



A RESEARCH REPORT ON THE USE OF TECHNOLOGY

in the modern healthcare workplace



MODULE: Digital Skills and Research Methods

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ABSTRACT

Recent technological advancement has affected the health sector, resulting in changes in the work routines of health technicians and causing questions about its implementation at their workplaces. The present academic work seeks to the existing discussions about the importance of the use of technology in the modern healthcare workplace and its implementation during the years of 2020 to 2022. The data collection is secondary and was done through online qualitative research.

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Introduction

The present research has as focus to analyses how technology has been implemented in the modern healthcare workplace during the years of 2020 to 2022. According to Carl Mitcham (1978), technology is the creation or use of material artifacts by humans in all their aspects and forms. And the NHS says that technology has a positively impacts in healthcare by increasing patients' health outcomes, benefit both patients and institutions from saving time and money, and by having access to better information that can help us make more informed decisions about care.

Rationale

To complete my programme for certificate of higher education in health and social care, I was required to conduct secondary research on the use of technology in the modern healthcare workplace, for the module digital skills and research methods. And I choose to research about the importance and impact of technology in the healthcare sector during the years of 2020 to 2022.

Research Objectives

The objective of this research is to analyse the importance of technology in the health area and its advances throughout history. To make the analysis comprehensive research framework has focused on two important questions: first to present and evidence in a theoretical reference on the importance of these systems in the area of health for a better diagnosis and attendance of the population, thus seeking theoretical basis in authors in the area. Then analyse how the health services have used technology and new technologies to improve population service, for this stage of the development of the work was carried out online research.

Review of the existing literature

OMS define Healthcare technology, has the application of organized knowledge and skills in the form of devices, drugs, vaccines, procedures and systems designed to solve a health problem and improve quality of life.

Patel and Patel (2017) discuss how technological advancements, particularly e-technology, have led to a greater sense of human socialization.

Bishop (2021), confirm that application and software programs facilitate and improve the working process. By using new technologies, medical records can be stored, shared, and documented more efficiently.

Luzniak (2022), affirm that before COVID-19 ravaged the globe, healthcare software solutions were needed, but now they are crucial. During the pandemic, the use of technology has become an important part for healthcare sector to assist in diagnosis, treatment, and patient management, and healthcare software has proven how powerful and effective it can be.

According to Pavlovic (2020), through the use of IT technology, healthcare professionals are able to do a lot of things they couldn't do before. Like for example, technology and new medical software solutions allow doctors today to better prepare for surgery and minimize risks.

According to Ruiz Morilla et al. (2017), technology can be used effectively and efficiently when we know about its possibilities, and we can optimize the benefits that can be obtained and have a realistic perspective of the challenges that might arise.

Research Methodology

- **Research method and the methodology**

There are two types of research methods, and these are quantitative methods and qualitative methods. These methods can be applied either individually or as a complement to each other, often allowing for more in-depth and comprehensive results.

According to the Grønmo, (2019), quantitative research uses a methodology based on numbers, metrics and mathematical calculations. Qualitative research, in turn, is based on the subjective character. In other words, its result does not show concrete numbers, but narratives, ideas and individual experiences of the participants.

The research carried out for this work was qualitative.

- **Data, Primary and secondary data**

Burt et al. (2009) defines that primary data comes from the organization or establishment that originally collected the data. And the secondary data sources are information's obtained from a different source than the primary data source.

For the purpose of this research, I decided to choose secondary data because it allows me access for research and analysis with a greater variety of sources and samples. In addition to that, saves time and money.

- **Data collection process**

The collection of data and information from texts was carried out through the internet, books, articles, technology and information magazines. Thus, constituting the bibliographic research and consultation with authors to better understand the subject, their benefits and limitations, what innovations and what are developed to unite information technology and health.

- **Population, Sample and Sample size**

For Burt et al. (2009), any measurable factor associated with a population element is a population characteristic. And samples are subsets or subgroups of elements in a population that provide insights into certain characteristics of that population.

For the purpose of this work my population is the healthcare sector and my sample is the evolution of technology between 2020 and 2022.

- **Ethics in data collection**

During this research all the websites that I was browsing are sitting properly, it was only used from the research purpose and everywhere the respect was showing for all the researchers.

Results/Findings, analysis and discussion

- **Secondary data analysis**

We can define health technology as all solutions developed from the combination of these two major areas. While health creates demands for the invention and improvement of the technological apparatus, technology provides a series of advances, whether in the provision of services, new equipment, education or communication.

According to O'Regan (2021), the implementation of technology in healthcare has many benefits such as:

- Allowing the service users to be more in charge of their own health, safety, and wellbeing.
- Enhancing communication among families, professionals, and staff.
- Data collection and comparison, as well as exchange of good practice between peers.
- By assisting surgeons with robotics during surgery, surgeons can perform less invasive procedures, lose less blood, make smaller incisions, reduce scarring, and recover faster.
- The ability to access a consultation more immediately via a remote connection.
- It is easier to read records since no handwriting is required.
- Information about patients can be shared more easily between locations, teams, and clinicians.
- Digital information has a lower chance of being lost, damaged, or destroyed than paper records.
- Providing high-quality care and treatment.

Health and social care use a wide range of technology, and over the last several years, many advances have been made in the field of healthcare technology. I gathered seven of the medical technological advances that most directly impact the lives of those who work in the area and also the health of patients:

3-D printing

A 3-D printing is a method of manufacturing physical objects from a 3D model created on a computer. This technology makes it possible, for example, to manufacture complex parts using less material than in traditional manufacturing methods. For example, Royal National Orthopaedic Hospital is using 3-D printing to produce hip, knee and spine implants.

Artificial organs

According to Wang (2018), an artificial organ is a mechanism manufactured by the human being, aiming at the integration in the human body and, therefore, the restoration of a biological function and the patient's quality of life.

Robotic surgery

Robotic surgery is a minimally invasive, innovative procedure that has been applied in the treatment of various types of cancer, with effective results. According to NHS (2021), the surgical intervention is performed by means of a robot totally controlled by the surgeon and brings important benefits to patients, from more precision, safety, shorter surgical and recovery time. For example, Guy's and St Thomas' already carries out the most robotic operations in the UK with around 1,100 cases a year.

Health wearables

Health wearables are those electronic devices that can be attached to clothes and accessories, such as watches, bracelets and smartphones. Dr Bijan Najafi claim that Health wearables are components that contribute to the remote monitoring of patients, as they have the ability to automatically collect, process and display data in real time, which can also improve patients' awareness of their health outside the clinical environment.

Virtual reality (VR)

According to The Medical Futurist (2020), we can define this concept as the creation of effects, through visual resources, that make it possible to immerse people in an environment different from the one in which they are in reality. In medicine, virtual reality can be used for several purposes, either helping health professionals in learning, or for patients in their treatments. An example of this can be seen in a program that was developed by Stanford University. The institution created a scenario in which students can simulate sinus surgery. These digital environments helped students visualize details of the human body and practice surgical procedures without putting the lives of real patients at risk. (Salisbury Robotics Lab, n.d.)

Technology Enabled Care Services (TECS)

According to NHS, a technology enabled care service is defined as a method of providing convenient, cost-effective, and highly accessible medical care to patients with chronic conditions using technologies such as telehealth, telecare, telemedicine, telecoaching, and self-care. During the Covid-19 pandemic, these technologies made significant advances not only in terms of legislation, with the release of some previously unregulated practices, such as teleconsultation, but also in relation to the acceptance of the population and the medical class itself. For example, NHS created a Technology Enabled Care Services (TECS) programme to develop the right commissioning environment that supports and encourages the innovative use of technology to improve health outcomes for patients with long term conditions and deliver more cost-effective services (NHS, n.d.).

Artificial intelligence

Artificial intelligence can be defined as the competence of a device to replicate certain cognitive abilities. According to Davenport & Kalakota (2019), the use of artificial intelligence in health, accompanied by machine learning, brings immense benefits such as early and more accurate diagnosis, resource optimization, health research, improves patient experience, and reduces costs and fraud.

- **Summary of the findings**

Technology has revolutionized not only care, but also the management and role of the patient in prevention and treatment, enabling safe self-care.

New treatments, diagnostic techniques and discoveries in the health field constantly enable a better quality of life for people. However, during 2020 to 2022 advances in medicine were not restricted to scientific discoveries. In the last 2 years, technology has also been increasingly transforming health management, through hospital programs and software for clinics and clinical decisions. This type of system has considerably avoided the number of operational errors in the flow of day-to-day activities, in addition to providing increasingly assertive patient care.

Conclusion

The technological era arrived and covered numerous areas, including the Health Sector, in most health institutions adhered to the new operational techniques during these two years. Technology applied to healthcare goes far beyond modern electronic equipment and digital applications. In the last two years, healthcare has been strongly preventive and brings medicine into the daily lives of patients, through innovations such as Telemedicine, Virtual reality and Artificial Intelligence.

In conclusion, the role of technology in healthcare has reshaped the way we look at patient care, hospital management, discovering and innovating better drugs, and predicting the course of treatment based primarily on data. As a result, these advances are revolutionizing the healthcare system to become more proactive, personalized and convenient than ever before.

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