

POLICYBRIEF

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Health Online Services in Portugal

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Highlights

1. Digital Health Evolution in Portugal

Portugal has seen steady advancements in digital healthcare services, with HOSPI assessments conducted in 2019, 2021, and 2023. Overall, Portuguese hospital websites provide basic institutional information relevant to patients and are developed with attention to technical functions such as navigability, privacy and security, usability and readability. More attention should be put into providing online services that are easy to use and on facilitating interactions from the patients' community.

2. Strongest and Weakest Aspects

Technology Features (navigability, privacy and security, usability, and readability) are the strongest area for Portuguese hospital's websites. Services have been consistently the weakest area, indicating the need for enhanced online patient care options and community interaction with the website.

3. Public vs. Private Hospital Performance

Private hospitals generally rank higher in online service provision due to more flexibility in website development. Public hospitals, constrained by standardization requirements, lag in Services but perform well in Community Interaction criteria and transparency aspects.

4. Main recommendations from the past HOSPI editions:

1. Strengthen Transparency and Quality Metrics
2. Foster Digital Community Engagement
3. Enhance Digital Patient Services
4. Improve Website Accessibility and Usability

1. Introduction

Digital health services encompass a range of online functionalities, such as appointment scheduling, telemedicine, patient record management, and accessibility. Effective digital transformation in the healthcare sector enhances service delivery, reduces administrative burdens, and ensures that critical health information is readily available to patients and healthcare providers. As healthcare systems worldwide embrace digital solutions, Portugal must address existing gaps to ensure a competitive and patient-centric healthcare landscape. Health Online Service Provision Index (HOSPI) is an instrument developed by the United Nations University Operating Unit on Policy-Driven Electronic Governance (UNU-EGOV) that assesses the online presence of hospitals based on a set of indicators and sub-indicators organised into four criteria: Content, Services, Community Interaction, and Technology Features.

HOSPI has been applied in Portugal in 2019, 2021, and 2023. This policy brief summarizes these findings and provides recommendations for enhancing digital health services in Portugal.

2. Assessment Approach

2.1. Methodology

The assessment is based on direct observation of the websites of hospitals, according to a set of indicators and sub-indicators that are periodically reviewed. The methodology encompasses three main activities.

The **data collection process** is carried out by a team of two assessors, supervised by a third one who is an expert in the instrument. Each assessor is requested to assume the position of a typical user and record the assessment for each sub-indicator in the assessment grid.

In the **data validation phase**, the data collected by the assessors is compared by the expert to detect discrepancies and carry out an additional check to determine the final value of the assessment (audit).

In the **data processing and analysis phase**, the weight assigned to each sub-indicator, indicators, and criteria is applied to compute the HOSPI value for each hospital and rank them accordingly.

2.2. Assessment instrument: criteria and indicators

The HOSPI instrument is organised into four criteria, each with a set of indicators. A set of sub-indicators is defined for each indicator, which are the aspects evaluated in each website. Table 1 gathers the indicators of each of the four criteria.

Content	Health Institution Information Available on the Website
	Quality Metrics
	Organisational Structure and Medical Information
	Patient Information
	Research and/or Teaching
Services	Administration Procedures
	Appointments
	Patient Care
Community Interaction	Participation
	Media
	Advertising/Marketing
Technology Features	Navigability
	Accessibility
	Usability/Readability
	Credibility
	Privacy/Security

Table 1: Criteria and indicators of the HOSPI instrument

The first criterion – Content – evaluates the presence of information relevant to the user. It evaluates the quality, availability, relevance, completeness, and concise representation of specific information expected to be provided on a hospital website.

The second criterion – Services – evaluates aspects of online service provision, focusing on the availability and diversification of these services, as well as on the interactivity of the user with the hospital.

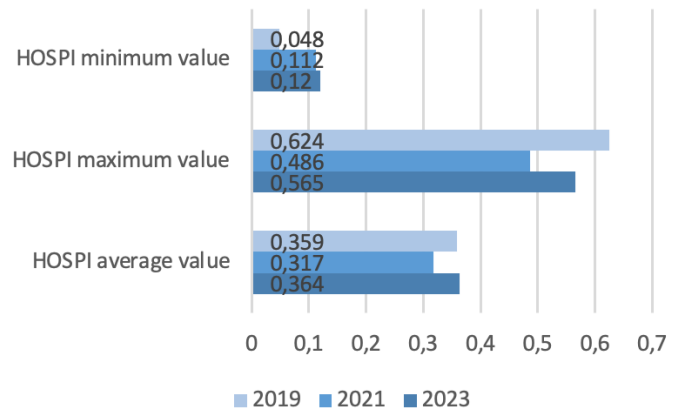
The third criterion – Community Interaction – evaluates the interaction between hospitals, patients, and online communities on the web. Special attention is given to the participation mechanisms available and the hospital’s public relations.

The fourth criterion – Technology Features – evaluates technical items related to easy navigation, website quality, visual appeal, functionality, and reliability, as well as how the content and services are assembled and made available on a website.

3. Results

The results presented in this document are a comparative analysis of the three applications of the instrument in the Portuguese context. Graphic 1 shows the average, maximum, and minimum HOSPI values in 2023, 2021, and 2019.

Results analysis needs to take into consideration that (1) the instrument is reviewed after each application, which results in slight adjustments to the sub-indicators, (2) assessors that conduct the assessment are different in each edition, (3) contextual factors such as the 2020 Covid-19 pandemic, might have influenced the attention put into websites.



Graphic 1: Average, maximum, and minimum scores obtained by the Portuguese hospitals in the three applications of the study

Overall, it is possible to identify a decrease in average and maximum values for 2021. The average value is at its maximum in 2023, which can reveal an increase in hospital website

offers. Notably, the minimum value increase throughout the editions may reveal more attention on websites overall.

Next are the main highlights of the performance of the hospital websites assessed according to criteria 1, 2, 3, and 4.

CRITERION 1 - CONTENT

Criterion 1- Content average, maximum, and minimum values follow a similar pattern to HOSPI values, as seen in Table 2. Most websites provide institutional information that is relevant for patients.

Year	C1 average value	C1 maximum value	C1 minimum value
2023	0,363	0,634	0,060
2021	0,326	0,621	0,091
2019	0,406	0,740	0,048

Table 2: Average, maximum, and minimum values for Criterion 1 - Content in the past three HOSPI editions in Portugal

Hospital websites usually have complete general information about the hospital but consistently lack quality metrics indicators. Quality indicators are a sign of transparency and can foster trust. Websites should also include organisational and medical information that allows patients to understand how the hospital functions and is organised. Other relevant information for patients that can be improved is the types of admission, patients' rights and obligations, information about payment, and information for foreigners.

CRITERION 2 - SERVICES

The Services criterion is the criterion with the heaviest weight for index calculation and the one with the lowest values among the four criteria. It is also the only one with the lowest value consistently being zero, as seen in Table 3. It is in service provision that hospitals should invest in their website.

Year	C2 average value	C2 maximum value	C2 minimum value
2023	0,246	0,589	0,000
2021	0,283	0,500	0,000
2019	0,314	0,722	0,000

Table 3: Average, maximum, and minimum values for Criterion 2 - Services in the past three HOSPI editions in Portugal

Most websites offer the possibility to consult and cancel appointments and other administrative procedures. Nonetheless, patients could benefit from facilitated communication about their processes with health professionals and other hospital professionals, access to medical records, prescription management, and other digital services that complement physical consultations.

CRITERION 3 - COMMUNITY INTERACTION

Criterion 3 - Community Interaction global values can be consulted in Table 4. It has the same average value variation as the global HOSPI average. Its minimum has been 0 in the past two editions

Year	C3 average value	C3 maximum value	C3 minimum value
2023	0,319	0,644	0,000
2021	0,285	0,571	0,000
2019	0,335	0,659	0,070

Table 4: Average, maximum, and minimum values for Criterion 3 - Community Interaction in the past three HOSPI editions in Portugal

Enabling community participation to listen to patients also shows caring and involvement. Websites that allow participation through some chat tool or online forum with opinion polls, newsletters, or FAQ sections are aligned with participatory principles. Other relevant features of this criterion that need attention are the provision of a virtual visit to the institution and information about the public relations office.

CRITERION 4 - TECHNOLOGY FEATURES

The Technology Features criterion - Criterion 4 has the highest average, maximum, and minimum values of the four criteria, except for the maximum in 2019. It follows the overall trend from 2019 to 2021 but achieves the highest values in 2023, as seen in Table 5. This fact recognises a general effort into website development, maintenance, and robustness.

Year	C4 average value	C4 maximum value	C4 minimum value
2023	0,578	0,718	0,297
2021	0,530	0,629	0,323
2019	0,533	0,668	0,180

Table 5: Average, maximum, and minimum values for Criterion 4 - Technology Features in the past three HOSPI editions in Portugal

Assessed websites answer credibility concerns like up-to-date information, grammatical correctness, or copyright disclosure. Privacy and Security aspects are also well-covered. Navigability and usability are generally addressed with functioning links, correct title bar denominations, website map and search engine provided, structured menus, and sophisticated tools embedded into the webpages. The areas that need more attention in Portuguese hospitals' websites are related to accessibility compliance with W3C validations overall. Other concerns include the possibility of printing the webpages, adjusting text size or contrast, and the provision of a hospital website certification or accreditation.

4. Recommendations

The following recommendations are valid for both public and private hospitals in Portugal. In general, it can be stated that hospital websites should be developed to offer patient-oriented platforms that provide transparent information, are customisable, and have easy-to-use access to services.

1. Strengthen Transparency and Quality Metrics

- Mandate the disclosure of key hospital performance indicators (e.g., number of admissions, nosocomial infection rates, mortality rates).
- Implement standardized reporting frameworks for waiting times (e.g., consultations, surgery, or emergency services) and patient satisfaction surveys.
- Promote transparency by providing access to open data files regarding clinical records and management practices for analysis and research.

2. Foster Digital Community Engagement

- Provide synchronous and asynchronous communication with doctors via online tools (e.g., chat, email, message exchange system).
- Provide tools for users to request information (e.g., chat, forum, FAQ, social media engagement).
- Develop educational resources and public consultation mechanisms.
- Make available information about associations at the hospital that support patients.
- Offer a virtual visit to the hospital.

3. Enhance Digital Patient Services

- Facilitate patient appointment management. Enable consultation and cancellation of appointments in a user-friendly way, as well as admission upon arrival to the hospital.
- Provide access to patients' medical records.
- Enable medical prescription requisition and consultation.
- Expand telemedicine services
- Introduce online prescription services and digital health monitoring.

4. Improve Website Accessibility and Usability

- Ensure compliance with WCAG 2.1 W3C accessibility standards.
- Provide accessibility declaration.
- Improve technical aspects for W3C CSS 3.0 validation and W3C Mark-up validation.

5. Concluding Remarks

The evolution of digital healthcare services in Portugal, as assessed by the Health Online Service Provision Index (HOSPI) over the 2019, 2021, and 2023 editions, highlights progress and ongoing challenges. The analysis of hospital websites demonstrates that while advancements have been made in certain areas, there is still considerable room for improvement, particularly in online service provision and community engagement.

One of the most significant findings is the continuous improvement in hospital website usability and accessibility, with the 2023 assessment reaching its highest overall average value. The criterion of Technology Features, which includes aspects such as navigability, usability, and credibility, showed notable enhancement, reflecting efforts to modernize hospital websites.

However, compliance with accessibility standards, such as WCAG, requires further attention to ensure inclusivity for all users, including those with disabilities.

Despite improvements, the Services criterion remains the weakest aspect of hospital websites, with an average score of just 0.246 in 2023. Many hospitals still lack essential digital services, such as comprehensive patient portals, telemedicine options, and seamless online appointment management. This shortfall underscores the need for hospitals to invest in expanding their digital service offerings to enhance patient convenience and reduce administrative burdens.

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