

Asynchronous Teleconsultation in Primary Health: the experience of Rio de Janeiro State Telehealth Nucleus of the Brazilian National Program of Telehealth



João Pedro Gismond	Scholarship for Scientific Initiation CNPq. Faculty of Medical Sciences, State University of Rio de Janeiro
Alexandra Monteiro	Faculty of Medical Sciences. Coordinator of the Rio de Janeiro State Telehealth Nucleus.
Munique Santos	Rio de Janeiro State Telehealth Nucleus. Faculty of Medical Sciences, State University of Rio de Janeiro
Marta Rocha	Rio de Janeiro State Telehealth Nucleus. Faculty of Medical Sciences, State University of Rio de Janeiro
Edson Diniz	Rio de Janeiro State Telehealth Nucleus. Faculty of Medical Sciences, State University of Rio de Janeiro
João Nezes	Rio de Janeiro State Telehealth Nucleus. Faculty of Medical Sciences, State University of Rio de Janeiro

Abstract

The telehealth actions are under way in the State of Rio de Janeiro, with the implementation of a teleconsulting system. Objective: to show the degree of the users' satisfaction with an asynchronous teleconsultation system, developed by the State University of Rio de Janeiro. Method: It was analyzed the 4,950 teleconsultories carried out in the period from 2010 to 2016. The system has questions that can be answered by the users that allow us to evaluate their satisfaction. Only 2,172 professionals had their satisfaction forms answered. Results: 82.4% of the professionals reported that they changed their approach to the problem, most of them related to clinical issues, followed by a clinical case. 68.8% of the patients did not need to be referred to the specialist. Conclusion: The implanted teleconsultation system contributes to improve clinical behaviors.

Keywords: Telehealth, Telemedicine, User's satisfaction, e-health.

Resumen

La teleconsultoría asincrónica en la salud primaria: la experiencia del Núcleo de Telesalud del Estado de Río de Janeiro del Programa Nacional de Telesalud Brasileño

Las acciones de telesalud están en marcha en el Estado de Río de Janeiro, con la implementación de un sistema de teleconsulta. Objetivo: Demostrar el grado de satisfacción del usuario con un sistema de teleconsulta asincrónico desarrollado por la Universidad del Estado de Río de Janeiro. Método: Se analizaron 4950 teleconsultas efectuadas en el periodo de 2010 a 2016. El sistema cuenta con preguntas que pueden ser respondidas por el usuario para evaluar su satisfacción. Sólo 2.172 profesionales respondieron los formularios de satisfacción. Resultados: el 82,4% de los encuestados informó que cambiaron el abordaje del problema, siendo en su mayoría concerniente a aspectos clínicos, seguidos de caso clínico. El 68,8% de los pacientes no tuvieron que ser derivados a un especialista. Conclusión: El sistema de teleconsulta implementado aporta a la mejora de la gestión clínica.

Palabras clave: Telesalud, Telemedicina, Satisfacción del usuario, e-salud

Resumo

Teleconsultoria assíncronica na saúde primária: a experiência do Núcleo de Telessaúde do Estado do Rio de Janeiro do Programa Nacional de Telessaúde Brasileiro

As ações de telessaúde estão em curso no Estado de Rio de Janeiro, com a implantação de um sistema de teleconsultoria. Objetivo: mostrar o grau de satisfação dos usuários com um sistema de teleconsultoria assíncrono, desenvolvido pela Universidade Estadual do Rio de Janeiro. Método: Foram analisadas as 4950 teleconsultorias realizadas no período de 2010 a 2016. O sistema possui perguntas que podem ser respondidas pelos usuário que permitem avaliar sua satisfação. Somente 2172 profissionais tiveram seus formulários de satisfação respondidos. Resultados: 82,4% dos profissionais relataram que mudaram sua abordagem do problema, sendo sua maioria relacionadas com questões clínicas, seguidos de caso clínico. 68,8% dos pacientes não necessitaram ser encaminhados para o especialista. Conclusão: O sistema de teleconsultoria implantado contribui para melhorar condutas clínicas.

Palavras chave: Telessaúde, Telemedicina, Satisfação do usuário, e-health

INTRODUCTION

Since the publication of Alma-Ata, in 1978¹, primary health care is defined as the first level of contact of individuals, the family and community with the National Health System, bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process. In this matter and although all the efforts made by the World Health Organization to have the better health for all², some problems are still occurring especially in remote areas of developed and developing countries like the shortage of doctors, difficulties in recruiting and retaining health professional in remote areas and higher mortality and morbidity rates³. In this context, Telehealth is a valuable resource for delivering health-related services to remote areas as second opinion or professional education^{3,4}. This is also a useful tool for continental countries such as Brazil, a country which has an asymmetric distribution of the population with some of them living in remote areas, including forests and semiarid regions, a high proportion of Indigenous people all with difficulty access to health teams, a few number of generalist physicians and complete lack of referral specialists. In this scenario, the Brazilian Ministry of Health created in 2007 the Brazilian National Telehealth Networks Program which has the goals to provide continuing education in distance, teleconsultation for primary health professionals and specialized telediagnosis. The Program is supported by Scientific-Technical Nucleus such as the Rio de Janeiro State Nucleus which is located at the Rio de Janeiro Telehealth Center of the Rio de Janeiro State University (UERJ). This study aims to show the satisfaction survey of the users of the asynchronous teleconsultation system for second opinion in primary health, developed and supported by the UERJ's Telehealth Center.

MATERIAL AND METHODS

The Web-based system for telehealth teleconsultation was developed by the RJ-UERJ Telehealth team as a free system with PHP language and utilization of a PostgreSQL database, to send doubts by filling out an online form, where archives and image could be attached⁵. The access to the teleconsultation system was done by a single registration in the learning virtual platform Moodle (Perth, Australia) of the RJ-UERJ Telehealth Nucleus. The process to filling out the teleconsultation form includes first the choice of "doubt area", divided into: alcohol and drugs, breastfeeding, palliative care, nursing, physiotherapy, leprosy, medicine, nutrition, dentistry, elderly health, mental health and work health. In the second

stage, the user choose the "subarea" of the consulting, in case of medicine, for example, can be family medicine, pediatrics, pediatric neurology, adolescent medicine, infectology, hematology, and in the case of nursery, as another example, the "subareas" are: stomata, obstetric nursery, acute wounds, chronic wound, children's health, women's health and gender's violence.

Lastly, the "doubt type" which was classified as: clinical case, general medicine doubt, family and/or community approach, team work process, planning and management, and health education. There are also two empty fields available for the "summarized doubt" and "details of doubt or physical examination" to be filled. If necessary, can be attached up to two files in image format (gif, jpg, or jpeg) or compressed files (zip, rar, 7z). This form was submitted randomly by the system to the registered teleconsultants in the areas available and they receive a warning email. After filling out the opinion of the teleconsultor, which can also attach files, the system sends an email to the requestor professional who accesses the system and verifies the opinion. If doubt remains, the applicant may re-submit the form with the questions or complete filling out the questionnaire system use satisfaction. This questionnaire basically includes three questions: "The use of teleconsulting changed your behavior?" "Did this teleconsult avoid you referring patients to secondary level or tertiary health care of?", "Would you like another kind of specialist?". All health professionals, mid-level or higher level, working in primary care in the Brazilian Public Health System may request freely to teleconsulting for any teleconsultor professional, following the concept of integrality.

From August 2010 to December 2016, 4.950 teleconsultation were requested by nurses (54.61%), doctors (26.54%), dentists (9.98%), community health workers (3.41%), dietitians (1.19%), nursing technicians (1.11%), occupational therapists (1.11%), pharmaceuticals (0.60%), physiotherapists (0.60%), psychologists (0, 26%), social workers (0.17%), auxiliary nurses (0.09%), oral health aids (0.09%), biologists (0.09%), speech therapists (0.09%) and technical oral health (0.09%). 44 teleconsultants professionals work in the system: 12 nurses, 10 doctors, 9 physiotherapists, 6 psychologists, 2 dentists, 2 nutritionists, 2 psychiatrists and 1 social worker.

RESULTS

Of the total 4,950 teleconsultations, 2032 teleconsultations were in the 'area' of medicine, followed by the nursing area with 1791 (table 1). The 'kind of doubt' most requested was the "general clinical question" (58.57%), followed by'

health education / continuing education of staff '(7.86%),' clinical case '(5.74%)', 'family approach' (5.48%), 'Community approach (5.08%),' the team work process' (4.86%) and planning and / or management (4.02%).

2,172 forms of satisfaction were filled. 82.42% of the professionals reported that they changed their approach. The type of advice that generated the most "change of behavior" was the "general clinical question" (66.36%), which was not required to send the patient identification data, followed by clinical case, with 7.87%. The nursing professional was the most changed the behavior (53.31%), followed by the doctor (29.19%).

Within the study group, it was found that 68.80% of cases where there was a reduction of referral, were on course general practice, 7.70% relating to clinical cases and the remaining 23.50% were distributed among the other types of doubt. The nurse was the professional who most avoided routing (55.69%), followed by the doctor (21.04%) and dentist (11.88%).

On the demand of a teleconsulting with a specialist, the doctor was the one who asked for more (38.83%), followed by nurses (35.92%). The specialist most requested by doctors was the cardiologist and nurses, the gynecologist.

Table 1: Number of consultants according to the different areas established by the Nucleus of the State of Rio de Janeiro.

Area	Teleconsultation Numbers
Alcohol and Drugs	32
Breast Feeding	32
Palliative Care	26
Nursing	1791
Physical Therapy	223
Leprosy	250
Medicine	2032
Nutrition	67
Dentistry	317
Health/Work/Environment	14
Health of the Elderly	145
Mental Health	21
Total	4950

DISCUSSION

This article presents the positive experience of offering a health multi professional asynchronous teleconsulting system with the focus on primary care. Users found that

66.36% of the teleconsultation by clinical questions usually generated in the conduit modification drawn initially, moreover, the teleconsulting avoided patients routing in 68.80% of the cases of clinical doubts in general. The group of professionals who requested more teleconsultation were nurses, the most prevalent group registered in the virtual environment Telehealth Center in all of the activities.

Most of the reported teleconsulting programs in literature has a focused approach in medical care in which the expert is an urban center performing teleconsulting via videoconference directly with the patient who is in a remote area⁶⁻¹¹, or between doctors in different specialties, such as neurology⁶, otorhinolaryngology⁷, pediatrics⁸, oncology⁹ and endocrinology¹⁰, among others¹¹. Hersh et al.¹², a literature review on the use of telemedicine, concluded that most studies published on teleconsultation addressed issues on dermatology, with most studies evaluating the degree of correlation between teleconsulting and traditional consultation in relation to diagnosis and the therapeutic approach, with wide variation in results, and not evaluated the utility and the degree of satisfaction by users, a teleconsulting system, either synchronous or asynchronous, to provide second opinion from a specialist. Unlike these studies, we did not compare the teleconsulting with traditional medical consultation but evaluated the use and satisfaction of an asynchronous teleconsulting system by professionals from primary health care, since most health professionals requiring the teleconsultation were in remote areas with limited access to specialists.

This article presents a multidisciplinary approach in primary care, including areas still poorly described in the literature like physical therapy and nutrition, that the remote second-opinion changed the practice of professional on-site service, qualifying its attention because of the possibility of supporting an expert, reducing costs and the displacement of patients for other cities.

Most of the teleconsulting programs destined to remote areas, both synchronous^{13,18,19}, and asynchronous^{14-17,20} is aimed to a specific group of professionals, usually exclusively physicians¹³⁻¹⁷ or dentists^{18,19}, even when it is intended for primary health care^{14,17} or when it is targeted to a specific specialty such as radiology¹⁵, pediatrics¹⁶ and ophthalmology²⁰. The teleconsultation can be asynchronous, via e-mail¹³, or through a website specifically for the teleconsulting¹⁴, or synchronous, via telephone¹³ or by videoconference^{18,19}. Generally, these programs have good acceptance by the participating professionals in relation to the quality of teleconsulting and importance of information acquired for

the clinical management of patients, enabling changes in treatment and greater confidence in the final diagnosis^{13,15,20} and reduce referrals to specialists¹⁸, evaluated through questionnaires answered by professionals who requested teleconsulting.

A study of asynchronous teleconsultation intended solely for general practitioners working in primary health care in a rural area of Italy, evaluated 927 teleconsultation in cardiology, 18 in dermatology and 12 in diabetology. In this study there was wide acceptance of physicians in relation to the teleconsultation in cardiology topics, with a rate of 91% change of management after teleconsulting and a reduction in the number of queries. However, the teleconsultations in dermatology and diabetology had little participation of doctors, due to the preference for a face to face visit to the specialist. In this study, 85% of participating physicians answered a questionnaire of satisfaction. Most participating physicians was very pleased with the teleconsultation, the connection and the necessary equipment for remote transmission of data to the various specialties were considered satisfactory, and the quality of the suggestions of experts on clinical problems was considered good. However, some doctors did not consider the service as essential¹⁷. Ruas et al.¹⁴ evaluated teleconsultation store and forward for doctors of primary health care in Belo Horizonte, Brazil. They were held 737 teleconsultation from 2006 to 2010. Until 2009 there was an increase in the number of requested teleconsultation, following the program implementation process, but in 2010, there was a sharp decline in the number of teleconsultation and system users number. On average, 85 doctors used the teleconsulting system, however, only eight accounted for 50.9% of all requests, and in 2010 the program was exclusively used by the most frequent users. Doctors users of the system were mostly women, medical experts of the family and community, with a stable employment contract and had more time in the profession and in the public health service. The authors of this study did not do the research of satisfaction survey. Callahan et al.¹⁶ reported the experience of 267 asynchronous teleconsultation, specific in pediatrics, via the Internet, with an average time of 32 hours to reply. There was a change of initial diagnosis in 15% of cases, modification of the treatment plan in 24% and referring to a tertiary hospital was avoided in 12% of cases.

The teleconsulting service presented in this article is intended for all professionals who work with primary health care, not just the physicians, what may explain the substantially increased number of teleconsultation requested

in our study. In addition, there are no restriction of consults to a determined subject, allowing that any professional can address issues from the family approach, to medicines use. The large number of requested teleconsultation and a percentage of 66.36% in the change in clinical conduct after a consulting are evidence of the participants' satisfaction. In addition, we did not use email or phone to the teleconsultings, but a distance education platform, exclusively designed for the program, which facilitates adherence by the professionals, since the use of e-mails is forbidden by brazilian law, and the phone use limits the interaction between the participants of consulting, because it do not allow sending images or videos.

Previous studies evaluating the use of synchronous teleconsultation²¹ and asynchronous²² in nursing, during the treatment of wound healing, evaluated the use of this technology among nurses in remote locations and a multidisciplinary team in Major Medical Centers can reduce costs, the healing time, the pace of wait between queries and degree of satisfaction of the patient in the end of therapy^{21,22}. Wilkins et al.²² evaluated asynchronous teleconsultation between a nurse specialist in wounds and a multidisciplinary team of a tertiary hospital, through a system store-and-forward for internet data transmission, in 56 cases, most related to lower limbs ulcers related to diabetes.

Vallejos et al.²³ evaluated asynchronous teleconsultation, specific on dermatology, for primary health professionals, aimed only to a rural area of North Carolina, USA, where the requester professional would send clinical information and photos of certain injuries, via e-mail for two dermatologists. The authors reported that of the total of 79 teleconsultations, 68 were submitted by nurses, 6 by doctors and 5 by medical assistants. Most teleconsultation were answered within 24 hours. After receiving the query answer, participants answered a questionnaire assessment. 32% of teleconsultation were classified as very useful by health professionals, 54% as useful and 11% as somewhat useful, with a change in the treatment initially scheduled in 17 cases (21%). There was a change in diagnosis in 10 cases (13%), being seven of it sent by a nurse, two by a physician and one physician's assistant. Our study is not focused on a single specialty and participants may require teleconsultation on any topic of health, which may explain the much higher number of teleconsultation on the study of Vallejos et al. Moreover, our study allowed the participation of all professionals involved in primary health care, including dentists, nutritionists and physiotherapists, as well as doctors and nurses, may also explain the higher number of reported consultancies in our study.

In our literature search we did not find any teleconsulting program that was intended for all professionals involved in primary health care at the same time. The inclusion of professionals from all areas of health in teleconsulting program, in addition to the doctor, it is very important, since it allows the integration of activities prevention, cure and control of diseases, offers a truly multi-professional approach to population and increases the use of tele. Our study showed a large participation of nurses and dentists, for example, showing the importance of including these professionals in such programs, aimed at primary health care, aiming to establish a health comprehensive care, coordinating actions and preventive and curative services, individual and collective, required for each case²⁴.

CONCLUSIONS

Teleconsulting systems are a great help in places where the tertiary is difficult to access and/or expensive, since its utilization avoided patient routing, and, more than this, changed the primary care approach, allowing it to solve the health problems in its own spot.

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