EXECUTIVE SUMMARY

ICT IN HEALTH SURVEY

2023

Brazilian Network Information Center - NIC.br

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Field management : Ipec - Inteligência em Pesquisa e Consultoria, Rosi Rosendo, Guilherme Militão, Ligia Amstalden Rubega, Denise Dantas de Alcântara and Paulo Vieira

Editing support team : Comunicação NIC.br: Carolina Carvalho and Leandro Espindola

Proofreading and revision in Portuguese : Tecendo Textos

Translation into English : Prioridade Consultoria Ltda., Isabela Ayub, Lorna Simons, Luana Guedes, Luísa Caliri and Maya Bellomo Johnson

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Executive Summary
ICT in Health 2023

Since 2013, the ICT in Health survey has investigated the adoption and use of information and communication technologies (ICT) in Brazilian healthcare facilities. Now in its tenth edition, the survey's historical series allows the analyses of the evolution of infrastructure and the adoption of ICT-based applications in healthcare facilities across the country, contributing to an understanding of the progress of digital health over time and the challenges to be addressed. This edition presents the results on the adoption and use of ICT in healthcare facilities, deepening the analysis on the use of Artificial Intelligence (AI), with new indicators on types of tools, applications, and reasons for not adopting AI. In addition, the survey expanded the breakdown of results, providing unprecedented information by federative unit for some of the topics examined.

The 2023 results indicated that 98% of health facilities used computers and 99% accessed the Internet. Access to ICT infrastructure in public facilities has gradually advanced over the years. Computer use increased from 68% in 2013 to 97% in 2023, and Internet access from 57% to 98%. In private facilities, access to computers and the Internet has been universal since 2013. There are still regional disparities in access to computers and the Internet, with the lowest percentages recorded in Roraima (80%), Maranhão (85%), and Amapá (90%). However, in the states of the Center-West, Southeast, and South, access to computers and the Internet is universal.

The main devices used in healthcare facilities were desktop computers (96%) and portable computers (64%). The exception was in primary healthcare units (PHU), where the use of tablets increased from 29% in 2019 to 59% in 2023.

Among facilities with Internet access, 95% used cable or fiber optic connections, whereas 43% used mobile or modem connections. The maximum download speed of the main connection has gradually increased over the years, adapting to the needs of the new technologies used. In 2013, only 1% of facilities had a connection above 100 Mbps, rising to 33% in 2023. The percentage of facilities with a connection speed of up to 1 Mbps was 23% in 2013, reaching 10% in 2023.

89% OF PHU HAVE AN ELECTRONIC SYSTEM FOR RECORDING PATIENT INFORMATION

ELECTRONIC PATIENT DATA

Electronic systems for recording patient information were available in 88% of healthcare facilities, 85% of which were public and 91% private. Hospitals with up to 50 beds were the least likely to use electronic systems (72%), whereas those with more than 50 beds were the most equipped with this tool (96%).

Regional disparities can be observed, as the North (85%) and Northeast (83%) regions had the lowest percentages of health facilities using electronic systems, whereas the South was the region with the highest use (93%). The existence of an electronic system in facilities in the Federal District was almost universal, followed by Rio Grande do Sul and Mato Grosso do Sul. The states with the lowest use of electronic systems in healthcare facilities were Amapá, Maranhão, and Acre (Figure 1).

INFORMATION SECURITY

These advances in ICT adoption have also led to an increase in the amount of personal data circulating in the digital environment, especially in the context of digital health,

where different organizations have access to sensitive patient information. In this sense, it is essential that information security measures are implemented to protect this data.

The results indicated that the challenges remain for facilities to effectively adapt to the Brazilian General Data Protection Law (LGPD) and the disparity between public and private facilities remains (Chart 1). Only the disclosure of the privacy policy on the website of the facility increased between 2022 and 2023, from 26% to 30%. The other measures remained stable compared to the previous year.

Another relevant aspect is the preparation of health teams for the use of digital tools. Only a third of healthcare facilities offered information security training courses to their employees. One positive aspect was the increase in the proportion of facilities with inpatient care and up to 50 beds (from 18% in 2022 to 26% in 2023), with more than 50 beds (from 48% to 55%) and facilities focused on diagnosis and therapy services (SADT) (from 47% to 52%) that offered this offered this kind of training sessions. In 2023, the difference between public (16%) and private facilities (44%) that had adopted these measures also remained stable.

TELEHEALTH SERVICES

Access to telehealth has the potential to expand the supply of health services in the country, overcoming geographical barriers to bring specialized care to patients. In 2023, there was a significant increase in the percentage of facilities offering distance learning, distance research activities, and teleconsultation (Chart 3). The expansion of this offer was driven by public facilities, which began to provide more distance learning services (from 24% to 31%), distance research activities (from 15% to 20%), and teleconsultation (from 15% to 21%) between 2022 and 2023.

It is worth noting that teleconsultation was more present in the North (24%) and Northeast (24%) regions. Among the states in the North, a third of the healthcare facilities in Acre, Rondônia, and Tocantins provided this service. In the Northeast, the states with the most healthcare facilities providing this service were Bahia, Maranhão, and Piauí (Figure 2).

ADOPTION AND USE OF NEW TECHNOLOGIES

More advanced and complex tools, such as Big Data analytics, AI, and the Internet of Things (IoT), can help increase access to health care, enabling more accurate diagnoses and more effective treatments. However, a small number of healthcare facilities use this type of technology.

Big Data analytics was carried out by around 4% of healthcare facilities. The main sources of information were data from the facility itself: 73% of facilities used data originating in patient

Greater availability of online services for patients

Internet access has increased, and more people are using applications to perform online services and look up health information on the Internet (54% of Internet users in 2023). The offer of online services by facilities has remained stable in recent years, always around a quarter of healthcare facilities, but in 2023 there was a significant increase in almost all the services investigated by the survey. The only exception was online interaction with medical teams. The highest increases were found for booking appointments and lab tests (Chart 2).

These results were influenced by the expansion of these services in public institutions, especially in the online scheduling of appointments and tests. The use of these services can improve time management, increase efficiency for professionals, and provide greater convenience for patients.

FIGURE 1

HEALTHCARE FACILITIES BY AVAILABILITY OF AN ELECTRONIC SYSTEM TO RECORD PATIENT INFORMATION (2023)

Total number of healthcare facilities with Internet access (%)

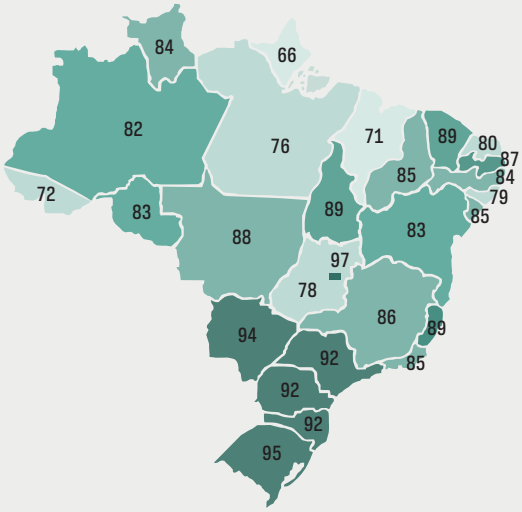


CHART 1

HEALTHCARE FACILITIES BY MEASURES ADOPTED CONCERNING THE BRAZILIAN GENERAL DATA PROTECTION LAW – LGPD (2023)

Total number of healthcare facilities with Internet access (%)

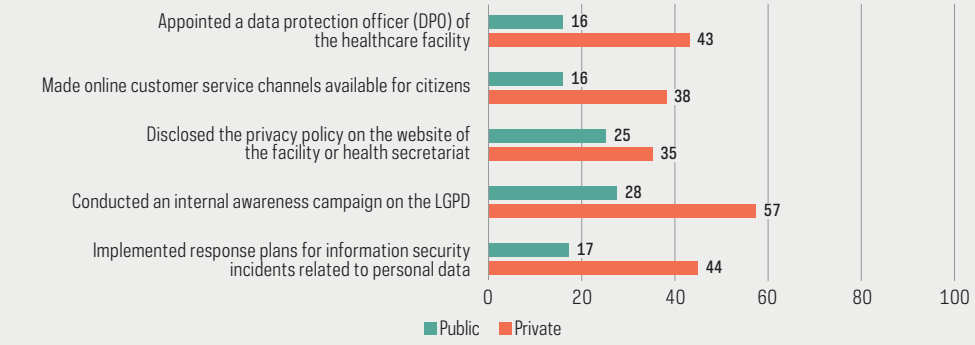
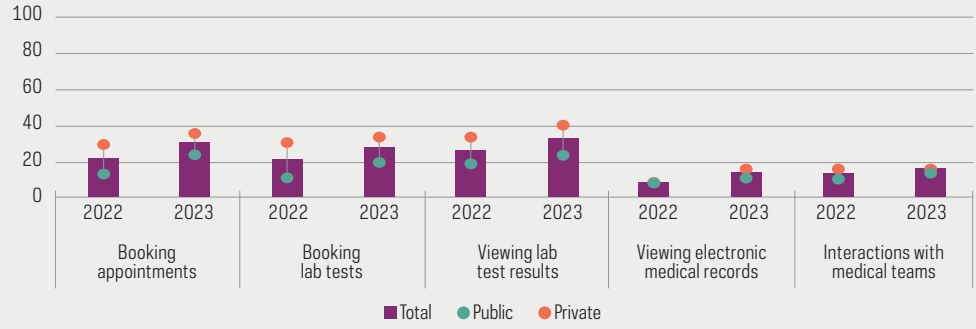


CHART 2

HEALTHCARE FACILITIES BY TYPE OF SERVICE OFFERED TO PATIENTS THROUGH THE INTERNET (2022-2023)

Total number of healthcare facilities with Internet access (%)



demographics and medical records, and 65% used data from smart devices.

Technologies such as AI, robotics, and IoT were used by a low percentage of healthcare facilities in the country. Around 3,200 used AI, 3,800 used robotics, and 4,300 used IoT. Facilities with inpatient care and more than 50 beds and SADT made the most use of these technologies.

In order to better understand the adoption of AI in healthcare facilities, new indicators on the subject were included. The results indicate that the most used AI tools were those for workflow automating (46%), speech recognition (33%), and text mining and written or spoken language analysis (32%). Recognition and processing of images, and machine learning for data prediction and analysis, were used by 21% and 16% of facilities that used AI, respectively.

Still regarding the use of AI, the main types of applications were those for digital security and organizing clinical and administrative processes. Human resource management or recruitment and assisting in the dosage of medications were the least used types of applications (Chart 4). The main reasons for facilities not to use AI were also investigated, namely: AI solutions are not a priority, incompatibility with existing equipment, software, or systems in the healthcare facility, and very high costs.

Finally, the main challenges identified are related to IT management and governance and the implementation of measures for facilities to comply with the LGPD, especially given the growing volume of patient data and the importance of the security and privacy of this information.

22% OF HEALTHCARE FACILITIES WITH INPATIENT CARE AND MORE THAN 50 BEDS PERFORMED BIG DATA ANALYTICS

Survey methodology and access to data

The tenth edition of the ICT in Health survey collected data about healthcare facilities using telephone interviews and a web questionnaire with 4,117 managers, between February and July 2023. The results of the survey, including the tables of estimates, totals, and margins of error, are available on the Cetic.br|NIC.br website (https://cetic.br). The methodological and data collection reports are available both in book format and on the website.

FIGURE 2

HEALTHCARE FACILITIES THAT OFFERED TELECONSULTATION SERVICES (2023)

Total number of healthcare facilities with Internet access (%)

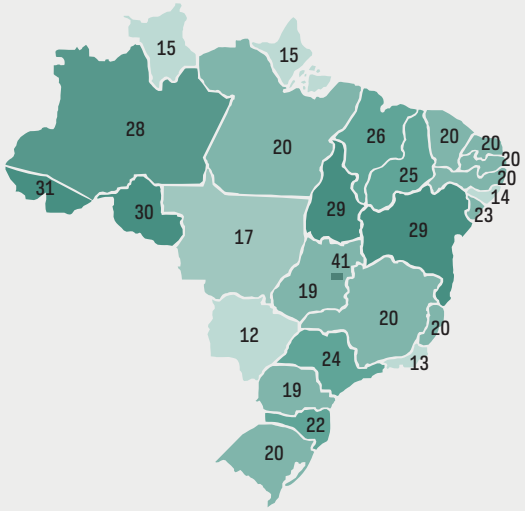


CHART 3

HEALTHCARE FACILITIES BY TELEHEALTH SERVICES AVAILABLE (2022-2023)

Total number of healthcare facilities with Internet access (%)

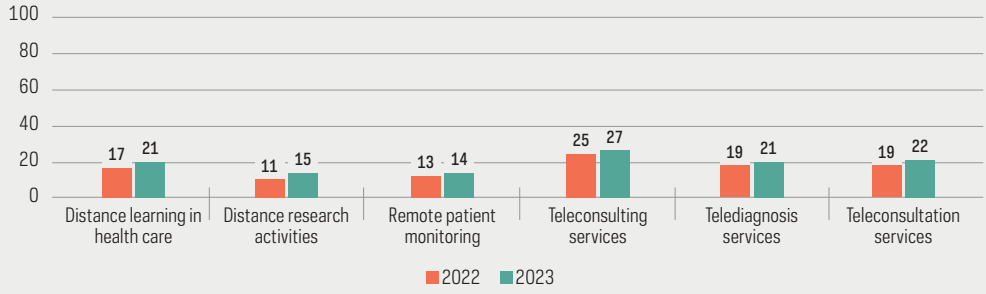
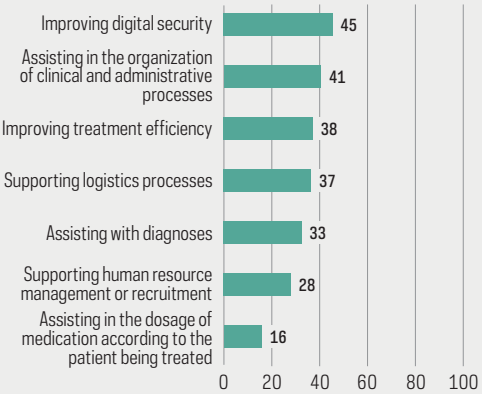


CHART 4

HEALTHCARE FACILITIES THAT USED ARTIFICIAL INTELLIGENCE TECHNOLOGY, BY TYPE OF APPLICATION (2023)

Total number of healthcare facilities that used Artificial Intelligence technologies (%)



63%
of facilities do not use AI because it is not a priority

52%
of facilities do not use AI due to incompatibility with equipment, software or systems

50%
of facilities do not use AI due to high costs

49%
of facilities do not use AI due to lack of need or interest

ABOUT CETIC.br

The Regional Center for Studies on the Development of the Information Society, a department of NIC.br, is responsible for producing indicators and statistics on the access and use of the Internet in Brazil, disseminating analyzes and periodic information on the Internet development in the country. Cetic.br is a Regional Study Center, under the auspices of UNESCO. More information at http://www.cetic.br/.

ABOUT NIC.br

The Brazilian Network Information Center – NIC.br (http://www.nic.br/) is a non-profit civil entity, which in addition to implementing the decisions and projects of the Brazilian Internet Steering Committee, has among its attributions: coordinate the registration of domain names – Registro.br (http://www.registro.br/), study, address and handle security incidents in Brazil – CERT.br (http://www.cert.br/), study and research network technologies and operations – CEPTRO.br (http://www.ceptro.br/), produce indicators on information and communication technologies – Cetic.br (http://www.cetic.br/), implement and operate Internet Exchange Points – IX.br (http://ix.br/), enable the participation of the Brazilian community in the global development of the Web and support the formulation of public policies – Ceweb.br (http://www.ceweb.br), and host the Brazilian W3C office (http://www.w3c.br/).

ABOUT CGI.br

The Brazilian Internet Steering Committee, responsible for establishing strategic guidelines related to the use and development of the Internet in Brazil, coordinates and integrates all Internet service initiatives in the country, promoting technical quality, innovation and dissemination of the services offered. Based on the principles of multistakeholderism and transparency, CGI.br represents a democratic Internet governance model, internationally praised, in which all sectors of society participate equitable in the decision-making. One of its formulations is the 10 Principles for the Governance and Use of the Internet in Brazil (http://www.cgi.br/principios). More information at http://www.cgi.br/.

Access complete data from the survey

The full publication and survey results are available on the **Cetic.br** website, including the tables of proportions, totals and margins of error.