

Perceptions on Telemedicine in Portugal During Sars-Cov-2 Pandemic: A Mixed-Methods Study

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Abstract: This study aimed to investigate how patients and professionals faced telemedicine or telehealth in Centre Region in Portugal during the Sars-Cov-2 pandemic. Mixed-methods exploratory and parallel study including data from a survey of 190 healthcare patients and seven qualitative interviews with healthcare professionals from the Centre Region of Portugal were carried out. Descriptive and multiple correspondence analysis was used for survey results evaluation while healthcare professionals' perceptions were studied using a thematic analysis approach. Although few participants (15%) experienced telemedicine before the pandemic, most (73.2%) consider the health sector prepared to provide it. The most mentioned benefits of telemedicine were the avoidance of travel, convenience, and comfort for the patient. The limitations that may exist in this modality relate to patients who do not have the necessary technological devices, the lack of adequate diagnostic tools, and limitations to the patient-doctor relationship. Younger participants (<30y) were associated with characteristics of the telemedicine operating system, like the adequacy of diagnostic tools while persons more than 50 years old were associated with the lack of preparation or predisposition of professionals to provide telemedicine.


1 INTRODUCTION


Telemedicine is defined by the World Health Organization as “The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for the diagnosis, treatment, and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities” (WHO, 2010). Despite being a theme present both in the literature and in examples/cases of remote healthcare provision, the practice of telemedicine or telehealth has fallen to spread through health systems that some optimistic perspectives anticipated (Waller & Stotler, 2018; Wootton et al., 2017). Kruse and colleagues (2018) identified some of the barriers to the implementation

of telemedicine mainly related to issues with technically challenging staff, followed by resistance to change and cost. Before the pandemic, the practice of telemedicine was driven by technological developments (Chan et al., 2020; Weinstein et al., 2018) and gains in terms of the cost-benefit ratio, although the literature is not clear on this effect (Shigekawa et al., 2018; De La Torre-Diez et al., 2015), seeking to reach populations far from urban centers. However, the current pandemic caused by the SARS-COV-2 virus caused an urgent need for the adaption of healthcare provision, where distance service provision appears to be the best available solution across different healthcare levels.

This rapid change has transformed the experience of patients and professionals, so understanding their perspective can help establish patterns of use and reveal clues that deserve further investigation. Based on the principle that patients favor the provision of

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face-to-face health services, the eventual willingness to opt for other modalities deserves to be explored beyond the current moment. In the same sense, with a professional practice focused on the reception of patients in person, health professionals' perception regarding the implementation of telemedicine delivery channels could contribute to developments in the area. This study aimed to investigate how patients and professionals faced telemedicine or telehealth in Centre Region in Portugal during the Sars-Cov-2 pandemic.

2 METHODS

2.1 Ethics & Informed Consent

The study addressed personal perceptions and didn't include any kind of personal health data. The study was conducted in compliance with data protection regulations and Helsinki Declaration. All participants were informed about the study's aims, and informed consent was obtained before data collection procedures took place.

2.2 Study Type & Context

A mixed-methods exploratory and parallel study including data from a survey of healthcare patients from the Centre Region of Portugal and a qualitative approach using interviews with healthcare professionals from the same geographic area (Östlund et al., 2011) was carried out.

2.3 Patient Survey

A short questionnaire was developed containing seven questions about the perception of telemedicine use, readiness of the health system, its advantages, and limitations. In addition to those seven questions, other four others were included to characterize the participants (district of residence, age group, type of geographic area, and access to health services). Participants were recruited digitally in different health-related forums, expressing the request for dissemination by other users with whom they interact. As inclusion criteria, participants should be over 18 years old and live in the Centre region of Portugal. Data collection was carried out between July and August of 2021.

2.4 Healthcare Professionals' Interviews

Participants were selected using a maximum variation purposive sampling criterion (Palinkas et al., 2015) to document diverse modifications that have emerged in adapting to different conditions. Inclusion criteria comprised being familiarized with telemedicine practice during 2021. Invitations were made through direct contact. The interview guide was designed to explore the perception, experience, and challenges of telemedicine practice. The interviews were conducted using videoconference in August of 2021.

2.5 Data Analysis

Descriptive and multiple correspondence analysis (MCA) was used for survey results, using SPSS Window version 25.0. Qualitative data obtained from healthcare professionals' perceptions were studied using a thematic analysis approach (Braun & Clarke, 2006).

3 RESULTS

3.1 Patient Survey

The online questionnaire was answered by 190 participants, with the district of Viseu being the most represented (n=90, 47.4%). Most participants were between 18 and 30 years old (n=72, 37.9%), and live in cities (n=93, 49.0%). The vast majority consider having easy access to health services (n=168, 88.4%). There was an association between 'geographic area' and 'access to health services' (Chi-square (1, n=190) = 9.72, p<0.01), where the urban areas (Small towns or cities) show a higher proportion of 'easy access'.

The use of remote health services is mentioned by 100 (52.6%) of the participants, with only 15 having this experience before the Covid-19 pandemic started. Of the participants who had no experience with telemedicine, more than half (n=46) were willing to use it if proposed.

Most participants (n=139, 73.2%) consider that the health sector is prepared to provide telemedicine services, with the private sector being prepared to receive the greatest number of favorable opinions. The most mentioned benefits or advantages of telemedicine concern the avoidance of travel, convenience, comfort for the patient, and the possibility of saving resources.

The limitations or constraints that may exist in this modality concern the fact that many patients do not have the necessary technological devices, the lack of adequate diagnostic tools, and the limitations of the patient-doctor relationship - Table 1.

Table 1: Answers to the questionnaire.

Have you already used distance health services?		
Yes:, <i>n (%)</i>		100 (52,6)
Before Covid-19 pandemic		15 (15,0)
After Covid-19 pandemic		85 (85,0)
No:, <i>n (%)</i>		90 (47,4)
Yes, if proposed		46 (51,1)
No, or not sure, if proposed		44 (48,9)
Do you think the health sector is prepared to provide telemedicine services?		
Yes:, <i>n (%)</i>		139 (73,2)
Public Sector		24 (17,2)
Private Sector		66 (47,5)
Both private and public		49 (35,3)
No, <i>n (%)</i>		51(26,8)
Benefits or advantages of telemedicine, <i>n</i>		
Avoid traveling		165
Convenience and comfort		117
Economy of resources		101
Infection prevention/avoidance		91
Faster response from professionals		71
Limitations or constraints of telemedicine, <i>n</i>		
Users without technological		165
Inadequate diagnostic tools		137
Limited patient-doctor		113
Resistance to change		86
Service additional complexity		25
Health professionals not prepared		24
Privacy flaws		20

Being available to receive health services at a distance was not associated with age group, geographic area, or access to health services. Age was associated with the opinion of the health sector's readiness to provide telemedicine services with a statistically significant proportion of younger people considering the health sector to be ready to do so (Chi-Square (4, n=190)= 10.94, p<0.05).

The first MCA considered all the variables presented in Tables 1 and 2, except the first. In this model 'Geographic area' and 'Access to Health Services' showed poor discrimination, so they were not considered for the second model.

For the second model, after obtaining the total inertia for the 16 dimensions, the MCA considered a two-dimension solution. The first and second dimensions presented, respectively: eigenvalue, 1.992 and 1.695; inertia, 0.142 and 0.121; and Cronbach's alpha, 0.536 and 0.441.

The analysis also considered plots for discrimination measures and joint category points - Figure 1.

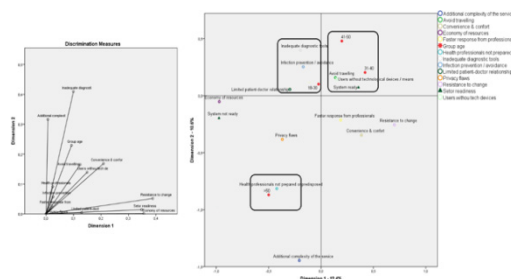


Figure 1: Plots for discrimination measures and joint category points.

All the discrimination measures were below 0.5, with a maximum of 0.388 for 'resistance to change' in the first dimension and 0.410 for 'inadequate diagnostic tools' in dimension 2. From the results and the graphic visualization, it is possible to distinguish three groups according to age.

The first includes younger people and has associated concerns with characteristics of the health system's functioning - the adequacy of diagnostic tools, infection prevention, or the patient-doctor relationship.

The second one includes persons aged between 31-50 years old who are associated, on the one hand, with a positive view of the health system's readiness for telemedicine.

On the other hand, the advantages of avoiding travel and concerns about the existence of persons who do not have the appropriate technical means to access this type of health service provision. The third group corresponds to people over 50 years old, highlighting the consideration of the lack of preparation or predisposition of professionals to provide telemedicine.

3.2 Healthcare Professionals' Interviews

Seven health professionals from the following areas participated in the interviews: Child Psychiatry, Gynecology, Neurosurgery, Ophthalmology, Otolaryngologist, Psychiatry, and Psychology.

Table 2 summarizes the key findings from interviews, where the difficulties of using telemedicine with children, in physical examinations, or in health conditions that imply serious disability, clearly emerged. Several activities were identified where telemedicine would be positive, such as in the renewal (without change) of medication, in follow-up consultations, or for analysis of diagnostic tests. Health professionals consider that the technological infrastructure is prepared for the practice of telemedicine, as well as the planning and organization of services. However, there are clear concerns about the loss of quality in the patient-physician relationship, as well as the need for specific software for clinical management using this type of service delivery.

Considering the current skills of professionals, it is recognized as existing in terms of digital literacy and online time management, but lacking in ensuring privacy and data protection, as well as in the challenges that interpersonal communication entails.

4 DISCUSSION

This mixed-methods study reports findings on perceptions about the telemedicine approach in the Centre Region of Portugal during the Sars Cov-2 pandemic. Telemedicine seems to be accepted by patients, many of them already involved in distance delivery of health services, although adherence could be mainly motivated by the pandemic context. However, even those who have not yet had contact with this modality state that are willing to try it if proposed, suggesting this issue deserves further and broader studies about this channel for contact with health service users.

Despite the huge increase in health activities carried out remotely in the public sector in Portugal (SNS, 2022), there seems to be a perception of better preparation of the private sector for the provision of health services through this modality. This result may be due to the enormous pressure that the context of the pandemic has put on the National Health Service, with the media focused on its daily indicators, leaving little room for the adaptations made by the public sector.

The advantages and limitations of telemedicine are in line with other works that have addressed the topic (Breton et al., 2021; Kichloo et al., 2020; Scherer et al., 2021). There is an agreement between patients and professionals in some of the limitations like clinical/diagnostic assessment tools or hindrances on the patient-doctor relationship, for

example, and in some of the advantages - fewer travels through follow-up appointments, for example. However, the concern with patients who do not have technological means is a major concern as a potential barrier to the adoption of this modality. Older patients group need special attention from health managers regarding the telemedicine model because this study suggests that some under-preparation of professionals or even the complexity of such a system may arise additional challenges to the successful development of health services based on information and communication technologies.

These results seem to point to the importance of reviewing the ways of interacting with clients in the health sector, far beyond the constraining experience of the pandemic, and this is probably the time to evaluate which practices can be preserved and developed, because they may allow relevant gains in efficiency and effectiveness in the provision of care.

Table 2: Key findings from interviews.

	adequate	no or to improve
to be used?	medication renewal follow-up consultations to analyze diagnostic tests	when physical assessment is needed with children
readiness of the system?	communication infrastructure work planning/organization	severe pathology doctor-patient relationship loss specific clinical management software
competencies of health professionals?	digital literacy online time management	privacy and data protection interpersonal online communication

This may also be the time to assess whether organizations have the skills and material resources to change and improve the logic of care provision and whether there is a need to review the processes themselves. This may help to identify critical processes that would suffer the deepest impact from this type of change, and therefore, contribute more to increasing proficiency and service quality. It will also

be relevant to understand in which situations and in which target groups it would be wise to invest more since telemedicine will not be a solution for all situations or all target groups (Timpel et al., 2020; Chunara et al, 2021). This is eventually the moment to learn from experiences, to assess and identify what aspects do or do not deserve to be treated as conjectural. Realizing which of the changes that occurred can be assumed as worth incorporating into organizational systems as a part of a new way of creating value in healthcare provision (Losorelli et al., 2021). This value, both for external customers (patients) and for internal customers (health professionals), would enable gains at various levels, from greater convenience and comfort, lower infection rates, and gains in access, to new opportunities for skills development for professionals. All these aspects can have a relevant impact on satisfaction levels, both of patients and professionals, a dimension that increasingly is desired to consider in the evaluation of healthcare institutions Dorsey et al., 2020).

This work has methodological limitations. On the one hand, the method of recruiting participants may imply a selection bias, both in terms of health professionals and users of health services. On the other hand, the lack of control mechanisms over survey responses may introduce an information bias.

5 CONCLUSIONS

The recent Sars-Cov-2 pandemic seems to have increased awareness of the potential of using the modality of health services at a distance, with the need of refining the best aspects of offering this modality to maintain quality levels.

Future studies could approach the skills and competencies of professionals to be improved to guarantee more proficiency and adaptation to patients' different requirements. Technology investments needed to implement and develop telemedicine would also benefit from further research, to help mitigate some mentioned difficulties.

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