EXECUTIVE SUMMARY

ICT IN HEALTH SURVEY

2022

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Executive Summary ICT in Health 2022

Since 2013, the ICT in Health survey has investigated the adoption and use of information and communication technologies (ICT) in Brazilian healthcare facilities. Currently in its ninth edition, it presents data collected from managers and professionals (physicians and nurses) working in healthcare facilities. Because of the COVID-19 pandemic, the last survey including professionals was conducted in 2019; and it resumed in 2022. The results for this population can be used to compare the use of ICT by physicians and nurses in the pre- and post-pandemic periods, providing a better understanding of their adoption and use by these professionals.

24% OF THE IT DEPARTMENTS HAVE EMPLOYEES WITH HEALTH DEGREES

Healthcare facilities

ICT INFRASTRUCTURE AND GOVERNANCE

The 2022 results show that almost all healthcare facilities had access to computers and the Internet (98% in both cases). It is worth noting that primary healthcare units (PHUs) improved their access gradually over the last few years, reaching 97% for both computers and the Internet. The main disparity was in the North region, with the lowest proportion of healthcare facilities using the Internet (92%).

Cable or fiber optic connections were present in 95% of healthcare facilities, while mobile connections were used in 39% of them. There was an increase in satellite connections, reaching 10% of facilities, and a reduction in radio connections (8%). The maximum download speed of the main connection increased in terms of the total number of facilities (32% had speeds above 100 Mbps); however, only 17% of public facilities had connections above 100 Mbps.

Information Technology (IT) departments can provide better digital health governance; however, only a third of healthcare facilities had IT departments. A significant variation was observed between types of facilities: 84% of inpatient facilities with more than 50 beds had IT departments, whereas only 26% of outpatient facilities did.

The adoption of electronic systems to record patient information had been increasing during the pandemic. However, in 2022, it remained stable in 88% of healthcare facilities, 85% of public and 91% of private facilities.

INFORMATION SECURITY

Good practices and the legal framework aimed at data protection must be present in digital health governance. Among some actions investigated by the survey, it was found that 39% of healthcare facilities had information security policies, with a significant difference between public (25%) and private facilities (51%). Of these, 76% offered information security training to their employees, including 83% in private and 58% in public facilities.

The information security tools such as antivirus programs and password-protected access were the most adopted in healthcare facilities, while more complex security tools

were in a smaller percentage. There were significant disparities between public and private facilities (Chart 1).

Another important finding was healthcare facilities' compliance with the Brazilian General Data Protection Law (LGPD). The results show that, in general, less than half of healthcare facilities adopted some of the measures investigated by the survey. In addition, private facilities carried out more actions related to the LGPD than public facilities (Chart 2).

ONLINE PRESENCE AND TELEHEALTH

Access to quality health information has the potential to contribute to the well-being of the population, in addition to facilitating access to services. In 2022, about half of healthcare facilities had websites (47%) and an account on social networks (52%) Online services were offered by less than a third of healthcare facilities.

The availability of telehealth services also remained low in recent years. In 2022, services such as distance learning (17%) and distance research activities (11%) were less available in healthcare facilities. Remote patient monitoring (13%), which had advanced during the pandemic, fell back seven percentage points. Teleconsulting (25%), telediagnosis (19%), and teleconsultation (19%) services remained stable in relation to 2021. Despite the greater digitalization of the health sector, the offer of online and telehealth services has remained stable in recent years.

Healthcare professionals

The adoption and appropriation of technologies by healthcare professionals were also investigated by the survey. In addition to the availability of applications suited to their work routines and patient care, the survey investigates the perception of the benefits and barriers to the appropriation of ICT.

In 2022, about 90% of physicians had access to computers and 93% to the Internet, proportions that remained stable compared to recent years. In the case of nurses, computer access improved, from 90% in 2019 to 96% in 2022, while 94% had Internet access.

Access to these technologies also influenced how medical and nursing prescriptions were issued. In 2022, 68% of physicians wrote prescriptions in electronic format, an increase of 14 percentage points from 2019. In this edition, the survey began investigating how nursing prescriptions are written. Electronic formats were used by 51% of nurses, and 27% adopted both electronic and paper formats.

Adoption and use of new technologies

Cloud e-mail (70%) was the cloud service most used by healthcare facilities and increased in public facilities (from 52% in 2021 to 61% in 2022). Secondly, there is file storage or databases in the cloud (60%) with an increase from 34% to 46% in the same period in public healthcare facilities.
It is estimated that about 7,600 healthcare facilities (6% of the total) performed Big Data analytics, with a higher number in private (about 5,700) than in public facilities (about 1,800). Of these, the main source of data was the facility's internal data, originating in patient demographics, forms, and medical records (76%), and from smart devices or sensors (74%). Other technologies such as blockchain (1%), Artificial Intelligence (3%), and robotics (4%) were used by a small portion of healthcare facilities.

26%
of healthcare facilities offered viewing lab test results

22%
of healthcare facilities offered booking appointments

21%
of healthcare facilities offered booking lab tests

13%
of healthcare facilities offered interaction with the medical team

8%
of healthcare facilities offered viewing electronic medical records

CHART 1
HEALTHCARE FACILITY BY TYPE OF INFORMATION SECURITY TOOL USED (2022)
Total number of healthcare facilities with Internet access (%)

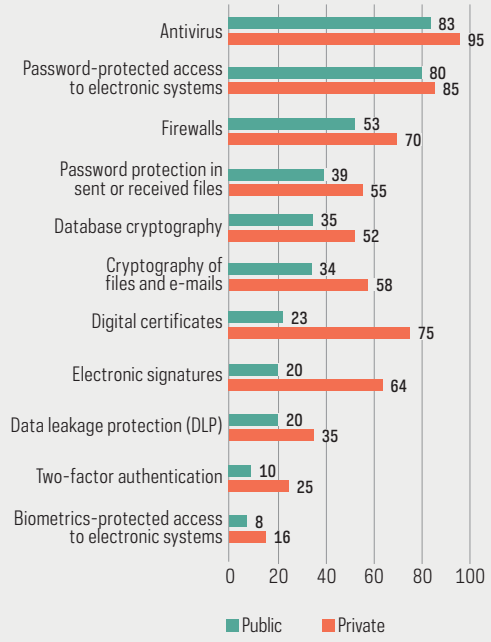
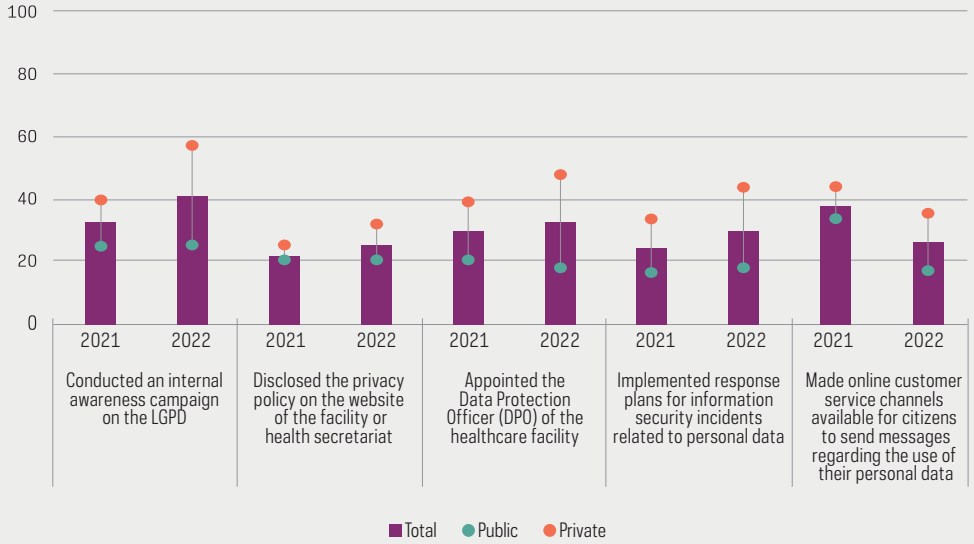


CHART 2
HEALTHCARE FACILITIES BY MEASURES ADOPTED CONCERNING THE BRAZILIAN GENERAL DATA PROTECTION LAW (LGPD) (2021-2022)
Total number of healthcare facilities with Internet access (%)



Access to patient information in electronic format has increased compared to 2019. Charts 4 and 5 show the greatest variations for nurses and physicians.

In the latest edition, the ICT in Health survey also began to investigate the participation of professionals in information security courses. It was observed that 46% of physicians and 29% of nurses underwent some type of training on the topic. This participation was significantly higher among nurses (62%) and physicians (72%) form private facilities compared to nurses (13%) and physicians (14%) from public facilities.

As for telehealth strategies, it was found that, in 2022, professionals began to have greater access to all services investigated by the survey, compared to 2021, according to Charts 5 and 6.

Finally, another new indicator in this edition is access to teleconsultation by health professionals. It was found that about a third of them had this service available at the healthcare facility they worked.

26% OF NURSES AND 33% OF PHYSICIANS HAD A TELECONSULTATION SERVICE AVAILABLE AT THE FACILITY

Survey methodology and access to data

The ninth edition of the ICT in Health survey collected data about healthcare facilities and professionals (physicians and nurses). Data collection was carried out using telephone interviews and a web questionnaire among 2,127 managers and 1,942 professionals between April and October 2022. 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.

CHART 3

NURSES BY TYPE OF PATIENT DATA ELECTRONICALLY AVAILABLE (2019-2022)

Total number of nurses with computer access in the healthcare facility (%)

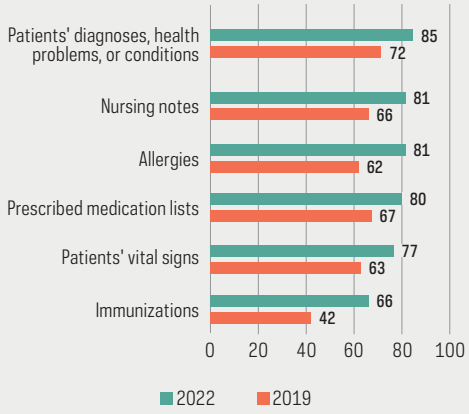


CHART 4

PHYSICIANS BY TYPE OF PATIENT DATA ELECTRONICALLY AVAILABLE (2019-2022)

Total number of physicians with computer access in the healthcare facility (%)

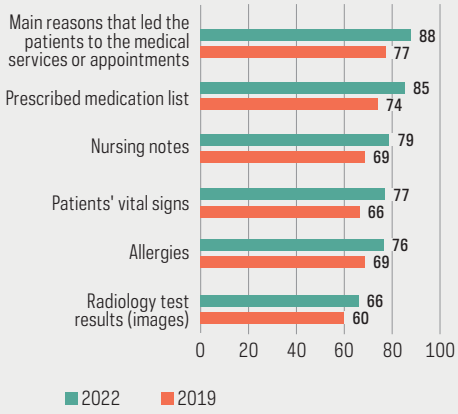


CHART 5

NURSES BY TELEHEALTH SERVICES AVAILABLE IN THE HEALTHCARE FACILITY (2019-2022)

Total number of nurses with computer access in the healthcare facility (%)

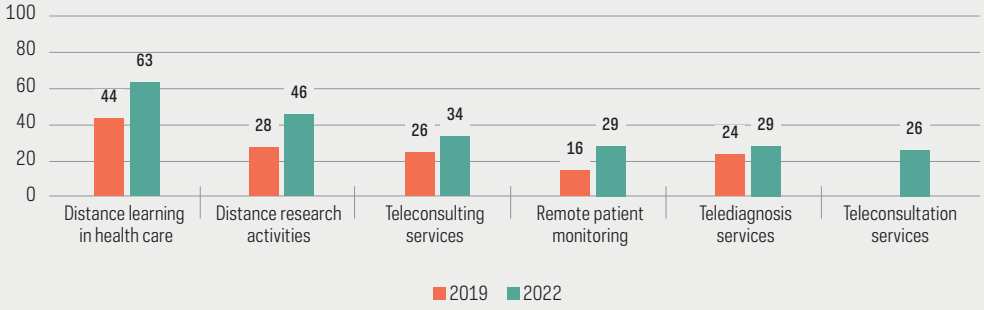
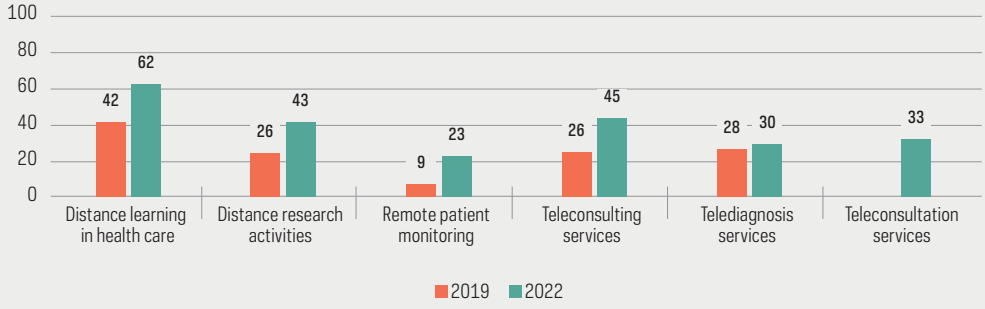


CHART 6

PHYSICIANS BY TELEHEALTH SERVICES AVAILABLE IN THE HEALTHCARE FACILITY (2019-2022)

Total number of physicians with computer access in the healthcare facility (%)



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.

ACCESS
WWW.CETIC.BR