

Telemedicine in Alentejo

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Abstract

Alentejo covers a third of Portugal, yet it is home to only 5% of the population. Residents of the region are poorer, older, and less educated than the rest of the country. There is a shortage of physicians in several specialties. The low population density, a concentration of specialized services, and a poor public transportation network all create barriers to access. Telemedicine was introduced in 1998 to help address these challenges. In this article, we provide an overview of the program and its current status, focusing on infrastructure, services, and activity volume. We also discuss the impact the program has had from the perspectives of patients and healthcare professionals. From 1998 to 2011, there were 132,546 episodes of service using telemedicine, including real-time teleconsultations, teleradiology, teleultrasound, and telepathology. At present, the network includes 20 primary care units and five hospitals, covering almost 30,000 km² and 500,000 people. Units have high-resolution videoconferencing equipment, access to patients' clinical records, an image archive, and peripherals, such as electronic dermatoscopes and phonendoscopes. Teleconsultations are available in 15 medical specialties and areas, ranging from neurology to pediatric surgery. In 2008, regional health authorities started a tele-education program, and by the end of 2011, 876 healthcare professionals, across 52 locations, had participated in remote learning sessions. More than a decade since telemedicine was introduced in Alentejo, it is now an integral part of everyday service provision. A comprehensive assessment of the costs and consequences of the program is currently underway.

Key words: telemedicine, teleradiology, distance learning

Introduction

Alentejo represents approximately one-third of Portugal's continental territory but is home to only 5% of its population (499,038 people). There are 18.3 people/km², a sixth of the national average.¹ A quarter of the inhabitants are over 65 years old, and only 5% have a higher education degree.

Mean monthly earnings are around 10% lower than the national average. These factors all interact to create significant social and economic challenges for local health authorities. To exacerbate these difficulties, the supply of healthcare services is severely constrained. There is a shortage of hospital consultants in several specialties, and these are often concentrated in the region's main hospital, in Évora (e.g., there are three dermatologists in the region, all working in the Hospital do Espírito Santo de Évora). The population is dispersed, and local healthcare units can be hundreds of kilometers away from the main hospitals. The public transportation network is poor, and services to district capitals—where hospitals are located—are infrequent. It is not unusual for patients, and often their family members, to take an entire day off to attend a hospital appointment. In 1998, the regional health authorities started a telemedicine program in order to better meet the needs of the population with their limited resources. It has since become the largest telemedicine initiative in Portugal.

In this article we provide an overview of the use of telemedicine in Alentejo, with brief descriptions of the infrastructure and organization, services provided, activity volume, and impact. A larger study assessing the costs and consequences of teleconsultations is currently underway.

The Alentejo Telemedicine Programme

OBJECTIVES

The Programme is based on the premise that patients should be seen, diagnosed, and treated as close as possible to where they live and work. Its main objectives are to increase the accessibility of specialist healthcare services through a reduction in travel distances for patients, to reduce waiting times, to ensure equity in the access to the best available care for patients in remote underserved locations, and to reduce the costs of providing healthcare services through avoidance of unnecessary care.

ORGANIZATION AND INFRASTRUCTURE

There are 26 telemedicine platforms distributed among 20 primary care units and five hospitals, covering four districts (*Fig. 1*). These communicate over the Health Information Network (Rede Informática de Saúde), a high-speed virtual private network managed by the Ministry for Health. The network is provided free of charge to healthcare units in the Portuguese National Health Service. The telemedicine platforms include high-resolution videoconferencing equipment, access to electronic patient records and picture archive, and peripherals such as electronic dermatoscopes and phonendoscopes (availability varies between units).

The most specialized care is provided in Évora. District hospitals in Beja, Portalegre, Elvas, and Litoral Alentejano provide

Table 1. Number of Episodes of Service Using Telemedicine, 1998–2011

YEAR	MODALITY			TOTAL
	TELECONSULTATIONS	TELERADIOLOGY	TELEULTRASOUND	
1998	30	35	0	65
1999	70	987	0	1,057
2000	181	1,702	0	1,883
2001	361	1,828	0	2,189
2002	963	2,279	0	3,242
2003	1,714	4,718	0	6,432
2004	2,562	6,126	0	8,688
2005	2,683	7,976	0	10,659
2006	2,886	9,555	0	12,441
2007	2,677	12,422	0	15,099
2008	3,717	13,031	0	16,748
2009	3,294	10,565	0	13,859
2010	3,479	16,140	767	20,386
2011	3,235	15,389	1,174	19,798
Total	27,852	102,753	1,941	132,546

Data are from the Administração Regional de Saúde do Alentejo, I.P.²

and means of transportation). For patients living in remote locations (e.g., Odemira is 100 km distant from Évora), savings were considerably bigger.

THE PERSPECTIVE OF CLINICIANS

In late 2010, a group of general practitioners ($n=4$), consultants ($n=6$), and primary care managers ($n=2$) involved in the Telemedicine Programme participated in interviews concerning the impact of teleconsultations in the region. The majority ($n=11$) would encourage colleagues to use teleconsultations, with one consultant considering that face-to-face care is preferable when available. Asked about the disadvantages of telemedicine, half of the respondents mentioned not being able to physically touch the patient, with the other half considering there were none. As for the benefits, participants mentioned improvements to service capacity, productivity, and efficiency due to quicker consultations and better scheduling, patient benefits from increased geographical access and reductions in traveling time and associated costs, avoidance of unnecessary visits to the hospital, and, finally, continual medical education of general practitioners and consequently fewer referrals.

In the end of 2010, 32 participants from four tele-education sessions were surveyed on several issues, using a 5-point Likert scale. The majority of participants were either very satisfied ($n=20$) or somewhat satisfied ($n=7$), and 30 reported they would encourage colleagues to participate in future sessions. Items concerning the quality and performance of trainers were considered either good or

very good by all respondents. Ten respondents were participating in tele-education sessions for the first time.

Looking to the Future

We are currently conducting a comprehensive evaluation to quantify the economic impact as well as assess unintended effects from the use of teleconsultations in Alentejo. The findings will be used to clarify how the technology can be used to provide maximum benefit at lowest cost to all stakeholders, as well as to inform future implementations of teleconsultations at a national level.

At present, the use of telemedicine in other regions of Portugal is extremely limited compared with Alentejo. In 1998, the same year the Alentejo Telemedicine Programme was created, the pediatric hospital in Coimbra started a telecardiology consultation in association with hospitals in Leiria and Porto.⁴ Since then, other hospitals (Santa Maria da Feira, Lisboa, and Covilhã in Portugal, Mindelo in Cape Verde, Luanda in Angola, and Madrid in Spain) have joined the service. From 1998 to 2006, the pediatric hospital in Coimbra provided 4,741 teleconsultations, although there is no information regarding which hospitals were involved.⁵ Based on the few available studies, most projects are either small or in early stages of implementation.^{5–7}

In July 2012, the Ministry for Health set up a working group to develop a national telemedicine program drawing on the experience of the Alentejo Telemedicine Programme. The group has identified the following priorities: advance the use of teleconsultation in other regions of Portugal; pilot a remote monitoring solution for chronic obstructive pulmonary disease patients; and ensure that lawmakers and payers develop legislation and policies that allow for the spread of telemedicine.⁸ In Alentejo, the regional health authorities are currently undertaking an ISO 9001 certification of teleconsultations, and tele-education is expected to receive the same certification by end of the year.

Conclusions

The Alentejo Telemedicine Programme is now more than a decade old. Patients and providers in the region believe the Programme promotes equity and reduces barriers to access to outpatient care. Regional health authorities consider it essential to address the region's challenges.² The Programme is now an integral part of everyday healthcare provision, and the experience acquired in the region is currently informing a national program for telemedicine. The experiences of other international initiatives is also being taken into account.^{9–11} Notwithstanding the general positive impact to date, future work should focus on establishing a high-quality economic evidence base for the use of telemedicine services. Despite a large and growing number of studies concerned with the economic impact of telemedicine, there is still little robust evidence of its cost-effectiveness.^{12,13} If we are to sustain and realize the promise of telemedicine, whether in Alentejo or elsewhere, it is essential that,

Table 2. Selected Patient Survey Results

VARIABLE	TELEMEDICINE	FACE-TO-FACE
Means of transportation		
Car	57	76
Bus	2	9
Taxi	0	2
Ambulance	2	8
Walk	39	5
Total	100	100
Satisfaction		
Very satisfied	42	26
Somewhat satisfied	54	68
Indifferent	2	3
Somewhat unsatisfied	2	3
Total	100	100
Patient came accompanied		
Yes	46	67
No	54	33
Total	100	100
Occupation of companion		
Active (employed)	16	40
Inactive (retired, unemployed, student)	30	27
Total	46	67

whenever possible, we conduct evaluation studies that are in accordance with best practices and guidelines for economic evaluation. The evaluation of costs and consequences that is currently underway in Alentejo should contribute to that objective.

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Disclosure Statement

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