The Impact of Digitizing Patient Medical Records on Improving the Quality of Healthcare Services from the Perspective of Doctors and Nurses: A Case Study of the Ouled Attia Neighborhood Public Health Institution in Skikda Province-

أثر رقمنة الملف الطبي للمريض على تحسين جودة الخدمات الصحية من وجهة نظر الأطباء والممرضين دراسة حالة المؤسسة العمومية للصحة الجوارية أولاد عطية بولاية سكيكدة

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Abstract:
This study aimed to evaluate the impact of digitizing patient medical records on improving the quality of healthcare services at the Ouled Attia Neighborhood Public Health Institution in Skikda Province. The study adopted a descriptive-analytical approach to formulate the theoretical framework and a case study approach for the applied aspect. A questionnaire was used as a data collection tool from a simple random sample of 105 doctors and nurses at the institution. The data were statistically analyzed using SPSS Statistics 26 to test the proposed hypotheses. The results revealed a direct and statistically significant impact (at a significance level of $\alpha \leq 0,05$) of digitizing medical records on improving the quality of healthcare services at the institution. These findings underscore the importance of digitization in enhancing the efficiency of healthcare services.

Keywords: *Digitization; Service Quality; Healthcare Service Quality.*
Jel Classification Codes : *I18 ; O33; L86*

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Introduction:

The world today is witnessing a rapidly evolving environment, particularly in the realm of business, where a significant transformation is underway to keep pace with the digital revolution, Digitization refers to the process of converting information and data from traditional formats into digital ones, facilitating their storage, processing, and sharing. This enhances operational efficiency and contributes to improving the quality of services provided in both public and private sectors. Furthermore, digitization paves the way for innovation and the development of new solutions that meet the needs of users in a rapidly changing world.

The digitization of healthcare services represents a pivotal step toward enhancing the quality of care and improving access to it. By transitioning from paper-based medical records to electronic health records, doctors and healthcare teams can quickly and accurately access patient information and various health-related data, thereby improving diagnostic and treatment precision. Additionally, telemedicine reduces time and effort, enabling patients to receive medical consultations without the need to visit clinics, leveraging various digital health platforms that allow effective monitoring of their health conditions. Moreover, data analytics play a crucial role in understanding health trends and predicting epidemics, supporting efficient decision-making. This enables healthcare systems to deliver more effective and efficient services, positively impacting the overall health of society.

The digitization of patient medical records is one of the modern technological advancements transforming healthcare systems worldwide. Many healthcare institutions strive to enhance the quality of their services by adopting digital technologies, reflecting the importance of leveraging medical data more effectively to improve patient care and provide precise, tailored services.

Delivering high-quality medical services, ensuring patient treatment, and monitoring their health status are the ultimate goals of healthcare institutions, it has become evident that technological advancements have extended their influence across various fields, including healthcare, making the adoption of modern technologies indispensable. As digitization is a product of modern technology and healthcare institutions operate in a dynamic technological environment, these institutions have shown significant interest and serious commitment to effectively utilizing digital tools. This commitment has become an urgent necessity rather than an optional choice. Healthcare institutions are thus compelled to adopt innovative approaches, moving away from simple, traditional methods toward advanced, complex digital solutions. Instead of manual handling of patient interactions and health data, electronic medical records consolidate all digital documents, treatment procedures, and outcomes, saving considerable time and ensuring patient information is securely stored and accessible to various medical and administrative personnel. This facilitates the delivery of distinguished healthcare services and high-quality performance, contributing to meeting patients' needs and making informed treatment decisions. This leads us to the following research question:
What is the impact of digitizing patient medical records on improving the quality of healthcare services provided, from the perspective of doctors and nurses?
The following sub-questions arise under this main question:

- What is meant by the digitization of patient medical records?
- What is the theoretical framework for the quality of healthcare services?
- What is the relationship between the digitization of patient medical records and the quality of healthcare services?

Study Hypotheses:

This study is based on the following hypotheses:
Main Hypothesis: There is a direct impact of digitizing patient medical records on improving the quality of healthcare services at the Ouled Attia Neighborhood Public Health Institution in Skikda Province.

This main hypothesis branches into the following sub-hypotheses:

Sub-Hypothesis 1: There is a statistically significant impact at a significance level of $\alpha \leq 0.05$ of the technical requirements dimension on improving the quality of healthcare services at the Ouled Attia Neighborhood Public Health Institution in Skikda Province.

Sub-Hypothesis 2: There is a statistically significant impact at a significance level of $\alpha \leq 0.05$ of the administrative requirements dimension on improving the quality of healthcare services at the Ouled Attia Neighborhood Public Health Institution in Skikda Province.

Sub-Hypothesis 3: There is a statistically significant impact at a significance level of $\alpha \leq 0.05$ of the human resources requirements dimension on improving the quality of healthcare services at the Ouled Attia Neighborhood Public Health Institution in Skikda Province.

Sub-Hypothesis 4: There is a statistically significant impact at a significance level of $\alpha \leq 0.05$ of the financial requirements dimension on improving the quality of healthcare services at the Ouled Attia Neighborhood Public Health Institution in Skikda Province.

Significance of the Study:

The significance of this study lies in two primary dimensions: scientific and practical importance, as outlined below:

Scientific Importance:

This study addresses the digitization of patient medical records as a modern mechanism aligned with the technological advancements occurring in the work environment. It emphasizes the critical role of digitization in enhancing the quality of healthcare services provided to patients.

Practical Importance: The practical significance of the study lies in its exploration of the real-world and field-based application of digitizing patient medical records, identifying the key challenges that hinder its adoption, which significantly contributes to improving the quality of healthcare services. The study underscores the necessity of prioritizing digitization, in line with the substantial attention given by the state to this issue, particularly within public institutions.

Study Objectives:

This study aims to elucidate the impact of digitizing patient medical records on the quality of healthcare services at the Ouled Attia Neighborhood Public Health Institution in Skikda Province, evaluating this process from the perspectives of doctors and nurses. The study seeks to achieve the following objectives:

- To understand the patient medical record, its importance, components, characteristics, requirements, and obstacles to its implementation.
- To highlight the necessity of transitioning from traditional methods to digital approaches, emphasizing the digitization of patient medical records as an urgent priority for public health institutions, as outlined in the roadmap of the Ministry of Health.
- To underscore the importance of equipping doctors and nurses with the skills to master modern technologies and keep pace with advancements in this field, prioritizing the digitization of patient medical records as a tool to streamline treatment processes and archive patient health information.
- To emphasize the need for the healthcare sector to adapt to the digital environment and modernize healthcare institutions in line with contemporary and advanced developments.
- To advocate for the adoption of modern management methods, moving away from traditional approaches as a requirement for positive change, placing patient satisfaction at the forefront of priorities for Algerian healthcare sector administrators, and establishing an administrative framework based on excellence and quality performance.
- To promote the widespread adoption of patient medical records across all healthcare institutions.

Reasons for Choosing the Topic:

- The significance of digitizing patient medical records in ensuring the adaptation of human resources and transforming their perspective toward modern technologies.
- Understanding the impact of digitizing patient medical records on the quality of healthcare services.
- The importance of improving the quality of healthcare services for patients, medical staff, and paramedical personnel alike.

Methodology and Tools of the Study:

To address the theoretical aspect of the study, a descriptive-analytical approach was employed, highlighting the concepts related to the topic by reviewing numerous Arabic and foreign articles, books, and theses concerning the digitization of patient medical records, the improvement of healthcare service quality, and the mechanisms for enhancing it. This was achieved through the following:

- Clarifying concepts related to the digitization of patient medical records, including its components, characteristics, implementation requirements, and barriers to its adoption.
- Defining the concepts of healthcare service quality.
- Collecting data for this study through a questionnaire distributed to the sample population, followed by the analysis, interpretation, and processing of the data using the Statistical Package for the Social Sciences (SPSS) software, based on a case study approach focusing on the Ouled Attia Neighborhood Public Health Institution in Skikda Province for the field study.

Study contents:

The study is divided into two chapters: the theoretical framework of the study and the field study conducted at the Ouled Attia Neighborhood Public Health Institution in Skikda Province.

I- Theoretical Framework of the Study:

I-1- Digitization of Patient Medical Records:

I-1-1- Definition of Digitization:

The term "Digitization," widely used across various fields today, prompts an exploration of its application within the healthcare sector and how healthcare institutions can benefit from it. Accordingly:

Digitization is defined as the administrative conversion of documents into digital (binary) format using a computer, replacing paper-based (analog) documents. It is also the process of transforming data into a digital form to enable electronic processing by computers (بومعرافي& بن تازير, 2018).

Said Yaqtin defines digitization as the process through which any type of paper document is transferred into a digital format, making it amenable to electronic processing by computing devices (بضياف، 2021).

Digitization is the electronic conversion of tangible content, such as books or images, into a format that can be read by a computer(ساردو و جزار، 2024) .

Regardless of the type or medium of the paper document, digitization involves a sophisticated reproduction process that enables the conversion of such a document into a digital sequence. This is achieved through an organized technical, intellectual, and clerical process that indexes, tabulates, and represents the content of the digitized text. Digitization is an electronic method of administrative documentation and can take the form of images or text(عطاب و الدراجي، 2021) .

The collective processes that transform existing physical resources into a digital format are referred to as digitization (Smithsonian institution, 2011). This involves converting physical documents into a digital electronic format (Rhode Island Department of State, n.d).

Digitization can be defined as the process through which existing paper-based information is converted into a digital electronic format for processing by a computer (Prepared by the researcher).

I-1-2- Digitization of Patient Medical Records:

This modern concept of digitization, which has brought an end to traditional administrative practices by relying on advanced technologies and computers for file processing, has been adopted in the healthcare sector. It has mobilized material and human resources to digitize patient medical records in pursuit of excellence and quality in performance, upholding high standards of ethics and principles, and enhancing the quality of healthcare services.

- **Patient Medical Record:**

The written observations of physicians and nurses notes are insufficient to constitute a patient's medical record; these must be supplemented with all preserved patient data, including demographic information, images, or physiological data. Thus, the medical record serves as a tool for centralizing and coordinating healthcare activities, as highlighted by P. Degoulet in 1991 (Laforest & all, 2002). Medical records enable patient identification by providing comprehensive information. They encompass various medical documents that diagnose the patient's health condition. Manual review of these records is time-consuming, particularly given significant population growth and the increasing demands of patients. This drives institutions to adopt electronic medical records, moving beyond traditional paper-based methods (شريف و آخرون، 2023).

- **Electronic Medical Record:**

The electronic medical record (EMR) is a fundamental and critical requirement for the development of the healthcare sector and its services. Definitions and perspectives among researchers regarding its concept have varied, and multiple terms have been used to describe the electronic processing of patient information. These include the Electronic Medical Record (EMR), the Computerized Patient Record (DPI: Dossier Patient Informatisé), and the Electronic Medical File (DEM: Dossier Électronique Médical). Despite the variety of terms, their common objective is to serve the patient, enhance healthcare support, provide necessary care, and protect patients through the comprehensive health information contained within these records (شريف و آخرون، 2023).

Article 292 of Law No. 18-11, dated 18 Shawwal 1439, corresponding to July 2, 2018, concerning health, stipulates that: "Public and private health structures and institutions are required to establish and maintain a single electronic medical record for each patient and ensure its regular updating. They must also safeguard the confidentiality of the information in their possession and, in addition, ensure the management and preservation of the medical archive."

The electronic medical record is a digital version containing precise notes, data, and health information regarding a patient's condition. It is utilized in diagnostic, therapeutic, and continuous monitoring services to provide optimal care, treatment, and support, ensuring the required healthcare is delivered. To facilitate tracking the patient's health status and providing necessary treatments, this record is electronically linked to the health databases of various healthcare institutions (بوحليط، 2021).

Also the electronic medical record is a digital representation of a patient's health status within a doctor's clinic or healthcare institution. It is a general term for any electronic system established to facilitate the healthcare of patients available in the hospital (Woo & Pfeffer, 2013).

The electronic medical record encompasses a comprehensive set of personal, medical, and nursing information covering all aspects related to a patient's condition. This includes symptoms, medical history, test results, final diagnosis of the condition, statistics, and medical, surgical, and therapeutic interventions undergone by the patient, as well as the progress of their health status and response to treatment(نادى جابر عبد المتجلى، 2020) .

The electronic medical record can be described as a file that records all personal and therapeutic information related to the patient, stored and processed electronically to enable continuous monitoring of the patient's condition. This information is characterized by confidentiality and security to ensure safe and effective healthcare for the patient (Prepared by the researcher).

I-1-3- Importance of the Electronic Medical Record:

The electronic medical record is a digital version containing patient information, representing a significant advancement in the healthcare sector and a qualitative leap toward optimal patient care and effective management. Its importance is underscored by its status as a legal document that includes all medical procedures undergone by the patient during healthcare(إكرام محمد، 2017) . Additionally, its signifiance is evident in the following aspects:

- Facilitating the diagnostic process in less time with high speed, accuracy, and effective performance by having all information centralized in one place. Moreover, sharing this information through the electronic medical record aids in making informed decisions, thereby reducing medical errors. It also minimizes administrative procedures and maximizes the utilization of resources and human capabilities(صلاح كامل، 2023) .
- Accessing all patient data and enabling its general sharing through the provision of advanced computer systems that assist medical and paramedical teams in achieving this (Bentlemsani, 2023).
- The reliance of electronic medical records on computer systems enables the storage, processing, and transfer of data and information. These records contain precise content, facilitate easy access, and allow healthcare providers to review the patient's medical history, medications taken, laboratory tests, imaging results, and various other information required for healthcare delivery (درة و آخرون، 2017).
- It contributes to improving the quality, safety, and efficiency of healthcare delivery (Ward & al, 2014).
- It contributes to cost reduction, as the use of electronic medical records promotes the rationalization of paper and file usage and reduces labor costs. Additionally, it supports the continuity of providing high-quality patient care (طاهري و طاهري، 2017).
- Electronic medical records were initially introduced to overcome the limitations of traditional paper-based records and to facilitate more effective clinical decision-making. Over time, their role has expanded beyond mere record-keeping, becoming the backbone of modern healthcare infrastructure. They enhance the quality, safety, and efficiency of care by improving communication, streamlining administrative tasks, and supporting a wide range of functions, including decision-making support, patient engagement, and integration with other healthcare technologies. The overarching goal is to establish an interconnected, efficient, and transparent healthcare system that enables continuous improvements in patient care (Holmes, 2022).

I-1-4- Characteristics of the Electronic Medical Record:

The distinctive characteristics of the electronic medical record make it a unique electronic document that provides the medical team with ease and flexibility in managing patient care. It ensures the security and confidentiality of the patient's health information, which must remain private and secure, accessible only to authorized personnel to protect patient privacy and uphold professional confidentiality (Laforest & all, 2002).

- The medical information contained in the electronic medical record varies in its lifecycle, ranging from permanent information that cannot be discarded, such as the patient's name, identity, and personal details, to information with a short lifecycle that is continuously updated as needed (قاضي و بن موسى، 2023).

- The electronic medical record is considered an integration of multiple information tools that include patient-related documents within a computerized medical file, such as test requests, electronic prescriptions, decision support systems, digital imaging, telemedicine, and laboratory results (Dutta & Hwang, 2020).
- The use of electronic medical records enhances data exchange and integrated utilization, facilitating seamless information sharing, coordination, and communication among various healthcare stakeholders to deliver medical care efficiently. This improves financial management and reduces costs associated with information systems (لبانجي، 2024).

I-1-5- Requirements for Digitizing the Patient's Medical Record:

The digitization of the patient's medical record, like other projects or programs, requires the preparation of an appropriate and conducive environment to ensure its success. Failure to do so may lead to the project's failure, resulting in a waste of time, money, and effort. To successfully implement this technology, a set of requirements must be considered, as follows (Kamri & Alla, 2022):

- **Technical Requirements:**

To digitize the patient's medical record and ensure the success of this project, an appropriate, if not advanced, level of infrastructure is required, including facilities, equipment, and essential material and technical resources(بوزازي، 2021) . This includes computers, software, and servers, with computers encompassing various systems and accessories, as well as system software such as operating systems, network management systems, and storage systems. Additionally, email programs, databases, and both wired and wireless networks (Internet, Intranet, Extranet) are critical, as they have strongly supported the transformation of institutions toward adopting technology in administrative operations(بن جمعة و سنوسي، 2023) . Furthermore, the availability of scanners and digital photographic equipment is essential as key technological tools for processing images and information. Scanners play a crucial role in converting data from printed or visual sources into digital signals that can be processed and stored in computer memory. Meanwhile, digital photographic equipment consists of electronic devices used to capture and store photographs in digital format, replacing reliance on traditional films(بوخاري و يحياوي، 2022) .

- **Administrative Requirements:**

These encompass the set of processes involved in preparing administrative structures and organizing frameworks to support the digitization process, making it accessible in a simple and flexible manner. This is achieved by exerting the necessary efforts and providing both material and moral support for all aspects related to the digitization of the medical record (غربية و العيفاوي، 2024).

- **Human Resource Requirements:**

The necessity of having competent and qualified human resources equipped with substantial knowledge and familiarity with the principles of technological and technical advancement, keeping pace with its mechanisms, is paramount. These individuals should possess sufficient expertise to perform their tasks while being fully adept at utilizing information technologies, operating computers, managing networks, handling databases, and mastering all necessary information to manage and guide operations in the most effective manner. The human element is a critical component in the success of the patient medical record digitization project and its effective implementation (بريش، 2021).

- **Financial Requirements:**

These encompass the total financial resources allocated to the implementation of the digitization process, ensuring the provision of necessary financial support to execute the project with a sufficient

budget to acquire required equipment and tools, as well as to maintain regular and effective maintenance to uphold a high level of service delivery(بن صالح و بوقلقول، 2018) .

I-1-6- Obstacles to Digitizing Patient Medical Records:

Like any project, a healthcare institution aiming to implement and establish the foundation for digitizing patient medical records often encounters challenges and obstacles that may hinder or delay its realization in practice. These obstacles include, but are not limited to the following:

- Most of these obstacles stem from technical issues, primarily related to unstable internet connectivity, slow data transfer rates, frequent disconnections, and the lack of activation of undersea cables. These issues have hindered all digitization projects, particularly those involving digital platforms that require robust internet networks to accommodate high volumes of digital content with seamless data flow. Additionally, reliance on copper cables for telephone networks instead of optical fibers weakens network quality and exacerbates maintenance and repair challenges, thereby impeding digitization efforts in the face of significant contemporary challenges (وسار، 2022).
- A lack of cultural awareness regarding information technology, both socially and organizationally, within institutional structures, coupled with an inability to keep pace with digital advancements and the modern technologies they have introduced. This is compounded by the dominance of traditional bureaucratic concepts in administrative work environments and insufficient knowledge of automated information technologies (مكيد و بوزكري).
- Resistance to change among employees, coupled with feelings of marginalization when modern technologies are adopted, a lack of motivation, and disinterest in new developments in the information technology landscape. Additionally, there is a lack of forward-thinking vision among employees regarding technological projects, a shortage of specialized, highly skilled personnel in information technology within institutions, and limited training programs for employees in this field (ثامري و رولامي، 2022).
- Fear of engaging in electronic transactions due to inadequate legislation and regulations, coupled with concerns about information security, apprehension regarding the mishandling of personal data confidentiality, and fears of data breaches. Additionally, there are limitations in financial resources for establishing the necessary infrastructure, given the high costs of implementing such projects, connecting sites and networks, and updating devices, equipment, and software (بن صالح و بوقلقول، 2018).

I-2- Quality of Healthcare Services:

I-2-1- Definition of Healthcare Service:

A healthcare service is defined as the efforts exerted by healthcare system personnel to promote and improve health in service of the patient and to enhance public health for community members. It is a comprehensive framework of components and elements designed to meet patients' needs, fulfill their desires, achieve their satisfaction, and provide comfort and reassurance to restore their health and well-being (مسعودي و مكاوي، 2020). Furthermore, it encompasses all services provided by the medical team, whether therapeutic, curative, or preventive in nature, as well as the quality care and respectful treatment received by individual patients or groups within the healthcare institution (جناد).

I-2-2- Types of Healthcare Services:

Healthcare services within the healthcare system are divided into two main types: therapeutic healthcare services and preventive or environmental healthcare services. Therapeutic services directly target individual health, encompassing diagnostic and home-based treatment services, as well as care provided within healthcare institutions, including surgical interventions aimed at eliminating diseases permanently or alleviating their symptoms. Preventive or environmental healthcare services target the community as a whole by working to prevent the spread of infectious diseases, intoxications, and various epidemics, and by developing measures to mitigate health deterioration caused by

irresponsible practices of individuals or groups that contribute to environmental pollution (كورتل و بولصباع، 2013). Preventive healthcare services also indirectly benefit individual health through services such as vaccinations to protect against communicable and epidemic diseases, scheduled childhood immunizations, and maternal and child healthcare services (زيدان و بن كادي، 2023).

I-2-3- Concept of Healthcare Service Quality:

The quality of healthcare services is defined as the ability of the services provided to patients to achieve desired health outcomes while delivering care with high quality, efficiency, and safety through the adoption of scientific knowledge and the application of advanced medical technology (CALMUS & all, 2021).

The World Health Organization has defined healthcare service quality as: "the ability of healthcare services provided to individuals and populations to improve desired and required health outcomes. To achieve this, healthcare services must be safe, effective, timely, equitable, and person-centered" (Organisation mondiale de la santé, 2017).

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) defines the quality of healthcare services as the degree to which internationally recognized standards are adopted and adhered to in order to deliver high-quality, proficient work and achieve positive outcomes for services, diagnostic procedures, or the management of health issues (عوفي و عاشوري، 2017).

Palmar highlights the perspective on the quality of healthcare services from the following angles (ذياب، 2012):

- **From the patient's perspective:** It refers to the compassionate, respectful, and considerate treatment received by the patient.
- **From the physician's perspective:** It encompasses the medical expertise demonstrated by the physician and the application of advanced knowledge and sciences in service of the patient.
- **From the owners' perspective:** It involves the ability to employ the most skilled and competent staff and provide the best facilities to deliver services to patients.
- **From the hospital administration's perspective:** It is the achievement of efficiency, rationality, and effectiveness in delivering the highest quality services.

The quality of healthcare services refers to the indicators and evidence that reflect the quality of conditions established to achieve patient satisfaction and meet their needs by providing high-level medical services with precision, quality, and effectiveness. Simultaneously, it involves creating an encouraging work environment that integrates competent human resources, modern technical equipment, and advanced medical tools to perform examination, diagnosis, and treatment processes, while reducing workplace stress and mitigating fatigue in task performance (قريوة، 2022).

It can be stated that the quality of healthcare services involves creating all appropriate conditions for the patient and harnessing modern medical knowledge, skills, sciences, and technologies to serve them efficiently and effectively, delivering high-quality healthcare. This includes fostering an environment of compassion and respect to enable patients to regain their well-being, while allowing the medical team to feel pride and fulfillment, restoring their capacity and energy to perform tasks efficiently and effectively within the framework of professional ethics, and treating patients and their companions with humanity (prepared by the researcher).

I-2-4- Importance of Healthcare Service Quality:

The importance of healthcare service quality lies in the following aspects:

- The quality of healthcare services enables the establishment of an integrated healthcare system that prioritizes the psychological and physical well-being of individuals, facilitating the healthcare institution’s mission and designated role in providing optimal patient care with high quality and

distinction. This achieves complete patient satisfaction, enhances their loyalty, and fosters a positive image of the institution and its staff in their minds (شعبان، 2021).

- Activating and developing communication channels between service providers and recipients (حسن رضوان، 2021).
- Increasing the productivity of healthcare workers, elevating their levels of satisfaction and confidence, boosting their morale, and making them feel like active contributors, as they are the most critical element in service delivery, ultimately leading to the desired outcomes (الحاج، 2021).
- Achieving efficiency, sound management, and rationality in utilizing available resources whether human, financial, or material in service of the patient and the public good (أوشن، 2018).
- Reducing bureaucracy, minimizing costs, rationalizing expenditures, and gaining public support by adhering to commitments and meeting patients' needs (بديسي و زويوش، 2011).

I-2-5- Dimensions of Healthcare Service Quality:

Several researchers have proposed a set of dimensions for assessing the quality of healthcare services. In a study by Kotler, it was suggested that patients evaluate service quality based on five dimensions (بن سيدي أحمد و يعقوب، 2022):

- **Reliability:** This refers to performing duties to the fullest extent without shortcomings and executing predetermined tasks with precision and dependability.
- **Responsiveness:** This denotes the promptness and willingness to respond to patients' needs immediately.
- **Assurance:** This involves carrying out tasks competently, safely, and credibly to gain the patient's trust.
- **Empathy:** This reflects the emotional interaction between the service provider and the recipient (the patient), ensuring the latter receives compassion and respect.
- **Tangibility:** This is defined as the physical facilities, resources, and materials provided to the patient to ensure high-quality and distinguished care.

Additional dimensions of healthcare service quality have also been identified, as follows (CALMUS & all, 2021):

- **Competence:** Ensuring care that aligns with evidence-based scientific knowledge and is relevant to people's health needs.
- **Safety:** Providing services that ensure the highest possible level of safety and security for the patient.
- **Accessibility:** Delivering the required service at appropriate times, within reasonable timeframes, and across reasonable geographical distances.
- **Reliability:** Providing healthcare services in a respectful manner, taking into account patients' preferences and values.
- **Effectiveness:** Ensuring healthcare services that achieve optimal use of available resources.
- **Equity:** Guaranteeing high-quality healthcare services for all, regardless of characteristics such as gender, ethnicity, geographical location, or socioeconomic status.

The following dimensions of healthcare service quality can be adopted (دبون، 2012):

- **Technical Competence:** Represented by the skills, capabilities, competencies, effectiveness, precision, and performance level, ensuring continuous alignment to achieve the desired patient satisfaction.
- **Physical Resources of the Hospital:** Encompassing all tangible assets, including buildings, equipment, and vehicles, utilized to serve the patient and provide optimal conditions for their care in the best possible manner.
- **Safety:** The sense of security, reassurance, and absence of fear associated with the healthcare services provided.

- **Continuity:** Refers to the patient's ability to access healthcare services without interruption or delay, seamlessly and flexibly upon request.
- **Effectiveness and Efficiency:** Involves delivering the best service efficiently by making optimal use of available resources.
- **Reliability:** Reflects the patient's confidence in the healthcare institution and its staff, their perception of its credibility, and their reliance on it to receive the desired medical service without errors or delays.

I-3-The Relationship between Digitizing Patient Medical Records and the Quality of Healthcare Services

Most studies acknowledge the existence of a relationship between the digitization of patient medical records and the improvement of healthcare service quality. This relationship is evident through the following points:

Electronic medical records can contribute to the following (طاهري و طاهري، 2017):

- Improving Healthcare Efficiency: Electronic medical records enable the handling of a larger number of patients in less time by reducing appointment durations and improving the management of patient records.
- Enhancing Care Quality: They contribute to improving the quality of care through better coordination among healthcare providers, ensuring integrated and coordinated care.
- Rapid and Accurate Diagnosis: They facilitate faster and more precise diagnosis of medical conditions.
- Cost Reduction: They help reduce costs by avoiding unnecessary duplicate medical procedures.
- Facilitating Information Exchange: They enhance the exchange of health information among healthcare institutions and services, supporting more effective healthcare management.

Also the use of electronic health record systems has demonstrated compliance with international medical standards and recommendations. It possesses the flexibility to align with periodic directives issued by the Ministry of Health. Moreover, due to the detailed patient healthcare information it contains, it enhances accurate documentation, overcomes challenges and ambiguities, and contributes to the development and improvement of services in healthcare facilities (محمود إكرام، 2017).

Access to and management of information are considered two critical elements for the quality and safety of healthcare, making the electronic medical record an indispensable tool today. It facilitates communication between specialists, improves access to scientific information, and the implementation of the electronic medical file reduces medical errors, enhances patient safety, and ensures the quality of healthcare services (Rosa & all, 2021).

Electronic health records (EHRs) offer clinical, administrative, and societal benefits, as outlined below (Menachemi & Collum, 2011):

Clinical Benefits:

- Improvement in Care Quality and Patient Safety: EHRs contribute to greater adherence to evidence-based clinical guidelines, thereby enhancing care quality, reducing medical errors, bolstering patient safety, and minimizing medication errors.
- Increased Clinical Efficiency: Electronic health files reduce the occurrence of duplicate diagnostic tests, thereby conserving resources and lowering costs.
- Promotion of Preventive Care: This is achieved by elevating immunization rates and improving adherence to preventive care protocols.

Administrative Benefits:

- Improvement in Financial Performance: EHRs reduce costs associated with duplicate tests, retrieval of paper files, and photocopying.
- Increased Operational Efficiency: EHRs facilitate access to information, thereby reducing resources allocated to patient management and improving workflow.

- Enhanced Legal and Regulatory Compliance: EHRs provide superior data security and patient privacy through controlled access and auditing mechanisms.
- Increased Physician Satisfaction: Studies have found an association between EHR use and increased physician satisfaction with their professional practices, which supports physician retention, particularly in underserved areas.

Societal Benefits:

- Improvement in Research Capabilities: EHRs provide electronically accessible data, facilitating quantitative analyses to identify best evidence-based practices.
- Enhancement of Population Health: By aggregating clinical data with other sources (such as medication purchases and school absenteeism rates), EHRs support disease outbreak monitoring and improved surveillance of potential biological threats.
- Reduction in Societal Costs: The efficiencies resulting from EHRs contribute to lowering overall healthcare costs at the community level.

The use of electronic health records enhances effective coordination of healthcare by practitioners and improves the quality of information and clinical data, thereby supporting evidence-based decision-making. Furthermore, EHRs contribute to improving patient outcomes, strengthening safety measures, and reducing costs through increased operational efficiency and error minimization. These systems also promote information exchange between healthcare institutions, fostering collaboration and providing accessible data across diverse communication channels, which leads to more precise treatments and better patient outcomes. In addition, EHRs support the development of evidence-based therapeutic goals, enhance data analysis, and establish preventive care strategies by enabling effective communication with patients particularly those requiring preventive measures thereby facilitating more accurate diagnosis and treatment, as well as efficient performance in delivering healthcare services (Chimbo & Mosti, 2023).

Electronic health records (EHRs) have revolutionized healthcare delivery, offering numerous benefits to patient care and health outcomes. They have significantly contributed to improving patient care by enhancing the accessibility and accuracy of patient-related information, which includes medical history, medications, and laboratory test results, thereby leading to more informed decision-making and improved care coordination. Moreover, EHRs facilitate communication among healthcare providers, enabling better care coordination and reducing medical errors. Furthermore, studies have shown that EHRs improve patient outcomes by supporting evidence-based practices and clinical decision-making. EHRs can also provide alerts and reminders for preventive care and routine screenings, assisting healthcare providers in adhering to best practices and guidelines. In addition, EHRs enable real-time monitoring of patient data, allowing for the early detection of potential health issues and timely interventions (Adeniyi & all, 2024**).**

II- The Field Study:

II-1- Introduction to the Public Neighborhood Health Establishment of Ouled Attia in Skikda Province:

The Public Neighborhood Health Establishment of Ouled Attia in Skikda Province is a public administrative institution that possesses legal personality and financial autonomy. Its directorate is headquartered in the municipality of Ouled Attia in Skikda Province, and its directorate comprises four (04) sub-directorates, as follows:

- The Sub-Directorate of Finance and Resources includes three (03) sub-offices: Budget and Accounting Office, Structures and Resources Office, Public Procurement Office;
- The Sub-Directorate of Human Resources includes three (03) offices: Human Resources Management Office, Training Office, Disputes Office;

- The Sub-Directorate of Health Services includes three (03) offices: Prevention and Environmental Hygiene Office, Admission, Contracting, and Cost Accounting Office, Organization and Monitoring of Health Activities Office;
- The Sub-Directorate for Maintenance of Medical Equipment and Ancillary Equipment includes two (02) offices: Medical Equipment Maintenance Office, Ancillary Equipment Maintenance Office.

The institution encompasses healthcare facilities listed among its physical assets, comprising 49 treatment rooms and eight multiservice clinics, as follows:

- Adjerim Zakia Bounoghra Multiservice and Maternity Clinic (operating 24 hours a day, 7 days a week);
- Oued zhor Multiservice Clinic (operating 24 hours a day, 7 days a week);
- Zitouna Multiservice and Maternity Clinic (operating 24 hours a day, 7 days a week);
- Beni zid Multiservice Clinic (operating 24 hours a day, 7 days a week);
- Collo Multiservice Clinic (operating 12 hours a day, 5 days a week);
- Khenak mayoun Multiservice Clinic (operating 12 hours a day, 5 days a week);
- Kanoua Multiservice Clinic (operating 12 hours a day, 5 days a week);
- Cheraia Multiservice Clinic (operating 12 hours a day, 5 days a week).

The institution was established pursuant to Executive Decree No. 07-140, dated 2 Jumada al-Awwal 1428, corresponding to 19 May 2007, concerning the establishment of public hospital institutions and public community health institutions.

The Public Community Health Institution of Ouled Attia in Skikda Province aims to achieve the following objectives:

- Ensuring the continuity of primary healthcare and strengthening preventive activities;
- Restoring the role of multiservice clinics as providers of primary healthcare;
- Addressing disparities to ensure effective community healthcare;
- Achieving a balance in health activities to meet the needs of the population;
- Improving patient reception, diversifying services provided to citizens
- humanizing the relationship between the healthcare sector and patients, and enhancing the doctor-patient relationship to build trust and realize the true concept of the family doctor.

II-2- Study Population and Sample:

The study population was defined as the 480 doctors and nurses at the Public Community Health Institution of Ouled Attia in Skikda Province. A sample of 120 individuals from this population was targeted. A total of 115 questionnaires were retrieved, of which 10 were deemed invalid for analysis due to incomplete responses or multiple answers to the same statements. Consequently, the number of valid questionnaires for analysis was 105 questionnaires.

II-3- Study Instrument:

This study utilized a questionnaire designed to collect, analyze, and interpret data, and to derive and discuss results. The questionnaire was structured around three main axes:

- **First Axis:** Personal and professional information;
- **Second Axis:** Digitization of patient medical records at the Public Community Health Institution of Ouled Attia in Skikda Province;
- **Third Axis:** Improvement of the quality of healthcare services.

This study adopted a five-point Likert scale, where each statement in the questionnaire's axes corresponds to five response options:

Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. The boundaries of the categories corresponding to these five options were determined, along with the degree of agreement each category represents. The range and the length of each category were calculated as follows:

The range (R) is calculated as the difference between the highest and lowest values, i.e.,

R = 5 - 1 = 4.
Consequently, the length of each category is derived from the relationship between the range and the number of categories, expressed as: R / number of categories.
Thus, the category length equals 4 / 5 = 0,8

Table n°1: Categories of the Five-Point Likert Scale and Degrees of Agreement

Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Score	5	4	3	2	1
Range	] 5 – 4,2]	] 4,2 – 3,4]	] 3,4 – 2,6]	] 2,6 – 1,8]	] 1,8 – 1]
Degree of Agreement	Very High	High	Moderate	Low	Very Low

Source: Prepared by the researcher

II-4- Validity of the Study Instrument:

II-4-1- Internal Consistency Validity for the Axis of Patient Medical Record Digitization:

The Pearson correlation coefficient was calculated to determine the degree of correlation between the statements of this axis and the overall score of the axis. The results are as follows

Table n°2: Internal Consistency Validity for the Axis of Patient Medical Record Digitization

N°	Dimension	Correlation Coefficient	Significance Level
01	Technical Requirements	0,568**	0,000
02	Administrative Requirements	0,756**	0,000
03	Human Resources Requirements	0,803**	0,000
04	Financial Requirements	0,764**	0,000

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon reviewing the results presented in the table above, it is evident that the correlation coefficients are positive and statistically significant at the (0,01) significance level. This indicates a high degree of internal consistency between all dimensions of the patient medical record digitization axis and the overall score. Furthermore, the dimensions of the axis are valid for measuring what they were designed to measure.

II-4-2- Validity of Internal Consistency for the Dimension of Improving Healthcare Services Quality:

The following table presents the results of the internal consistency validity test for the statements related to the dimension of improving the quality of healthcare services.

Table n°3: Internal Consistency Validity for the Dimension of Improving Healthcare Services Quality

N°	Statement	Correlation Coefficient	Significance Level
01	The electronic medical record is an effective practical tool for physicians to monitor patients' health status.	0,512**	0,000

02	The treating physician can easily access the electronic medical record.	0,696**	0,000
03	Patients express satisfaction with the ease of accessing their electronic medical records.	0,702**	0,000
04	The medical information recorded in the electronic medical record is accurate and comprehensive.	0,670**	0,000
05	Physicians receive medical test results electronically directly from the laboratory to their computers.	0,435**	0,000
06	Patients express satisfaction with the speed of obtaining medical test results.	0,395**	0,000
07	Patients can easily book treatment appointments digitally.	0,353**	0,000
08	Digital appointment booking helps reduce waiting times.	0,312**	0.000
09	The radiology department uses a digital processing device linked to the electronic medical record system.	0.727**	0,000
10	Patients receive radiology results in a short period.	0,662**	0,000
11	Physicians can view radiology results electronically at their offices via computers.	0,737**	0,000
12	Physicians issue medical prescriptions electronically.	0,278**	0,000

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon reviewing the results presented in the table above, it is evident that the correlation coefficients are positive and statistically significant at the (0,01) significance level. This indicates a high level of internal consistency among all statements related to the dimension of improving healthcare services quality and the overall score. Furthermore, the statements within this dimension are valid for measuring what they were designed to assess.

II-4-3- Internal Consistency Validity of the Questionnaire Dimensions:

The internal consistency validity of the questionnaire dimensions is assessed by calculating the correlation coefficient between each dimension of the questionnaire and the overall mean score of the questionnaire items.

Table n°4: Internal Consistency Validity of the Study Dimensions

Dimension	Title	Correlation Coefficient	Significance Level
Second	Digitization of the Patient Medical Record at the Public Neighborhood Health Institution in Ouled Attia, Skikda Province	0,872**	0,000

Third	Improving the Quality of Healthcare Services	0,872**	0,000

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results presented in the table above, it is evident that the correlation coefficients between the mean score of each study dimension and the overall mean score of the questionnaire items are positive and statistically significant at the (0,01) significance level.

II-5- Reliability of the Study Instrument:

The reliability of a questionnaire refers to its ability to produce consistent results if administered multiple times to the same study sample under identical conditions, indicating stability and consistency in the obtained results. The reliability coefficient ranges from 0 to 1, where values closer to 1 indicate high reliability, and values closer to 0 indicate low reliability.To assess the reliability of the questionnaire, the Cronbach's alpha coefficient was calculated, with the following criteria:

- If Cronbach's alpha is less than 0,6 reliability is considered weak.
- If Cronbach's alpha ranges between 0,6 and 0,7 reliability is considered acceptable.
- If Cronbach's alpha ranges between 0,7 and 0,8 reliability is considered good.
- If Cronbach's alpha exceeds 0,8 reliability is considered excellent.

Table n°5: Cronbach's Alpha Coefficient Values

Dimension	Cronbach's Alpha Coefficient	Reliability Level
Digitization of the Patient Medical Record	0,726	Good
Improving the Quality of Healthcare Services	0,799	Good
Entire Questionnaire	0,837	Excellent

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon reviewing the results in the table above, the Cronbach's alpha coefficient for the dimension of digitization of the patient medical record is 0,726 and for the dimension of improving the quality of healthcare services, it is 0,799 both indicating good reliability. For the entire questionnaire, the Cronbach's alpha coefficient is 0,837 falling within the excellent range. This suggests that the study instrument is reliable and can be considered valid for the study.

II-6-Verification of the Quality of Study Data:

To ensure the quality of the study data, the normality of the distribution is tested, followed by an analysis of the coefficient of variation and the permissible variance.

II-6-1- Nature of the Distribution of Study Variables:

To determine whether the data follows a normal distribution, the Kolmogorov-Smirnov statistical test was applied. The results are presented in the following table:

Table n°6: Kolmogorov-Smirnov Test

Study Variables	Dimension	Statistical Significance
Digitization of the Patient Medical Record	Technical Requirements	0,000
	Administrative Requirements	0,000
	Human Requirements	0,000
	Financial Requirements	0,000

Improving the Quality of Healthcare Services		0,042

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results in the table above, it is evident that the statistical significance values for the study variables are less than 0,05 This indicates that the data follows a normal distribution, suggesting that the effect observed in the dependent variable results from the influence of the independent variable. Consequently, the study hypotheses can be tested.

II-6-2- Analysis of the Variance Inflation Factor:

To ensure the absence of multicollinearity among the dimensions of the independent variable, the results are presented in the following table:

Table n°7: Variance Inflation Factor and Tolerance

N°	Dimension	Variance Inflation Factor (VIF)	Tolerance
01	Technical Requirements	1,185	0,844
02	Administrative Requirements	2,061	0,485
03	Human Requirements	2,075	0,482
04	Financial Requirements	1,194	0,837

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon reviewing the results in the table above, it is evident that the Variance Inflation Factor (VIF) ranges between 1,185 and 2,075 which is less than 10, and the tolerance values range between 0,482 and 0,844 which is greater than 0,1 Therefore, there is no multicollinearity among the dimensions of the independent variable, namely the digitization of the patient medical record at the Public Neighborhood Health Institution in Ouled Attia, Skikda Province. Additionally, there is no correlation among the independent variables, ensuring no issues arise during the analysis and testing of the hypotheses' validity.

II-7-Presentation and Discussion of Study Results:

II-7-1- Analysis of Personal and Professional Data of the Study Sample:

II-7-1-1- Gender Distribution:

The results presented in the table below illustrate the characteristics of the study sample in terms of gender.

Table n°8: Distribution of Sample Individuals by Gender

Gender	Frequency	Percentage
Male	26	24,80%
Female	79	75,20%
Total	105	100%

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon reviewing the results recorded in the table above, it is evident that the study population is predominantly female, with 79 individuals, accounting for 75,20% of the sample size. In contrast, the number of males is 26 representing 24,80% This disparity can be attributed to females' greater interest in the healthcare sector and their enrollment in paramedical training programs at institutes that guarantee direct employment upon graduation. Additionally, the success rate of females in recruitment competitions for medical professionals is notably higher compared to males.

II-7-1-2 -Age Distribution:

The results presented in the table below illustrate the characteristics of the study sample in terms of age.

Table n°9: Distribution of Sample Individuals by Age

Age Group	Frequency	Percentage
Less than 30 years	22	21,0%
30 to less than 40 years	49	46,7%
40 to less than 50 years	19	18,1%
50 years and above	15	14,3%
Total	105	100%

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results presented in the table above, it is evident that the age group of 30 to less than 40 years ranks first, with 49 individuals, accounting for 46,7% of the total sample size. This is followed by the age group of less than 30 years, with 22 individuals, representing 21,0% of the total sample. The third rank is occupied by the age group of 40 to less than 50 years, with 19 individuals, constituting 18,1%. Finally, the age group of 50 years and above includes 15 individuals, making up 14,3%. Consequently, the characteristic of youth predominates in the study sample, with 68,7% of the sample being under 40 years of age.

This youthful demographic is likely to enhance their ability to perform at their best, positively impacting the delivery of high-quality healthcare services.

II-7-1-3 -Educational Level:

The results presented in the table below illustrate the characteristics of the study sample in terms of educational level.

Table n°10: Distribution of Sample Individuals by Educational Level

Educational Level	Frequency	Percentage
Secondary	18	17,10%
University	87	82,90%
Total	105	100%

Source: Prepared by the researcher based on outputs from SPSS Statistics 26.

Upon reviewing the results shown in the table above, it is evident that the majority of the study sample holds a university-level education, with 87 individuals, representing 82,90% of the total sample size. This is primarily due to the institution's recruitment requirements for medical and paramedical positions, which mandate a university degree, such as a doctorate in medicine, pharmacy, or dentistry, or completion of paramedical training programs. In contrast, the secondary education level accounts for 18 individuals, or 17,10%, representing public health nursing assistants who were employed after completing training at annexes of paramedical training institutes, with an educational attainment equivalent to the third year of secondary school. Consequently, the study sample possesses a high level of education, which ensures the delivery of quality services.

II-7-1-4- Professional Experience:

The results presented in the table below illustrate the characteristics of the study sample in terms of professional experience.

Table n°11: Distribution of Sample Individuals by Professional Experience

Professional Experience	Frequency	Percentage
Less than 5 years	16	15,20%
5 to less than 10 years	39	37,10%
10 to less than 15 years	23	21,90%
15 years and above	27	25,70%

Total	105	100%

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results shown in the table above, it is evident that 39 individuals in the study sample, representing 37,10% have professional experience ranging from 5 to less than 10 years. This reflects relatively recent professional experience, which can be attributed to the recruitment of public health nursing assistants over the past decade, the graduation of a significant number of nurses from training institutes, and the implementation of recruitment competitions for physicians during this period. The second rank is occupied by individuals with 15 years or more of experience, accounting for 25,70%. This group has acquired substantial professional expertise, as most of its members gained experience in the healthcare sector prior to the establishment of public community healthcare institutions, as outlined in the health map approved by the relevant ministry starting in May 2007. The third rank includes individuals with 10 to less than 15 years of experience, comprising 23 individuals or 21,90%. Finally, newly employed individuals with less than 5 years of experience account for 16 individuals, equivalent to 15,20%.

II-7-2- Results of Hypothesis Testing and Interpretation:

II-7-2-1- Testing the First Sub-Hypothesis of the Main Hypothesis:

The first sub-hypothesis of the main hypothesis was formulated as follows: "There is a statistically significant effect at a significance level of $\alpha \leq 0,05$ for the dimension of technical requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province." To test this hypothesis, multiple linear regression was employed, and the results are presented as follows:

Table n°12: Testing the First Sub-Hypothesis of the Main Hypothesis

Independent Variable	R	R^2	Beta	F	Significance Level
Technical Requirements	0,366	0,134	0,366	15,936	0,000

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results presented in the table above, it is evident that the coefficient of determination (R^2) equals 0,134 indicating that 13,40% of the variance in improving the quality of healthcare services is explained by the variation in technical requirements. Additionally, the strength of the relationship is indicated by R = 0,366. The F-value is 15,936 which exceeds the critical table value of 3.92, and the significance level is 0,000 which is less than 0,05 Consequently, the first sub-hypothesis of the main hypothesis is accepted, which states: "There is a statistically significant effect at a significance level of $\alpha \leq 0,05$ for the dimension of technical requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province."

II-7-2-2- Testing the Second Sub-Hypothesis of the Main Hypothesis:

The second sub-hypothesis of the main hypothesis was formulated as follows: "There is a statistically significant effect at a significance level of $\alpha \leq 0,05$ for the dimension of administrative requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province." To test this hypothesis, multiple linear regression was employed, and the results are presented as follows:

Table n°13: Testing the Second Sub-Hypothesis of the Main Hypothesis

Independent Variable	R	R^2	Beta	F	Significance Level
Administrative Requirements	0,433	0,188	0,433	23,796	0,000

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results presented in the table above, it is evident that the coefficient of determination (R^2) equals 0,188 indicating that 18,80% of the variance in improving the quality of healthcare services is explained by the variation in administrative requirements. Additionally, the strength of the relationship is indicated by R = 0,433, The F-value is 23,796 which exceeds the critical table value of 3,92 and the significance level is 0,000 which is less than 0,05. Consequently, the second sub-hypothesis of the main hypothesis is accepted, which states: "There is a statistically significant effect at a significance level of $\alpha \leq 0,05$ for the dimension of administrative requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province."

II-7-2-3- Testing the Third Sub-Hypothesis of the Main Hypothesis:

The third sub-hypothesis of the main hypothesis was formulated as follows: "There is a statistically significant effect at a significance level of $\alpha \leq 0,05$ for the dimension of human resources requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province." To test this hypothesis, multiple linear regression was employed, and the results are presented as follows:

Table n°14: Testing the Third Sub-Hypothesis of the Main Hypothesis

Independent Variable	R	R^2	Beta	F	Significance Level
Human Resources Requirements	0,536	0,287	0,536	41,429	0,000

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results presented in the table above, it is evident that the coefficient of determination (R^2) equals 0,287 indicating that 28,70% of the variance in improving the quality of healthcare services is explained by the variation in human resources requirements. Additionally, the strength of the relationship is indicated by R = 0.536. The F-value is 41,429 which exceeds the critical table value of 3,92 and the significance level is 0,000 which is less than 0,05. Consequently, the third sub-hypothesis of the main hypothesis is accepted, which states: "There is a statistically significant effect at a significance level of $\alpha \leq 0,05$ for the dimension of human resources requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province."

II-7-2-4- Testing the Fourth Sub-Hypothesis of the Main Hypothesis:

The fourth sub-hypothesis of the main hypothesis was formulated as follows: "There is a statistically significant effect at a significance level of $\alpha \leq 0.05$ for the dimension of financial requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province." To test this hypothesis, multiple linear regression was employed, and the results are presented as follows:

Table n°15: Testing the Fourth Sub-Hypothesis of the Main Hypothesis

Independent Variable	R	R^2	Beta	F	Significance Level
Financial Requirements	0,260	0,067	0,260	7,447	0,000

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results presented in the table above, it is evident that the coefficient of determination (R^2) equals 0,067 indicating that 6,70% of the variance in improving the quality of healthcare services is explained by the variation in financial requirements. Additionally, the strength of the relationship is indicated by R = 0,260. The F-value is 7,447 which exceeds the critical table value of 3,92 and the significance level is 0,000 which is less than 0,05. Consequently, the fourth sub-hypothesis of the main hypothesis is accepted, which states: "There is a statistically significant effect at a significance level of $\alpha \leq 0.05$ for the dimension of financial requirements on improving the quality

of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province."

II-7-2-5- Testing the Main Hypothesis:

The main hypothesis was formulated as follows: "There is a direct effect of digitizing medical records on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province." To test the main hypothesis, multiple linear regression was employed, and the results are presented as follows:

Table n°16: Testing the Main Hypothesis

Independent Variable	R	R^2	Beta	F	Significance Level
Digitization of Medical Records	0,522	0,272	0,522	38,531	0,000

Source: Prepared by the researcher based on outputs from SPSS Statistics 26

Upon examining the results presented in the table above, it is evident that the coefficient of determination (R^2) equals 0,272 indicating that 27,20% of the variance in improving the quality of healthcare services is explained by the variation in the digitization of medical records. Additionally, the strength of the relationship is indicated by R = 0,522. The F-value is 38,531 which exceeds the critical table value of 3,92 and the significance level is 0,000 which is less than 0.05. Consequently, the main hypothesis is accepted, which states: "There is a direct effect of digitizing medical records on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province."

Conclusion:

This study examined the impact of digitizing patient medical records on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province, from the perspective of physicians and nurses. The study yielded the following results:

- The Public Community Healthcare Institution in Ouled Attia, Skikda Province, strives to keep pace with modern technological advancements in healthcare systems. It actively employs digital

technologies to ensure high-quality healthcare services, aligning with the Algerian state's policy to digitize the healthcare sector, which benefits both citizens and society.

- Positive and statistically significant Pearson correlation coefficients indicate a strong correlation between all dimensions of the digitization of patient medical records at the Public Community Healthcare Institution in Ouled Attia, Skikda Province.
- Positive and statistically significant Pearson correlation coefficients also demonstrate a strong correlation between all aspects of improving the quality of healthcare services.
- Based on the results of multiple linear regression analysis, the main hypothesis was accepted, which states: "There is a direct effect of digitizing medical records on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province." Additionally, all sub-hypotheses of the main hypothesis were accepted, which state:

- There is a statistically significant effect at a significance level of $\alpha \leq 0.05$ for the dimension of technical requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province.
- There is a statistically significant effect at a significance level of $\alpha \leq 0.05$ for the dimension of administrative requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province.
- There is a statistically significant effect at a significance level of $\alpha \leq 0.05$ for the dimension of human resources requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province.
- There is a statistically significant effect at a significance level of $\alpha \leq 0.05$ for the dimension of financial requirements on improving the quality of healthcare services at the Public Community Healthcare Institution in Ouled Attia, Skikda Province.

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