramento e Gerenciamento de Teleconsultorias) that searches for information availab-

le on the Ministry of Health platform, generating indicators. This program has several functionalities, among them the answered teleconsulting audit module, to technically evaluate the quality of the answers sent to the requesters of the Telessaúde Brasil Redes Platform.^{8,9}

Considering the reach of the NTS of the HU-UFMA, mainly due to the offer of teleconsultations that are funded with public health resources, and their influence in the context of permanent health education for professionals working in PHC, it is necessary to analyze the quality of the teleconsultations responses.

According to Gronroos 10 quality is formed by two dimensions: technical quality, which corresponds to the accuracy that the necessary procedures are carried out properly; and functional quality, which refers to the way in which services are received by users.

Previous studies^{7,11-13} point out that the satisfaction rate of Telessaúde Brasil Redes teleconsulting requesters is high. This study seeks to know, in addition to the applicant's degree of satisfaction, an assessment of the quality of the response measured by audit. We did not find any publication in the literature with this approach.

Thus, the main objective of this study is to evaluate the quality of the response of teleconsultations carried out by the State Nucleus of Telehealth in Maranhão.

METHODS

A descriptive and analytical study was carried out with a quantitative approach of the teleconsultations carried out by NTS HU-UFMA from the information collected on the Telessaúde Brasil Redes platform, integrated to the SMGT.

NTS HU-UFMA was created in 2007 and was responsible for promoting Telehealth and distance education activities at HU-UFMA. The infrastructure and technological resources were implemented by the University

Telemedicine Network (RUTE - Rede Universitária de Telemedicina). It had human and technological resources that allowed support for face-to-face and distance activities, either through web or videoconferencing. Among its main activities, they highlighted: Transmission of surgery, participation in several Special Interest Groups (SIG), on-site and distance learning courses, it was the technical-scientific nucleus of the Telessaúde Brasil Redes Program in the state of Maranhão, where it developed teleconsulting, tele-education and formative second opinion (SOF) activities.¹⁴ For that, it had a team of 22 teleconsultants, 02 tele-regulators and a technical support team with 11 professionals.

The representative sample (n = 653) was defined considering the total number of teleconsultations answered in the period from January 2017 to December 2018, 10,576, sampling error of 3%, confidence level of 95%.

The totality of this sample was obtained considering the monthly extracts of the studied period. In each month, the population of the month was evaluated and the sample size was defined. In the sampling process, the audited teleconsultations were randomly selected by the SMGT and automatically distributed to the auditors without them knowing who they would be auditing. When the teleconsultant received the audit result, he also did not know who audited him.

Thus, the absence of possible defects was ensured, excluding the possibility of auditor bias in the content being analyzed.

The topics demanded from the teleconsultation requests were categorized according to the International Classification of Primary Care – Second Edition (ICPC2). This classification presents a two-level coding system: the first defines the organic system, which addresses all systems, including psychological, pregnancy and family planning, social problems, and a chapter on general and non-specific situations. Each chapter is in turn divided into seven components:

complaints and symptoms, preventive procedures and diagnoses, medications, treatments and therapy, test results, administrative component, follow-up and other reasons for consultations and diagnoses and diseases.^{15,16}

The platform made available an evaluation questionnaire that was completed by the user, as an integral part of the closing of the opening x completion cycle of the teleconsulting, with the following questions:

a) Did the teleconsulting answer answer your question? (completely met; partially met; did not meet);

b) What is your level of satisfaction? (very satisfied; satisfied; indifferent; dissatisfied; very dissatisfied);

The first question evaluated the solvability of the teleconsultant's response and the second, the degree of satisfaction with the teleconsultation.¹²

The responses were evaluated by a team of teleregulators, responsible for carrying out internal audits of the responses prepared by the teleconsultants.¹⁷

In assessing the quality of the answer, the structuring of the answer was analyzed: objectivity in the answer to the main question, language used by the teleconsultant, necessary complementation following the principles and attributes of PHC, promotion of permanent education in health and presentation of basic references to allow access by the applicant.

According to the Telessaúde Brasil Redes response protocol 6 the teleconsulting response must contain the following mandatory items: direct response, complementation, PHC attributes, continuing education, references. In addition to these five mandatory items, they may also contain a summary of evidence and a description of the search strategy.

A score ranging from 0 to 10 was assigned to each mandatory item of the response protocol. The direct response was weighted 3 (three), the reference weighted 1 (one) and the others wei-

ghted 2 (two). The final grade was the result of the weighted average of the analyzed topics.

According to the final grade, the answers were classified according to the Likert Scale in: excellent (score 9.1 to 10), very good (score 8.1 to 9), good (7.1 to 8), fair (6.1 to 7) and poor (less than or equal to 6).

The weight values of each answer and the scores used were defined by the researched Telehealth nucleus.

Numerical variables were described as mean \pm standard deviation or median (interquartile range) according to the data normality distribution verified using the Shapiro-Wilk test. The categorical ones were described by tables containing absolute frequency and percentage.

To verify the association between the quality of the response measured by the audit and the applicant's satisfaction, the quality was grouped into positive (good, very good and excellent) and negative (regular and poor), satisfaction in satisfied (satisfied and very satisfied) and not satisfied (indifferent, dissatisfied and very dissatisfied), tested using Fisher's Exact test.

All analyzes were performed using Stata[®] v14.0 software, with a significance level of 5% ($p < 0.05$).

This study is an integral part of the research "Telehealth: a tool for permanent health education for Primary Care professionals in the State of Maranhão", approved by the Research Ethics Committee of the University Hospital of the Federal University of Maranhão - CEP/HU-UFMA with registration under CAAE n^o 72765317.0.0000.5086, opinion n^o 2.315.66.

RESULTS

653 teleconsultations were analyzed. The age of the requesting professionals ranged from 21 to 65 years, with a mean of 38 years (SD \pm 8), 83.3% were female and 53% had secondary education.

Among the evaluated teleconsulta-

tions, 227 (34.7%) were requested by community health agents, followed by nurses with 212 (32.4%), nursing technicians 108 (16.5%), doctors 37 (5.8%). The other professions that correspond to 11 (1.7%) teleconsultations were speech therapists, psychologists, social workers, occupational therapists and endemic agents (Table 1).

As for the topics consulted by chapter, according to ICPC2, 311 (47.6%) were general and unspecific, followed by pregnancy and family planning 61 (9.3%). Regarding the components of each chapter, 271 (41.5%) were about diagnostic and preventive procedures

(Table 2).

As for the resolvability of the answer, 88% of the applicants declared that they had their doubts fully clarified; 10.2% partially and 1.8% the doubt was not clarified (data not shown in table).

Regarding the degree of satisfaction, 98.2% of the applicants declared they were satisfied or very satisfied with the teleconsultation. Regarding the quality of the response, 85% were classified as good, very good and excellent. It is noteworthy that 44% obtained an excellent evaluation (Table 3).

Table 4 shows the median values for each item of the evaluated responses.

TABLE 1. Distribution of teleconsultations by professional category of the applicant, Maranhão, Brazil, 2017 and 2018

Occupation	No.	%
Community Health Agent	227	34,7
Nurse	212	32,4
Nursing Technician	108	16,5
Physician	37	5,8
Dental surgeon	28	4,3
Physiotherapist	19	2,9
Oral Health Technician	11	1,7
Other occupations	11	1,7
Total	653	100,0

Source: SMTG - Monitoring and Management System of Teleconsultations of the Nucleus of Telehealth Maranhão

TABLE 2. Topics of teleconsultation requests categorized according to the International Classification of Primary Care, version 2 (ICPC2), Maranhão, Brazil, 2017 and 2018

ICPC2 Classification	No.	%
Per chapter		
A - General and non-specific	311	47,6
W - Pregnancy and family planning	61	9,3
D - Digestive system	49	7,5
X - Female genital system (including breast)	43	6,6
R - Respiratory system	26	4,0
B - Blood, hematopoietic and lymphatic organs	23	3,5
K - Circulatory system	23	3,5
S - Skin	22	3,4

The highest median value was observed for the permanent education item and the lowest for PHC attributes.

There was a statistically significant association between the quality of the response and the applicant's degree of satisfaction ($p=0.001$). The percentage of satisfied was higher in the responses of teleconsultations qualified as positive (99.1% versus 92.9%), whereas, the proportion of dissatisfied was higher in teleconsultations evaluated with negative quality (7.1% versus 0.9%) (Table 5).

DISCUSSION

Community health agents and nurses requested more than two thirds of the teleconsultations evaluated. A similar result was evidenced in the research carried out by Bernardes, Coimbra and Serra, 7 which evaluated the use of services offered by the State Telehealth Center of Maranhão, showed that nurses and community health agents were the users who most used the teleconsulting service. These two professional categories represented the highest percentage of the total number of users registered on the Telessaude platform, in the study by Schmitz and Harzheim,¹³ with analysis of the production of teleconsultations carried out by 18 telehealth centers across the country, including the one in Maranhão.

Among the professionals who make up the PHC family health teams, physicians were the ones who least used teleconsulting services. Similar findings were found in other regions of Brazil.¹⁴ The high turnover of this professional leads to the breaking of ties with the PHC team, greater need to re-register the medical professional on the Telehealth platform and training to use the teleconsulting service. The lack of information about the teleconsulting service and the lack of training in its use are also factors associated with the non-use of the service by physicians, as pointed out by Danasceno and Caldeira.¹⁵

Teleconsultations were requested

P – Psychological	21	3,3
N - Nervous system	17	2,5
T - Endocrine, metabolic and nutritional	16	2,4
Y - Male genital apparatus	13	2,0
L – Musculoskeletal system	12	1,9
U - Urinary system	9	1,3
F – Eyes	5	0,8
H – Ears	1	0,2
Z - Social problems	1	0,2
Per component		
Diagnostic and preventive procedures	271	41,5
Diagnosis and Diseases	208	31,8
Complaints and symptoms	137	21,0
Medication, treatment and therapeutic procedures	20	3,0
Administrative	15	2,3
Follow-up and other reasons for consultation	1	0,2
Exam results	1	0,2
Total	653	100,0

Source: SMGT - Monitoring and Management System of Teleconsultations of the Nucleus of Telehealth

TABLE 3. Characteristics of the evaluations of the teleconsultations responses from the Telehealth Center of Maranhão, Maranhão, Brazil, 2017 and 2018

Response evaluation	No.	%
Applicant satisfaction		
Satisfied		
Ver satisfied	407	62,3
Satisfied	234	35,9
Not satisfied		
Indifferent	7	1,1
Dissatisfied	4	0,6
Very dissatisfied	1	0,1
Response quality (audit)		
Positive		
Excellent	288	44,1
Very good	162	24,8
Good	105	16,1
Negative		
Bad	50	7,7
Regular	48	7,3

Source: SMGT - Monitoring and Management System of Teleconsultations of the Nucleus of Telehealth

with topics distributed in all ICPC chapters. However, there was a concentration in the general and non-specific chapter (47.6%). A similar result was

pointed out in the surveys 7,13 which found that teleconsultation requests with topics classified in chapter A of ICPC, related to general or non-specific

problems, were the most frequent.

Among the general and non-specific problems coded in the ICPC are: fever, generalized pain, tiredness, fatigue, prescription, administrative procedures and others.²¹

According to Mendes²¹ the demand in PHC brings a large set of general and non-specific problems, indicating that health problems in PHC present themselves in an undifferentiated way. National surveys 18,22 point out that the most frequent demands in PHC were related to general and non-specific problems, according to ICPC.

The most frequent themes in teleconsultations reflect this peculiar condition of PHC described by Mendes²¹, indicating that requests are demanded from more common situations, in the practice of PHC teams, and that teleconsultations are motivated by the daily needs of professionals.¹² In this context, teleconsultations are an important tool for permanent education, as shown by experiences published both internationally,²³ and in Brazil.^{7,24}

Applicants' doubts were resolved in 88% of cases. The result of this indicator was superior to that found in a study 11 which evaluated nine years of experiences in teleconsulting for PHC in the state of Minas Gerais.

In the evaluation of applicants regarding satisfaction with the teleconsulting, it was found that 98.2% declared they were satisfied. As for the quality of the response, 85% were evaluated with positive quality.

Although user satisfaction is described in the literature as an indicator of service quality, there are authors who question this connection. Recent studies show that satisfaction is multidimensional, subjective, and that it is not always associated with service quality.²⁵

This study revealed that 92.8% of the negative quality responses, users were satisfied. The high satisfaction of these applicants can be explained by the low expectation²⁶ or even through the bias of gratitude²⁷ so that users can feel satis-

TABLE 4. Median of the scores given in the audit assessment for the mandatory items of the teleconsulting response, Maranhão, Brazil 2017 and 2018

Answer Items	Median	Interquartile Range
Direct answer	9	2
Complementation	9	2
Attributes	8	3
Permanent Education	10	2
Reference	9	2
General Score	8,8	1,8

Source: SMGT - Monitoring and Management System of Teleconsultations of the Nucleus of Telehealth

TABLE 5. Association of the quality of the response measured by audit and the requester's satisfaction, Maranhão, Brazil, 2017 and 2018

Response quality	Applicant satisfaction						Total P
	Yes		No				
	No.	%	No.	%	No.	%	
Positive	550	99,1	5	0,9	555	85,0	0,001
Negative	91	92,9	7	7,1	98	15,0	
Total	641	98,2	12	1,8	653	100,0	

Source: SMGT - Monitoring and Management System of Teleconsultations of the Nucleus of Telehealth

fied just by receiving the answer.

Although most users reported being satisfied, regardless of the good quality of the response, our findings showed that there was a statistically significant association between the quality of the teleconsultation response and the applicant's degree of satisfaction ($p = 0.001$).

CONCLUSION

The State Telehealth Center of Maranhão, through its activities, especially the offer of teleconsultations, played an important role in the qualification and strengthening of PHC in the state. Teleconsultations break geographical barriers and allow the exchange of information between health professionals throughout Maranhão.

Among professionals working in PHC, community health agents and nurses were the ones who most used the teleconsulting service. To maximize the benefits of teleconsultations, it is neces-

sary to expand the use of this service by physicians.

Among professionals working in PHC, community health agents and nurses were the ones who most used the teleconsulting service. To maximize the benefits of teleconsultations, it is necessary to expand the use of this service by physicians.

The analysis of the evaluations obtained in the present study also provides important information about the quality of the responses of teleconsultations carried out by the State Nucleus of Telehealth in Maranhão. The quality of the teleconsultations' responses and the degree of satisfaction of the applicants showed high rates.

The permanent process of evaluating the technical quality of the teleconsultations' responses, through audits, implemented by the Telehealth Center in Maranhão, contributed to the maintenance of the quality of the service.

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