



Tele dermatology for primary care in remote areas in Brazil

Tati GP Assis^{1,2}, Daniel MF Palhares^{1,2}, Maria BM Alkmim¹ and Milena S Marcolino^{1,2}

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The Telehealth Network of Minas Gerais (TNMG) is a public telehealth service supporting primary care practitioners in 660 of the 853 municipalities in the state of Minas Gerais, in the southeast of Brazil. A wide range of teleconsultations is provided. Store-and-forward tele dermatology began in 2007.¹

We conducted a retrospective study of the teleconsultations performed from the beginning of the service in April 2007 until August 2012. The teleconsultations were classified according to the professional who requested them and the municipality from which they were submitted. The number of municipalities covered by the TNMG increased from 82 in 2007 to 660 in 2012. A sample of teleconsultations from January to May 2010 was individually assessed to analyze the most frequent types of queries.

User satisfaction was assessed by the following questions, which were available to users when they received the response to their teleconsultation: (1) “Did the teleconsultation avoid the patient’s referral?” (2) “Did the teleconsultation answer your question?” (3) “What is your level of satisfaction with the teleconsultation system?”¹

Results

During the study period, 43,429 teleconsultations were performed. The most frequently requested specialty was dermatology, 8724 (20%). Of these dermatology requests, 47% were requested outside normal working hours. In 2012, there were 275 teleconsultations in dermatology per month. The majority of the questions were sent by nurses (58%). The remainder were sent by physicians (39%) or other healthcare professionals (3%).

There was an inverse relation between the number of inhabitants in a municipality and the use of the service. Municipalities with less than 5000 inhabitants were the ones that sent the highest number of teleconsultations (39% of the total). The ones with more than 100,000 inhabitants contributed only 0.4% of the total.

From January to May 2010, 413 tele dermatology consultations were performed. The majority were about assistance for a particular patient (93%) and the remainder were educational questions (7%). The most frequent

type of query was about pharmacological treatment (68%) or aetiology (60%), and the percentages were similar when comparing the teleconsultations requested by physicians and the ones requested by nurses (Table 1).

The satisfaction survey on 2012 showed that 81% of the teleconsultations had averted a referral. Most respondents (97%) felt that the teleconsultation had answered their question and 97% were satisfied with the network.

Discussion

The success of tele dermatology in the TNMG network is probably related to many factors. First, it is relatively simple to take pictures of skin problems and discuss the case. Second, there is a high demand for referrals to dermatologists, and teleconsultation is a rapid way of contacting a specialist. Third, the high demand may be related to the limited teaching of dermatology during undergraduate medical courses, so that primary care physicians lack specialist knowledge. The analysis of the types of queries submitted showed a high prevalence of questions about pharmacological treatment and aetiology. Other frequent queries were about general medical advice, diagnosis and non-pharmacological treatment. Thus, the large number of teleconsultations and the types of queries reflect the potential of telemedicine to assist with simpler cases in the local areas. The fact that 47% of tele dermatology consultations were requested out of hours is an indication of the importance of tele dermatology for the healthcare practitioners.

Nurses and physicians requested most of the teleconsultations. The unexpectedly large number from nurses, who requested almost 20% more teleconsultations than physicians, could be a result of the shortage of physicians

¹Telehealth Center, University Hospital, Universidade Federal de Minas Gerais, Brazil

²Medical School, Universidade Federal de Minas Gerais, Brazil

Corresponding author:

Tati Guerra Pezzini Assis, Telehealth Center, University Hospital, 110 Universidade Federal de Minas Gerais, Alfredo Balena Avenue 30130-100, Belo Horizonte, Brazil.
 Email: tatigpassis@gmail.com

Table 1. The most frequent types of queries in the teleconsultations performed from January to May 2010*.

	Total queries (%) n = 413	Physician queries (%) n = 189	Nurse queries (%) n = 219
Pharmacological treatment	68	73	63
Aetiology	60	58	62
General medical advice	17	16	18
Non-pharmacological treatment	14	13	15
Diagnosis	13	16	11
Surgical treatment	4	6	2
Patient follow-up	3	3	3
Prognosis	1	1	0.9
Assistance to pregnant women	0.7	1	0.5
Not specified	0.5	0	0.9

*subtotals add up to more than 100%, as the healthcare professional could ask more than one query in the same teleconsultation.

in rural areas. It is important to note that many teleconsultations from nurses include questions concerning pharmacological treatment. This represents a paradox, since nurses are not allowed to prescribe according Brazilian laws. The present study is the first to identify this problem for healthcare policy makers.

It was common to have more than one query related to the same clinical case, which illustrates the role of teleconsultation in providing a real case discussion, and avoiding referral in about 80% of cases. This confirms the benefit of teledermatology in preventing unnecessary referrals and, consequently, reducing costs.²

The remote and less developed municipalities usually have a lower potential to attract healthcare practitioners and limited structure to support primary care physicians. In addition, healthcare practitioners in these municipalities tend to be young and inexperienced, and are often isolated and in need of further training.¹ Thus, these locations are the ones which benefit the most from the telehealth service, as can be seen by their presence among the sites that most request teleconsultations.

The present analysis has the limitation that there was little information on patient follow-up after the first teleconsultation. Thus, it was not possible to fully assess the efficiency of the second opinion.

Conclusion

Telehealth appears to be a useful tool to provide specialized care in dermatology to small and isolated cities.

Our study reports the successful experience of a public telehealth service in Brazil, the TNMG. The lack of specialists in the small, remote and less developed municipalities, in combination with the difficulty experienced by primary care physicians in managing skin diseases, explains the large numbers of requests for teleconsultations in dermatology. In addition, the study indicates the need to improve the teaching of dermatology at undergraduate level.

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References

1. Alkmin MB, Figueira RM, Marcolino MS, et al. Improving patient access to specialized health care: the Telehealth Network of Minas Gerais, Brazil. *Bull World Health Organ* 2012;**90**:373–378.
2. Andrade MV, Maia AC, Cardoso CS, Alkmin MB, Ribeiro AL. Cost-benefit of the telecardiology service in the state of Minas Gerais: Minas Telecardio Project. *Arq Bras Cardiol* 2011;**97**(4):307–16.