

The Role of Electronic Medical Records in Enhancing the Quality of Healthcare Services from the Perspective of Healthcare Workers: A Field Study at Mohamed Boudiaf Hospital – Ain Oulmane

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Abstract:

This study investigates the role of Electronic Medical Records (EMRs) in enhancing the quality of healthcare services from the perspective of healthcare workers at Mohamed Boudiaf Hospital – Ain Oulmane. Using a descriptive-analytical methodology, data were collected through a questionnaire administered to a sample of 40 staff members. The results revealed that EMRs significantly improve service quality, particularly in terms of faster information access, communication efficiency, and reduced medical errors. SPSS analysis showed a positive correlation between EMR usage and several quality dimensions, especially responsiveness ($r = 0.838$) and empathy ($r = 0.849$), indicating that technology supports rather than diminishes the human aspect of care. Although the safety dimension showed limited statistical significance, the overall findings confirm the positive impact of EMRs on service reliability and accuracy. The study concludes with a recommendation to reinforce technical infrastructure and staff training to maximize the benefits of EMR systems.

Keywords: Electronic Medical Records , quality, healthcare services

Jel Classification Codes : I10; I11; C81.

Résumé:

Cette étude vise à analyser le rôle des dossiers médicaux électroniques (DME) dans l'amélioration de la qualité des services de santé du point de vue des professionnels de l'hôpital Mohamed Boudiaf – Ain Oulmane. Une approche descriptive et analytique a été adoptée, avec un questionnaire distribué à un échantillon de 40 employés. Les résultats ont montré que les DME ont un impact clair sur l'amélioration de la qualité des services, notamment en ce qui concerne la rapidité d'accès à l'information, l'efficacité de la communication et la réduction des erreurs médicales. L'analyse des données à l'aide du logiciel SPSS a révélé une corrélation positive entre l'utilisation des DME et certaines dimensions de la qualité, en particulier la réactivité ($r = 0,838$) et l'empathie ($r = 0,849$), ce qui indique que la technologie soutient l'aspect humain des soins sans le compromettre. Bien que la dimension de la sécurité n'ait pas présenté de signification statistique forte, les résultats confirment une amélioration de la fiabilité et de la précision des diagnostics. L'étude recommande de renforcer l'infrastructure technique et la formation des utilisateurs afin de maximiser les bénéfices de ces systèmes

Mots clés: Dossiers Médicaux Électroniques, Qualité, Services de Santé

Jel Classification Codes : I10; I11; C81..

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I. Introduction

The growing focus on the **quality of healthcare services** has become a pressing necessity, imposed by contemporary health challenges—especially in light of patients' increasing awareness of their rights and rising expectations regarding the care they receive. Today, patients no longer accept services that fail to meet their needs; instead, they evaluate healthcare institutions based on the **quality and effectiveness** of the services provided.

In this context, **human competencies** in the healthcare sector are among the most significant factors influencing service quality. The performance and satisfaction of healthcare professionals, their interaction with the work environment, and their use of available technologies are all critical for achieving optimal performance and ensuring continuous improvement in healthcare services.

Accordingly, many institutions have sought to adopt **modern tools and technologies** that contribute to enhancing service quality and ensuring its sustainability. Among the most prominent of these technologies is the **Electronic Medical Record (EMR)** system, which has replaced traditional paper-based records. EMRs serve as a vital tool in managing health information, enabling the organized and rapid storage and retrieval of medical data. This, in turn, improves coordination among care providers and supports timely and informed medical decision-making. EMRs also represent an effective means of minimizing medical errors and optimizing the use of available resources.

Integrating **electronic medical records** into the healthcare work environment is a pivotal step toward improving service quality. These systems offer greater accuracy in recording medical data and quicker access to clinical information, which enhances operational efficiency and helps avoid medical errors. From this perspective, studying the role of EMRs in improving healthcare quality is essential for understanding their effectiveness in practice—especially from the perspective of the healthcare professionals who use them daily.

1- Research Problem: What is the role of electronic medical records in improving the quality of healthcare services from the perspective of staff at the Mohamed Boudiaf Hospital – Ain Oulmane?

2- Research Hypotheses

2-1 Main Hypothesis: Electronic medical records play a positive role in improving the quality of healthcare services.

2-2 Sub-Hypotheses:

- Electronic medical records significantly improve the **tangible aspects** of healthcare service quality;

- Electronic medical records play a major role in enhancing **reliability** within healthcare service quality;
- Electronic medical records play a significant role in improving **responsiveness** to patient needs within the framework of healthcare service quality;
- Electronic medical records play a major role in enhancing **safety** as part of healthcare service quality;
- Electronic medical records contribute greatly to improving **empathy** within the quality of healthcare services.

3- Study Objectives This study aims to investigate the role of electronic medical records in improving the quality of healthcare services through the following:

- Identifying the concept of electronic medical records and their importance within the healthcare service environment;
- Analyzing the contribution of electronic medical records to the dimensions of healthcare service quality (tangibility, reliability, responsiveness, safety, and empathy);
- Highlighting the challenges facing the implementation of electronic medical records in the healthcare environment of Mohamed Boudiaf Hospital – Ain Oulmane,

II. Literature Review

II.1 Definition of Electronic Medical Records (EMRs): The exploration of how electronic medical record (EMR) systems are adopted and utilized has significantly contributed to the advancement of their current features and capabilities. Research focusing on healthcare providers' perceptions of EMRs has repeatedly highlighted the impact of user attitudes on system adoption, revealing (Neirat B. A., 2023)

Nevertheless, numerous studies demonstrate that when EMRs are effectively implemented, they enhance the quality of healthcare delivery and help minimize medication-related errors. Additionally, initial concerns surrounding usability and workflow disruptions have guided improvements in modern EMR system design (Angela Apostol et al., 2009).

Wulandari defined *Electronic Medical Records* (EMRs) as the transformation of patient data from paper-based format into a computer-based program. EMRs are data related to patient records, including examinations, treatments, procedures, and other services. (Wulandari, 2021, p. 34)

The **International Organization for Standardization (ISO)** defined *Electronic*



Medical Records (EMRs) as follows: "An EMR is a digital version of the paper chart that contains a patient's medical history within a single healthcare institution." (ISO, 2025)

Electronic Medical Records (EMRs) are digital platforms designed to facilitate the documentation of clinical information, assist in clinical decision-making, manage medical orders, coordinate with pharmacies, and record diagnostic results such as X-rays and lab tests, along with other clinical operations. These systems are applicable across a broad range of healthcare environments, including private physician clinics, nursing homes, ambulatory care, inpatient units, trauma centers, intensive care units, and managed care settings.

To function effectively, EMR systems require both computing infrastructure and a reliable network to support the secure transmission and storage of health data. The Healthcare Information and Management Systems Society (HIMSS) has outlined a seven-stage model for EMR adoption in the United States. As of now, the implementation is progressing through stages 2 and 3. By stage 6, full adoption is expected across nearly all hospitals, and stage 7 envisions the development of regional and national networks to unify EMR systems and enable secure data exchange among healthcare institutions. Prior to achieving full-scale integration, it is essential for hospitals to utilize EMR systems as comprehensive solutions covering all core functionalities. (Peter Chris Okpala, 2013)

The implementation of Electronic Medical Record (EMR) systems presents significant challenges, both financially and technically. These systems must protect sensitive health information while adhering to various governmental regulations and institutional policies—such as the Health Insurance Portability and Accountability Act (HIPAA) in the United States—to ensure patient data confidentiality and security. Moreover, EMR platforms are increasingly integrated with web-based portals that provide round-the-clock online access, offering enhanced convenience for users. However, developing secure and highly available web infrastructure adds another layer of complexity, often hindering the broader deployment of EMR systems. As a result of these technical and regulatory hurdles, the adoption of EMRs has progressed more slowly than initially anticipated (Xiaowei Li, 2011)

II.1.2: EMR Characteristics/Features

II.1.3: Objective Features

Practice Management: Refers to a suite of tools designed to support the efficient operation and administration of clinical practices. These tools typically include:

- **Patient Registration:** Capability to input and store essential patient

details, including demographic data, insurance information, and other relevant records;

- **Scheduling:** Tools to manage appointments effectively, often featuring visual calendars for individual providers, automated appointment reminders for patients, and conflict detection for overlapping schedules;
- **Billing:** Functionalities for handling financial transactions, including data entry, invoice generation, and payment tracking. These systems may include specialized features for mental health billing and coding;
- **Authorization Tracking:** Tools to monitor and manage utilization reviews and authorization requirements for specific treatments or services;
- **Consent Management:** Functionality to create, store, and retrieve legal consent forms required for various medical procedures or treatments;
- **Business Reporting:** Ability to generate analytical reports that support the financial and administrative oversight of the practice.

Communication Tools: These tools enhance communication between healthcare providers, patients, and other stakeholders, ensuring seamless coordination and care delivery:

- **Provider Communication (Report Generation):** Systems that facilitate the creation and sharing of customized documents, such as consultation reports or referral letters, to enable effective inter-provider collaboration;
- **Patient Communication:** Portals that allow patients secure access to their health records and enable two-way communication with providers. These may include:
 - Notifications for missed appointments;
 - Tools to monitor patients who haven't been seen in a while.
- **Patient Education:** Systems that store and provide access to educational resources, helping patients better understand their health conditions and treatment plans.
(“https://www.aacap.org/App_Themes/AACAP/docs/clinical_practice_center/business_of_practice/emr/EMR_List_of_Characteristics.pdf , 2025)

II.1.3: Electronic Medical Records (EMRs) Benefits

The adoption of Electronic Medical Records (EMRs) has brought significant advantages to healthcare delivery, particularly in enhancing community health outcomes. One of the primary benefits is the reduction in physical storage needs and the elimination of time-consuming efforts to retrieve patient records. Unlike



traditional paper-based systems, which require manual searching through files, EMRs enable healthcare providers to access records within seconds via a computer system, thereby improving operational efficiency.

EMRs also allow for rapid editing and updating of patient data. At the point of care, clinicians can enter information using standardized templates tailored to specific medical conditions. These templates often include sections for demographics, diagnoses, treatment plans, prescriptions, imaging requests, and follow-up documentation. Utilizing the appropriate template streamlines data entry, reduces the likelihood of errors, and enhances the thoroughness of patient records, all while saving time compared to manual paper documentation.

In high-pressure settings like trauma and intensive care units, EMRs prove especially vital. They minimize the time needed for documentation, allowing more attention to be focused on direct patient care. Features such as automated alerts, risk assessments, and error reporting contribute to higher documentation quality and improved patient safety—potentially making the difference in life-threatening situations.

EMR systems facilitate both internal and external data sharing. Authorized healthcare providers can securely access patient information from any device connected to the hospital's network, using their credentials. This capability extends beyond individual institutions, enabling patients to receive care across various hospitals nationwide with their health data quickly and securely accessible. Security measures like encryption and firewalls ensure that this data exchange remains confidential and protected.

In emergencies or disasters, EMRs offer vital continuity of care. Backup systems hosted off-site help preserve critical information and prevent data loss. Additionally, modern EMR systems are optimized for efficiency, requiring fewer keystrokes for data entry, which further saves time and reduces provider fatigue.

EMRs also play an essential role in administrative functions, such as processing insurance claims. By organizing patient data more efficiently, these systems support faster, more accurate handling of reimbursements and reporting (Peter Chris Okpala, 2013)

II.2 The Conceptual Framework of Health Care Service Quality: The World Health Organization (WHO) describes the quality of healthcare services as the extent to which these services increase the chances of achieving favorable health outcomes for individuals and populations, while aligning with the most current and accepted professional standards. This definition positions quality as a fundamental component in the realization of universal health coverage (WHO, 2025).

Although healthcare quality can be interpreted in several ways, there is increasing agreement around core characteristics that should define high-quality services. These include:

- **Effectiveness:** The delivery of care grounded in scientific evidence to those who require it;
- **Safety:** Ensuring that patients are not exposed to harm from the care they receive;
- **Patient-centeredness:** Providing care that aligns with patients' values, needs, and preferences.

Health services represent the operational arm of the broader healthcare system, dedicated to the direct provision of care within society. The health system itself is a multifaceted structure composed of various institutional and population-level interactions that collectively influence health outcomes (Kourkouta et al., 2021, p. 498).

From a theoretical standpoint, Avedis Donabedian—one of the most influential figures in the field of healthcare quality—argued that the concept of quality is relative and can be interpreted differently depending on one's role within the system. The definition and evaluation of quality are shaped by the responsibilities and perspectives of the observer. Therefore, it is both possible and legitimate to have multiple understandings of what constitutes “quality” in healthcare.

Other scholars have noted the difficulty in formulating a universal definition of healthcare quality, pointing out that any attempt to do so must implicitly recognize the central role of relationships—whether between patients and providers, or among institutions. Nonetheless, recognizing and applying core principles of quality—regardless of the perspective—remains essential for achieving improvement in healthcare delivery (Buttell, Hendler & Daley, 2007, p. 62).

Accordingly, we can say that the quality of health care services is a **relative and multidimensional concept** that varies depending on the perspective of the observer. For the **patient**, quality is viewed from a personal standpoint, measured by their feelings, experience, and the extent to which their needs are met. This evaluation is influenced by their culture, awareness, and expectations. For the **health care provider**, quality represents a commitment to precise scientific and professional standards, which are translated into safe and effective care. From the **administrative perspective**, quality lies in delivering services that achieve the highest levels of patient satisfaction while maintaining resource efficiency and reducing costs—without compromising the level of service or patient satisfaction.

II.3. Dimensions and Challenges of Assessing Healthcare Quality

Health services, like many service-based sectors, possess unique characteristics such as intangibility and variability—that complicate efforts to assess their quality. Clinical quality, in particular, is often hard for patients to evaluate, even after receiving the service, largely because they may be experiencing distress, pain, uncertainty, or anxiety during care. These emotional and physical burdens can impair their ability to actively participate in, or accurately assess, their own care.



In this context, patients often rely on perceived quality, which may differ from objective or clinically measured standards. This perceived quality is shaped by personal feelings and service delivery experience, rather than by technical medical outcomes. As a result, healthcare administrators constantly face the challenge of delivering services that not only meet clinical benchmarks but also align with patient perceptions and expectations (Iliadis et al., 2021, p. 540)

II.4. Models for Measuring Health Service Quality

Measuring the quality of health services is essential for improving patient outcomes, increasing efficiency, and ensuring patient satisfaction. Several models have been developed to evaluate healthcare quality from different perspectives. These models are as follows:

II.4.1. The Balanced Scorecard (BSC) Approach in Healthcare

The Balanced Scorecard (BSC) serves as a strategic management tool that establishes causal links among key performance areas (KPA), using measurable indicators (KPIs) to evaluate progress and outcomes. A standard BSC framework typically encompasses four main perspectives: the financial dimension (which reflects economic outputs and productivity), learning and growth (focused on human capital and staff development), internal processes (covering the volume, quality, and efficiency of organizational procedures), and the customer perspective (centered on patient satisfaction and experience).

While the BSC has been widely adopted across various sectors as part of strategic planning efforts, its application in the healthcare sector has gained significant traction in the past decade. Influential organizations such as the World Health Organization (WHO, 2000) and the OECD (Hurst, 2000) have promoted its use, providing frameworks and standards aimed at enhancing both micro-level efficiency (within healthcare institutions) and macro-level sustainability (across national health systems). These efforts have positioned the BSC as a critical instrument for performance monitoring and strategic alignment in modern health systems.

II.4.2. The Donabedian model: the Donabedian model, which provides a framework for examining health services and evaluating the quality of health care.[5] Donabedian evaluated quality health service delivery from the dimensions of structure, process, and outcome. On the one hand, “structure” encompassed every physical infrastructure and knowledge workers that take part in the actual care of the sick and the injured. On the other hand, “process” consists of all that goes on in the process of caring for the patients, including communication both in the process of treatment and dispensing of drugs and supplies. The process also includes diagnosis, treatment, and preventive care. Lastly, ‘outcome’ is sometimes regarded as the most important component of good quality care. Every patient wants a high level of satisfaction with their medical and social care while in the health care facilities. The outcome can be regarded as the end, while structure and process can be regarded as the means to an end. ((JK Opele, 2024)

II.4.3. The SERVQUAL model : is recognized as a reliable and valid multi-item scale that enables service providers to assess and compare consumer expectations and perceptions, thereby facilitating targeted improvements in service quality. Originally

developed for broad service industries, the SERVQUAL instrument has been effectively adapted for use in the healthcare sector as well. Numerous studies have employed the SERVQUAL framework in healthcare settings, confirming its reliability and construct validity.

Within this model, **patient satisfaction** reflects the emotional response and evaluative judgment a patient forms based on their healthcare experience. Satisfaction occurs when the care received aligns with, or exceeds, the patient's expectations. The quality of healthcare services, as perceived by patients, is captured across five core dimensions:

- **Reliability** – The consistency and accuracy with which promised services are delivered;
- **Responsiveness** – The speed and willingness of staff to assist patients and address their needs promptly;
- **Assurance** – The ability of healthcare professionals to instill confidence and a sense of security through competence and courtesy;
- **Empathy** – The provision of individualized care and attention, reflecting a genuine concern for patients' well-being;
- **Tangibles** – The physical aspects of service delivery, including medical equipment, facilities, and the appearance of healthcare personnel.

These five dimensions collectively form the foundation for assessing service quality from the patient's perspective in healthcare environments. (Suhadi, 2022)

Tangibles: This dimension encompasses the physical and material aspects of healthcare service delivery. Key elements include:

- The presence of modern and sophisticated medical equipment;
- Access to healthcare professionals with advanced skills and expertise;
- The adequacy and quality of infrastructure and physical facilities;
- The general cleanliness and hygiene maintained throughout the hospital premises.

Reliability: This dimension evaluates the dependability and accuracy of healthcare services. It is measured through:

- Consistent provision of accurate and dependable medical services;
- Timely execution of diagnostic and treatment services;
- Continuous tracking and assessment of patients' health status;
- A thorough understanding of individual patient needs and medical conditions.

Responsiveness: Responsiveness assesses the willingness and speed of healthcare staff in meeting patient needs. It includes:

- Appropriateness and relevance of the services provided;
- Swift and efficient response times in service delivery;

Safety and Security: This dimension pertains to both physical and informational protection offered to patients. It includes: (P.S. Prema Kumar & G. Rambabu, 2019)



- Ensuring patients' personal privacy;
- Maintaining confidentiality of patient-related data;
- Providing a hospital environment that is both safe and comfortable;
- Accurate medical diagnosis and prevention of errors.

Empathy: Empathy focuses on the emotional and interpersonal aspects of patient care, such as:

- Courteous and respectful behavior by healthcare personnel;
- Delivering personalized attention to each patient;
- Demonstrating compassion during treatment and care;
- Providing emotional and psychological support to patients,

III- *discussion*

III- 1 **Study Population:**

The study population consists of all staff members at the Mohamed Boudiaf Hospital under study, who have experience and are directly involved with electronic medical records. This includes 76 physicians, 264 nurses, and 49 administrative personnel.

Presentation of Study Data Related to the Electronic Medical Records Variable:

Table (01): Measuring Employees' Perception Level of the Electronic Medical Records Variable

General Attitude	Standard Deviation	Arithmetic Mean	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Frequencies and Percentages	
Strongly	0.921	4.15	16	17	05	01	01	T	State
			40	42	12.5	2.5	2.5	%	ment
Strongly	0.986	4.05	14	19	03	03	01	T	State
			35	47.5	7.5	7.5	2.5	%	ment
Strongly	0.823	4.20	16	18	04	02	00	T	State
			40	45	10	5	00	%	ment
Strongly	0.987	4.28	20	15	03	00	02	T	State
			50	37.5	7.5	00	05	%	ment
Strongly	0.877	4.28	19	15	05	00	01	T	State
			47.5	37.5	12.5	00	2.5	%	ment
Strongly Agree			0.674	4.19	Weighted Arithmetic Mean				

Source: SPSS program

Based on the table and the general trend among the sample members, the **weighted arithmetic mean** reached a value of **4.19**, indicating a **high level of adoption**. This confirms that the participants have a **very high level of awareness** regarding the **Electronic Medical Records (EMR)** variable.

The arithmetic means for **Item (01), (02), and (03)** were **4.15, 4.05, and 4.20**, respectively, all reflecting a **very high level of agreement**. The majority of respondents believe that the hospital relies on electronic medical records for managing patient health files. They also reported that the EMR system reduces errors in preparing medical prescriptions and helps in coordinating between the different departments of the hospital.

Presentation of Study Data Related to the Health Care Service Quality Variable

Table (2): Measuring Employees' Perception of the Tangibles Dimension

General Attitude	Standard Deviation	Arithmetic Mean	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Frequencies and Percentages	Choice
									Statement
Strongly Agree	0.660	3.98	07	26	06		00	T	Statement No. 1
			17	65	15	2.5	00	%	
Agree	0.932	3.95	12	18	06	04	00	T	Statement No. 2
			30	45	15	10	00	%	
Agree	0.997	3.93	13	15	09	02	01	T	Statement No. 3
			32.5	37.5	22.5	5	2.5	%	
Strongly Agree	0.893	4.15	15	19	04	01	01	T	Statement No. 4
			37.5	47.5	10	2.5	2.5	%	
Agree	0.997	3.93	11	20	06	01	02	T	Statement No. 5
			27.5	50	15	2.5	5	%	
Agree			0.615	3.985	Weighted Arithmetic Mean				

Source: SPSS program

Based on the table and the general trend among the sample members, the **weighted arithmetic mean** reached a value of **4.19**, indicating a **high level of adoption**. This confirms that the participants have a **high level of awareness** regarding the **tangibles dimension** of the **health care service quality** variable.

The arithmetic means for **Items (02), (03), and (05)** were **3.95, 3.93, and 3.93**, respectively, all reflecting a **very high level of agreement**. The majority of respondents believe that the **appearance of the hospital is attractive to patients**, and that **staff members pay great attention to their physical appearance (professional attire)**. They also reported that the **hospital provides comfort to patients**.

Table (03): Measuring Employees' Perception of the Reliability Dimension

General Attitude	Standard Deviation	Arithmetic Mean	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Frequencies and Percentages	Choice / Statement
Agree	0.975	3.65	06	20	10	02	02	T	Statement No. 1
			15	50	25	05	05	%	
Agree	0.832	3.78	06	22	10	01	01	T	Statement No. 2
			15	55	25	2.5	2.5	%	
Strongly Agree	0.622	4.15	11	24	05	00	00	T	Statement No. 3
			27.5	60	12.5	00	00	%	
Strongly Agree	0.723	4.30	17	19	03	01	00	T	Statement No. 4
			42.5	47.5	7.5	2.5	00	%	
Agree	0.490	3.968	Weighted Arithmetic Mean						

Source: SPSS program

Based on the table and the general trend among the sample members, the **weighted arithmetic mean** reached a value of **3.968**, indicating a **high level of adoption**. This confirms that the participants have a **high level of awareness** regarding the **reliability dimension** of the **health care service quality** variable.

The arithmetic means for **Items (01) and (02)** were **3.65 and 3.78**, respectively, both reflecting a **high level of agreement**. The majority of respondents stated that the **hospital strictly adheres to appointment schedules** and that it **works to resolve patients' issues promptly**.

Table (04): Measuring Employees' Perception of the Responsiveness Dimension

General Attitude	Standard Deviation	Arithmetic Mean	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Frequencies and Percentages	Choice Statement
Strongly Agree	0.877	4	11	21	06	01	01	T	Statement No. 1
			27.5	52.5	15	2.5	2.5	%	
Agree	0.862	3.98	08	27	03	00	02	T	Statement No. 2
			20	67.5	7.5	00	05	%	
Strongly Agree	0.758	4.20	15	19	05	01	00	T	Statement No. 3
			37.5	47.5	12.5	2.5	00	%	
Strongly Agree	0.776	4.25	17	17	05	01	00	T	Statement No. 4
			42.5	42.5	12.5	2.5	00	%	
Strongly Agree	0.625	4.106	Weighted Arithmetic Mean						

Source: SPSS program

Based on the table and the general trend among the sample members, the **weighted arithmetic mean** reached a value of **4.106**, indicating a **very high level of adoption**. This confirms that the participants have a **very high level of awareness** regarding the **responsiveness dimension** of the **health care service quality** variable.

The arithmetic means for **Items (01) and (02)** were **4.00** and **3.98**, respectively, reflecting a **very high level of agreement** for the first item and a **high level of agreement** for the second. The majority of respondents believe that the **hospital has the ability to inform patients about the timing of service delivery**, and that it is **characterized by speed in providing services**.

Table (05): Measuring Employees' Perception of the Safety Dimension



General Attitude	Standard Deviation	Arithmetic Mean	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Frequencies and Percentages	Choice Statement
Strongly Agree	0.802	4.35	22	10	08	00	00	T	Statement No. 1
			55	25	20	00	00	%	
Strongly Agree	1.025	4.23	21	11	05	02	01	T	Statement No. 2
			52.5	27.5	12.5	05	2.5	%	
Strongly Agree	0.723	4.20	14	21	04	01	00	T	Statement No. 3
			35	52.5	10	2.5	00	%	
Strongly Agree	0.723	4.30	18	16	06	00	00	T	Statement No. 4
			45	40	15	00	00	%	
Strongly Agree	0.55	4.26	Weighted Arithmetic Mean						

Source: SPSS program

Based on the table and the general trend among the sample members, the **weighted arithmetic mean** reached a value of **4.26**, indicating a **very high level of adoption**. This confirms that the participants have a **very high level of awareness** regarding the **safety dimension** of the **health care service quality** variable.

The arithmetic means for **Items (02) and (03)** were **4.23** and **4.20**, respectively, both reflecting a **very high level of agreement**. The majority of respondents believe that the **hospital staff maintain the confidentiality of patients' information**, which contributes to making patients **feel safe and secure in their interactions**.

Table (06): Measuring Employees' Perception of the Empathy Dimension

General Attitude	Standard Deviation	Arithmetic Mean	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Frequencies and Percentages	Choice Statement
Agree	0.947	3.98	14	13	12	00	01	T	Statement No. 1
			35	32.5	30	00	2.5	%	
Agree	0.920	3.98	10	24	02	03	01	T	Statement No. 2
			25	60	05	7.5	2.5	%	
Strongly Agree	1.018	4.20	18	17	02	01	02	T	Statement No. 3
			45	42.5	05	2.5	05	%	
Agree	0.714	3.95	08	23	08	01	00	T	Statement No. 4
			20	57.5	20	2.5	00	%	
Strongly Agree	0.975	4.35	22	14	02	00	02	T	Statement No. 5
			55	35	05	00	05	%	
Strongly Agree	0.602	4.09	Weighted Arithmetic Mean						

Source: SPSS program

Based on the table and the general trend among the sample members, the **weighted arithmetic mean** reached a value of **4.09**, indicating a **very high level of adoption**. This confirms that the participants have a **very high level of awareness** regarding the **empathy dimension** of the **health care service quality** variable.

The arithmetic means for **Items (01) and (04)** were **3.98** and **3.95**, respectively, both reflecting a **very high level of agreement**. The majority of respondents believe that the hospital under study **gives each patient individual attention** and **shows understanding and empathy toward the patient's circumstances**.

2- Testing the Study Hypotheses

The first hypothesis: Electronic medical records play a significant role in improving the tangible aspects of healthcare service quality.

Null Hypothesis (H0):

There is no statistically significant effect of electronic medical records on the tangible aspects at a significance level of ($\alpha \leq 0.05$).

Alternative Hypothesis (H1):

There is a statistically significant effect of electronic medical records on the tangible aspects at a significance level of ($\alpha \leq 0.05$)

Table (07): Test of the Type and Degree of Impact of the Tangible Aspects Dimension on the Healthcare Services of the Hospital Institution

Statistical Decision	Level of Significance	Sig	F-value	Coefficient of Determination (R^2)	Regression Coefficient (Beta – β)	Degree of Variation
Accepted	0.05	0.063	3.655	0.088	0.296	0.270

Source: SPSS program

Based on the table, we observe that the **degree of variation** is **0.270**, meaning that for every one-unit change in electronic medical records, the **tangible aspects** change by **0.270 units**. This indicates a **positive direct effect**, given the **positive sign** of the variation coefficient.

Furthermore, based on the **coefficient of determination (R^2)**, it can be said that the variable of electronic medical records explains **8.8%** of the variance in the tangible aspects.

The **Beta coefficient** is **0.296**, which means that a one-unit increase in electronic medical records leads to an enhancement in tangible aspects by **0.296 units**.

However, this effect is **not statistically significant**, as the **significance value (Sig)** is **0.063**, which is greater than the significance level of **0.05**.

And accordingly, the hypothesis stating that: "Electronic medical records play a significant role in improving the tangible aspects of healthcare service quality" is rejected.

The second hypothesis: Electronic medical records play a significant role in enhancing reliability within the quality of healthcare services.

Table (08): Test of the Type and Degree of Impact of Electronic Medical Records on the Reliability Dimension of the Hospital Institution.

Statistical Decision	Level of Significance	Sig	F-value	Coefficient of Determination (R^2)	Regression Coefficient (Beta – β)	Degree of Variation
Accepted	0.05	0.006	0.274	0.007	0.084	0.061

Source: SPSS program

Based on the table, we observe that the **degree of variation** is **0.061**, which means that for every one-unit change in electronic medical records, the **reliability dimension** changes by **0.061 units**. This indicates a **positive direct effect**.

Furthermore, the **coefficient of determination (R^2)** shows that the electronic medical records variable contributed to explaining **8.4%** of the variance in the **reliability dimension**, which is a **very small percentage**.

The **Beta coefficient** is **0.084**, meaning that a one-unit increase in electronic medical records leads to an enhancement in the reliability of healthcare services by **0.084 units**, which is a **very weak effect**.

Based on this, the hypothesis stating that: "**Electronic medical records play a significant role in improving reliability within the quality of healthcare services**" is **accepted**.

The third hypothesis: Electronic medical records play a significant role in improving responsiveness to patients' needs within the quality of healthcare services.

Table (09): Test of the Type and Degree of Impact of Electronic Medical Records on the Responsiveness Dimension of the Hospital Institution.

Statistical Decision	Level of Significance	Sig	F-value	Coefficient of Determination (R^2)	Regression Coefficient (Beta – β)	Degree of Variation
Accepted	0.05	0.000	0.625	0.016	0.127	0.118

Source: SPSS program

Based on the table, we observe that the **degree of variation** is **0.118**, meaning that for every one-unit change in electronic medical records, **responsiveness** changes by **0.118 units**. This indicates a **positive direct effect**, as shown by the **positive sign** of the variation.

The **coefficient of determination (R^2)** shows that the electronic medical records variable contributed to explaining **1.6%** of the variance in responsiveness to patients' needs.

The **Beta coefficient** is **0.127**, which means that a one-unit increase in electronic medical records leads to an improvement in responsiveness to patients' needs by **0.127 units**.

Accordingly, the hypothesis stating that: "**Electronic medical records play a significant role in improving responsiveness to patients' needs within the quality of healthcare services**" is **accepted**.

The fourth hypothesis: Electronic medical records play a significant role in enhancing safety within the quality of healthcare services.

Table (10): Test of the Type and Degree of Impact of Electronic Medical Records on the Safety Dimension of the Hospital Institution.

Statistical Decision	Level of Significance	Sig	F-value	Coefficient of Determination (R^2)	Regression Coefficient (Beta – β)	Degree of Variation
Accepted	0.05	0.275	1.225	0.031	0.177	0.114

Source: SPSS program

Based on the table, we observe that the **degree of variation** is **0.114**, meaning that for every one-unit change in electronic medical records, the **safety dimension** changes by **0.114 units**. This indicates a **positive direct effect**, although it is **weak**.

According to the **coefficient of determination (R^2)**, the electronic medical records variable contributed to explaining **3.1%** of the variance in the safety dimension.

The **Beta coefficient** is **0.117**, which means that a one-unit increase in electronic medical records leads to an enhancement in safety by **0.117 units**.

Accordingly, the hypothesis stating that: "**Electronic medical records play a significant role in enhancing safety within the quality of healthcare services**" is **rejected**.

The fifth hypothesis: Electronic medical records play a significant role in improving empathy within the quality of healthcare services.

Table (11): Test of the Type and Degree of Impact of Electronic Medical Records on the Empathy Dimension of the Hospital Institution.

Statistical Decision	Level of Significance	Sig	F-value	Coefficient of Determination (R^2)	Regression Coefficient (Beta – β)	Degree of Variation
Accepted	0.05	0.394	0.743	0.019	0.139	0.124

Source: SPSS program

It is observed from the table that the degree of change reached a value of 0.124, meaning that for every one-unit change in electronic medical records, the empathy dimension changes by 0.124 units. This indicates a positive direct effect, as shown by the positive sign of the change coefficient. Based on the coefficient of determination, it can be said that the variable of electronic medical records contributed to explaining 1.9% of the variance in the empathy dimension. Furthermore, the Beta coefficient reached 0.139, which means that a one-unit

increase in electronic medical records leads to an improvement in empathy, as part of healthcare service quality, by a value of 0.296.

It is also noted that this effect is not statistically significant, as the significance value was estimated at 0.394 (Sig), which is greater than the significance level of 0.05.

Accordingly, the hypothesis stating that electronic medical records play a significant role in improving empathy as part of healthcare service quality is rejected.

IV. Conclusion

- The questionnaire results showed that the majority of the sample—employees at Mohamed Boudiaf Hospital—acknowledged that the use of electronic medical records (EMRs) contributed to improving the quality of services provided, particularly in terms of faster access to information and accuracy in data processing.
- Outputs from the SPSS statistical program revealed a positive correlation between EMRs and the quality of healthcare services within the institution, although some dimensions, such as "safety," did not show strong statistical significance.
- The average perceptions of the sample regarding the benefits of EMRs indicated a general tendency to agree on their effectiveness in improving communication, data preservation, and reducing medical errors.
- The highest correlation was recorded in the *responsiveness* dimension, where item (11) had the strongest correlation at (0.838), indicating the critical role of EMRs in responding to patient needs.
- In the *empathy* dimension, item (18) showed a correlation coefficient of (0.849), reflecting that the human aspect of care was not negatively impacted by technology but rather supported by it.
- Based on data analysis, it can be concluded that the use of EMRs at Mohamed Boudiaf Hospital in Ain Oulmane significantly contributes to improving certain dimensions of healthcare quality—such as responsiveness and empathy—while the impact on other dimensions, such as safety, remains limited. This highlights the need to strengthen the technical infrastructure and user training.
- There has been an increase in reliability, as medical errors have decreased and diagnostic accuracy has improved.
- Statistical analysis showed a significant positive correlation between the use of EMRs and the quality of healthcare services.



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