ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

DEPARTMENT OF PROJECT MANAGEMENT

The effect of Electronic Health Record (EHR) on the Perceived Work Load of Pharmacy Professionals at Saint Paul Hospital Millennium Medical College: A Quantitative Analysis

A Project Draft Submitted to Addis Ababa University School of Commerce in Partial Fulfillment of the Requirements for the Award of a Master of Arts Degree in Project Management

By: Ruth Yilma

Advisor: Abdurezak Mohammod (PhD)

SEPTEMBER 2024

ADDIS ABABA, ETHIOPIA

STATEMENT OF DECLARATION

I, the undersigned, declare that this study entitled ***—The effect of EHR on the perceived workload of pharmacy professionals*** is my original work and has not been presented for a degree of Master of Project Management in any university, and that all sources of materials used for the study have been duly acknowledged.

Declared By:

Name: Ruth Yilma Shikur

Signature: _____

Date: _____

STATEMENT OF CERTIFICATION

This is to certify that the thesis prepared by Ruth Yilma Shikur, entitled: ***—The Effect of Electronic Health Record (EHR) on the perceived workload of pharmacy professionals at Saint Paul Hospital Millennium Medical College*** and submitted in partial fulfillment of the requirements for the Degree of Master of Art in Project Management complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Approved By:

Abdurezak Mohammed (PhD)	_____	_____
Advisor	Date	Signature
Zegeye Muluye (PhD)	_____	_____
Internal Examiner	Date	Signature
Zelalem Terefe (PhD)	_____	_____
External Examiner	Date	Signature

ACKNOWLEDGEMENT

First and foremost, I would like to express my deepest gratitude to God Almighty for His endless grace, wisdom, and strength throughout this journey. Without His guidance and blessings, this work would not have been possible. I would also like to extend my heartfelt thanks to my advisor, Dr. Abdurezak Mohammed, for his invaluable support and direction. I am thankful to the pharmacy professionals at SPHMMC for their participation, and to my friends for their encouragement. Finally, I am grateful to my family for their love, patience, and unwavering support.

ABSTRACT

The purpose of this study is to determine how pharmacy personnel at SPHMMC in Addis Ababa, Ethiopia, perceive their workload in relation to EHR. Training, self-efficacy, system quality, information quality, and technical support system are the EHR parameters that are employed. To explain how independent variables affected the dependent variable, the study employed an explanatory research strategy in conjunction with quantitative research. Additionally, descriptive analysis was utilized to characterize the data's properties, generate insightful analysis, and draw conclusions. A statistical program called the statistical package for social science (SPSS) version 24 is used to examine the data that has been gathered. The study employs a census method, targeting the entire population of pharmacy professionals at SPHMMC. Therefore, total population of pharmacy professionals that interact with the EHR system that were available during the data collection time was 65employees. From them, it was managed to collect 61 fully filled responses for analysis making the response rate 95%. The finding of the research emphasizes that the information quality and system quality have positive and statistically significant effect on perceived workload. Contrarily, training, self-Efficay and technical support system presented statistically not significant effect. From the regression analysis, it was found that Information quality has the highest correlation with perceived workload followed by the System quality. Based on the result, recommendations were made for to implement and sustain a high quality EHR system that is user friendly and the quantity and quality of information presented in the EHR system should be accurate, relevant and user friendly. In relation to this, it is suggested that SPHMMC optimize its training activities in order to have adequate coverage and relevance to the skills of the pharmacists being employed. It is advisable that strong and effective technical support is needed to be on the alert to prevent any issues.

Key Words: Perceived workload, Electronic Health Record (EHR)

Abbreviation and Acronym

DV – Dependent Variable

EHR- Electronic Health Record

EMR- Electronic Medical Record

EMMS- Electronic Medication Management System

HIMSS - Healthcare Information and Management Systems Society

ICU – Intensive Care Unit

IT - Information Technology

IS – Information System

IV – Independent Variable

MOS - Medical Outcomes Study

MRC - Modified Risk Calculation

PCP- Primary Care Physicians

POT - Perceived Organizational Support

SWAT – Subjective Workload Assessment Technique

SPHMMC- Saint Paul Hospital Millennium Medical College

TAM - Technology Acceptance Model

Table of Contents

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

1.1 Background Information

Nowadays, information technology (IT) is perceived as a crucial factor in enhancing the quality of healthcare and ensuring patient safety (Klinis et al., 2012). Electronic Health Records (EHR) constitute a fundamental element of IT, encompassing a patient's medical history maintained by healthcare providers, containing essential clinical data. The deployment of EHR systems is imperative for data quality management and enhancing communication within healthcare institutions, facilitating information sharing among various units and fostering the development of integrated health delivery networks (Yehualashet et al., 2015).

The issue of not using EHR in health care facilities is complex and extends to the quality of services and productivity. With EHR, the flow of records is computerized; otherwise, they have to rely on paper documents, which are often misfiled, missing, or contain wrong information. This exposes the patient to more risks and more often to medication errors for example wrong dosages or drug interferences that can be fatal (Menachemi & Collum, 2011). In addition, the absence of EHR makes it difficult to share patient information between departments and different healthcare providers. This delay of information exchange is a problem because it can lead to slowed decision making times, and thus longer patient waits and lesser quality of care (Hoerbst & Ammenwerth, 2010). Besides, when there are no digital records, healthcare staff gets stuck with dozens of formal activities that hinder them from performing their primary functions concerning patients. Long term effect of not using EHR is that it provides a very poor opportunity for patient outcomes monitoring, audit and research, which hampers the overall advancement of healthcare delivery (Adams, 2015).

However, while the benefits of EHR systems are well-documented, there are significant challenges associated with their implementation, particularly in developing country settings such as Ethiopia. In these contexts, issues related to resource limitations, inadequate training, and lack of technical support often exacerbate the difficulties healthcare professionals face when adopting new technologies (Blaya et al., 2010).

The acquisition of Electronic Health Records stands as a critical decision for healthcare organizations, notwithstanding governmental incentives. The adoption of EHRs continues to face obstacles, with a lack of comprehensive understanding regarding the factors influencing EHR adoption being a significant hindrance (Nambisan et al., 2013).

The process of EHR acquisition involves multiple user groups, including patients, caregivers, and healthcare managers. According to a report on healthcare financial management, the absence of national information standards poses a major barrier to EHR adoption (Ajami & Arab-Chadegani, 2013). Another study involving healthcare professionals highlighted project management issues as the critical success factor in EHR implementation (Safdari et al., 2015). Additionally, a lack of knowledge and experience in utilizing EHR systems is identified as a key obstacle. Resistance from staff members towards adopting new technologies like EHR systems is also noted, citing concerns about disruptions to established workflows (Ramaiah et al., 2012).

Pharmacy personnel at SPHMMC are a source of care of the healthcare team, as they play a role in giving the patients the right prescription that is safe and effective to their health. They are versatile in their roles, including clinical services turning in, medication therapy management, and patient education. The use of EHR has a good chance to be actualized in the field of workflow optimization and inter-professional communication, but it might also bring more tasks and duties for the professionals of the pharmacy world contributing to possible increase of workload.

This research assessed the current status of Electronic Health Records at SPHMMC, based on insights provided by pharmacy professionals engaged in their utilization. A quantitative analysis will be employed to investigate the impact of EHR on the perceived workload of pharmacy professionals.

1.2 Background of the Study Organization

St. Paul's Millennium Medical College (SPHMMC), nowadays, is known as the outcome of the decree of the Council of Ministers in 2010, although the medical school was opened in 2007 and the hospital was established by the late Emperor Haile Selassie in 1968. It is regulated by a board who falls under the Ministry of Health. During the inception of the College, Ethiopia was the

first to introduce the integrated modular and hybrid problem-based curriculum for undergraduate medical education. At present, the college is expanding to the post-graduate programs and diversifying the undergraduate program offerings. The growth of St. Paul's is a matter of speed versus time. The faculty has increased from 3 to 250 members within the last 6 years, and teaching facilities have been expanded. The college is composed of more than 2800 clinical, academic and administrative and support staffs who are medical specialty experts and are referred from all over the country to provide medical services, teach medicine and nursing students and conduct basic and applied researches. Though the facility has more than 700 beds in its inpatient unit, on an average day the College treats 1200 emergency and outpatient clients.

St. Paul's Hospital Millennium Medical College provides healthcare and training to its students through its different biomedical and clinical departments, including Anatomy, Physiology, Biochemistry, Pharmacology, Public health, Pathology, General Surgery, Internal Medicine, Obstetrics and Gynecology, Pediatrics and child health, Emergency Medicine, Urology, Neurology, Orthopedics, Psychiatry, Ophthalmology, ENT, Dentistry and Maxillofacial Surgery, Radiology, Anesthesiology, Nursing, ICU (Intensive Care Unit), ART (HIV care), Endoscopy, Physiotherapy, Laboratory and Pharmacy (SPHMMC, 2024).

Recently, SPHMMC has implemented an Electronic Health Record (EHR) system as one of the ways of enhancing the medical records technology in line with the general healthcare technology advancement. It was implemented to improve activities including patient record keeping, prescription writing, and stock control. However, with the adoption of EHR, the pharmacy department at SPHMMC has faced both opportunities and challenges. This study aims to quantify the perceived workload of pharmacy professionals in the context of EHR because of the significant roles that they play in the healthcare system.

1.3 Statement of the problem

Electronic Heath Records (EHRs) serve a wide range of purposes, from managing professionals' work in healthcare by reducing loads of administrative work, securing accuracy in medication management, up to the delivery of timely information for decision-making (Häyrinen et al., 2008). Literature reviews suggest that EHR adoption leads to better organization of paperwork, optimization of medication processes, and better interaction among care givers. For example,

EHR systems eliminated redundant work such as manual recording keeping, work-flow enable cross-department collaboration, and facilitated real-time patient information availability, enhance the quality of care with minimum burden of healthcare professionals' cognition (Adams, 2015).

The EHR system was fully implemented at SPHMMC pharmacy by the end of 2023 and this was a great advance in establishing the technological advancement in the hospital and improving the efficiency of the hospital's healthcare processes. Every day, pharmacy professionals at SPHMMC work in contact with the EHR system for purposes such as ordering and administration of medication, tracking drug stock, and access relevant patient's records.

Although EHR systems are expected to decrease workload in general, detailed studies on its effect for the pharmacy professionals especially in terms of developing countries has not been thoroughly investigated. Much of the existing literature focuses on physicians and nurses, leaving a gap in understanding how EHR affects pharmacists' workflows, particularly in a developing country context. Further, the five factors; EHR training, self-efficacy, system quality, information quality and technical support have not been adequately studied in this environment when used together. This gap also calls for a need to find out the relationship and the extent to which the established factors impact the perceived workload of pharmacy professionals at SPHMMC. To optimize the benefits of the EHR system and reduce perceived workload, it is essential to address the gaps identified in training, self-efficacy, system quality, information quality, and technical support. By addressing these factors, SPHMMC can maximize the efficiency of its EHR system and reduce the workload for pharmacy professionals.

1.4 Research Questions

Based on research problems, the study addressed questions like

- What is the effect of EHR training on perceived workload of pharmacy professionals at SPHMMC?
- What is the effect of EHR self-efficacy on perceived workload of pharmacy professionals at SPHMMC?
- What is the effect of EHR system quality on perceived workload of pharmacy professionals at SPHMMC?

- What is the effect of EHR information quality on perceived workload of pharmacy professionals at SPHMMC?
- What is the effect of EHR technical support system on perceived workload of pharmacy professionals at SPHMMC?

1.5 Significance of the Study

This study is important, as it investigates the effect of EHR on perceived workload for pharmacy professionals in SPHMMC and covers a critical knowledge gap in the Ethiopian health care area. Understanding how EHR systems affect workload is central to enhancing system usability, improving pharmacy workflows, and preventing staff burnout—all pieces of better patient care. These results will be interpreted into recommendations to the hospital management on the need to address training programs, customization of technical support services, and fine-tuning of the system in order for it to meet the needs of the pharmacy professions. The study also generated rich data that will be used in the development and implementation of an informed healthcare policy about EHR adoption and utilization in Ethiopia and other similar developing country settings. This research also lays a foundation for future studies in terms of pointing out areas that require further enhancement, as well as the long-term implications on workload and productivity resulting from the adoption of EHR. This will have its foundation from ongoing investigations related to the broader implications of EHR systems in various healthcare settings

1.6 Objectives

1.6.1 General Objective:

- Evaluate the effect of Electronic Health Record on the perceived workload of pharmacists at Saint Paul Hospital Millennium Medical College.

1.6.2 Specific Objectives:

- To study EHR training effect on perceived workload of pharmacy professionals at SPHMMC?
- To explore EHR self-efficacy effect on perceived workload of pharmacy professionals at SPHMMC?
- To investigate EHR system quality effect on perceived workload of pharmacy professionals at SPHMMC?

- To examine EHR information quality effect on perceived workload of pharmacy professionals at SPHMMC?
- To discover EHR technical support system effect on perceived workload of pharmacy professionals at SPHMMC?

1.7 Scope of the Study

This study is conducted at Saint Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia, focusing on the pharmacy department, where the Electronic Health Records (EHR) system has been fully implemented. The research aims to examine the impact of EHR on the perceived workload of pharmacy professionals by analyzing five independent variables: EHR training, self-efficacy, system quality, information quality, and technical support. Pharmacy professionals working in both inpatient and outpatient settings serve as the primary respondents. The study addresses a gap in the existing literature, particularly in the context of pharmacy professionals in developing countries, where limited research exists. It employed a quantitative analysis approach, meaning it gathered numerical data to measure changes in perceived work load after the implementation of EHR. By exploring how these variables influence workload, the study seeks to provide practical insights for optimizing EHR usage and improving efficiency at SPHMMC, with the potential to inform similar institutions.

1.8 Limitations of the Study

The generalization of the results may be limited because this research is targeted at SPHMMC only, which may not apply perfectly in other hospitals with different workflow patterns, staffing levels, or EHR systems. Moreover, some external factors would surely affect the results and may be because of a shortage of personnel or variable workload without any relation to EHR. Another limitation is that this study measures the short-term effect of EHR implementation and may not be indicative of long-term workload dynamics.

Other studies can improve these limitations by including more hospitals in a number of regions in Ethiopia, therefore providing diverse samples for generalizing results. Longitudinal data collection may show both the short- and long-term effects caused by the introduction of EHRs on workload for pharmacy professionals. Other variables that could be added to this present

research in order to control for external factors may involve the level of staffing and fluctuation in workload to better isolate the effects of EHR.

1.9 Operational definitions

Electronic Health Record (EHR): An electronic record that contains real-time, patient-centered information that is both secure and instantly available to authorized users.

Perceived Workload: The amount of work the pharmacy professionals perceive they have which is influenced by a vast array of factors, with EHR implementation being just one of them.

Dependent Variable (DV): Variable that will be influenced by the independent variables. In this context, it refers to the perceived workload of pharmacy professionals.

Independent Variable (IV): Variables that potentially influence the dependent variable. In this context, such as training, self-efficacy, system quality, information quality and technical support system.

1.10 Organization of the Study

The study will consist of the subsequent sections: Chapter one will have a comprehensive introduction to the research, covering the study's background, statement of the problem, general and specific objectives, research questions, significance of the study, scope, and organization of the research. Chapter two will provide a review of the literatures, which will contain both theoretical and empirical reviews, as well as a conceptual framework for the study. Chapter three will cover the research methodology, which integrates the research design, sample size, data sources, data collection method, and data analysis. Chapter four will present the study's findings by summarizing, interpreting the data, and discussing the results. Chapter five will include a summary, conclusion, and recommendations.

2. REVIEW OF RELATED LITERATURES

2.1 Theoretical Review

2.1.1 Electronic Health Record (EHR)

An EHR is an electronic system used and maintained by healthcare systems to collect and store patients' medical information. EHRs are used across clinical care and healthcare administration to capture a variety of medical information from individual patients over time, as well as to manage clinical workflows. EHRs contain different types of patient-level variables, such as demographics, diagnoses, problem lists, medications, vital signs, and laboratory data. According to the National Academies of Medicine, an EHR has multiple core functionalities, including the capture of health information, orders and results management, clinical decision support, health information exchange, electronic communication, patient support, administrative processes, and population health reporting (Aspden et al., 2004).

Hoerbst and Ammenwerth defined EHRs as digital versions of patients' paper charts; they are designed and developed to be shared among multiple healthcare settings. They facilitate sharing and managing health information to be fast, accessible, and up-to-date among many various stakeholders easily (Hoerbst & Ammenwerth, 2010).

In his paper of "Electronic Health Records: Then, Now, and in the Future," Evan described EHRs as a digital record store for patient health information meant to take the place of patients' paper records of the old type, supporting both clinical use and care processes. His paper is going to be used to trace the historical development of electronic health records. Evans pays attention to the role of EHRs in enhancing healthcare delivery by facilitating increased access to patient data, workflow improvement, and evidence-based medicine (Evans, 2016).

EHR is a digital system that cover storing and managing the health information about patients in many health setups. Kohli and Tan look at how EHRs have changed the ways of taking steps toward improving clinical workflows, obtaining better patient outcomes, and facilitating data-driven decision-making (Kohli & Tan, 2016). It also includes its strategic importance regarding healthcare reform and the operational advantages that it brings to enhance efficiency and reduce costs. Further, it talks about the challenges and complexities that come with EHR

implementation, such as data interoperability, data security, and user resistance. Kohli and Tan write that the ongoing evolution of EHRs is toward future critical linkage for innovation and healthcare policy making.

The paper by Häyrinen, Saranto, and Nykänen provides a comprehensive view of the research literature on EHR, defining its structure, content, usage, and effect. EHRs are defined as digitally stored health information about people that is accessible in different care settings and replaces paper records. For example, EHRs usually contain patient demographics, medical history, lists of medications, and results of diagnostic tests. Moreover, they enumerate the diverse areas where the application of EHRs could lead to added clinical decision-making, improving coordination of care for the patient, apart from supporting health management and research. In this review, the role of EHRs in the achievement of health quality and efficiency within the health system is further emphasized through data standardization, interoperability, and privacy. The general underpinning of this paper focuses on the roles electronic health records play in the context of modernized healthcare and further advancements in clinical practice (Häyrinen et al., 2008).

2.1.2 Advantages Of EHR

2.1.2.1 Improved Access and Sharing of Medical Information

Gurley and Rose state that EHRs enable a healthcare provider to access a patient's data in real time, resulting in better continuity and coordination of care. This accessibility results in, better decision-making, reducing redundant testing and ensuring that all relevant medical information is available to those with authorization thus supporting more efficient and effective patient care (Gurley & Rose, 2004).

With EHRs, Hoerbst and Ammenwerth confirm the existence of better access to and sharing of medical information. By all means, EHRs hold a guarantee for complete and timely patient data availability at all times across different healthcare settings, either within settings or across others, thus enabling improved communication and coordination among healthcare providers. This means an improved quality of care with greater efficiency and less duplication of tests and procedures (Hoerbst & Ammenwerth, 2010).

2.1.2.2 Improved Patient Results and Safety

Menachemi and Collum claim that EHRs lead to better patient results and safety. EHRs furnish and thus improve clinical decisions by comprehensively and most recently tracking patients' information, enhancing more accurate diagnoses and effective treatment options. They also help identify and reduce medical errors by using features such as automated alerts and reminders. With the streamlining of access to patient data and the support for evidence-based practice, EHRs ensure better overall safety for the patient and general health care (Menachemi & Collum, 2011).

The EHR delivers comprehensive, accurate, and timely patient information, which supports better clinical decisions and reduces medical errors. It also enable efficient monitoring and management of patient health, leading to enhanced continuity of care. The review underscores the importance of standardized EHR systems to maximize these benefits, ultimately contributing to safer and more effective patient care (Häyrinen et al., 2008).

2.1.2.3 Improved Clinical Decision-Making

Devkota and Devkota point out that Electronic Health Records improve clinical decision-making dramatically. EHRs allow doctors immediate access to relevant, up-to-date, and accurate patient information, enabling the physician to make timely and informed medical decisions. Above all, the use of decision support tools within the EHR further guides the physicians with evidence-based recommendations and alerting features to enhance diagnostic acumen and accuracy of treatment (Devkota & Devkota, 2013).

2.1.2.4 Improved Accuracy and Completeness

Electronic Health Records (EHRs) improve the accuracy and completeness of patient information. EHRs lower transcription errors, make records legible and promote thorough documentation of information regarding patients. This increased accuracy and completeness further support improved clinical decision-making, reduce the risk of medical errors, and enhance the quality of patient care (Gurley & Rose, 2004).

Richards, Prybutok, and Ryan describe the effect of EHRs on improving the accuracy and completeness of data about a patient, hence resulting in a competitive advantage to healthcare

organizations. Accurate and complete data are documented precisely with EHRs compared to manual records, leading to reduced errors and improved integrity. This results in better clinical outcomes, operational efficiency, and patient safety (Richards et al., 2012).

2.1.2.5 Operational Efficiency

Ray's paper on the pros and cons of EHRs points out that EHRs contribute to a tremendous amount of improved operational efficiency within the health care setting. EHR reduce the administrative load within the healthcare setting, cut down on paperwork, and as a result, increases the speed and accuracy during retrieving information. Such efficiency results in reduced waiting time for the patient, better allocation of resources, and hence generally improved workflow at the healthcare facilities (Ray).

According to Kohli and Tan, EHRs have allowed for better administrative processes and more accurate data with proper communication between healthcare providers. Such efficiencies help in bringing down duplications associated with record keeping and billing, thus cutting costs and resource use. EHRs can also provide timely access to patient data in the interests of fast decision-making and general support to improve workflow efficiency(Kohli & Tan, 2016).

2.1.2.6 Support for Research and Public Health

Electronic health records data can provide sources of real-world data for robust epidemiological studies, disease monitoring, and outcomes of treatment. Data from various populations and diverse settings in health care can be pooled to support longitudinal research with detailed patient histories and continued follow-up. Comprehensive data support better clinical research, public health surveillance, and policy enhancement (Devkota & Devkota, 2013).

2.1.3 Disadvantages Of EHR

2.1.3.1 High Implementation and Maintenance Costs

Gurley and Rose highlight high implementation and maintenance costs as a significant drawback of EHRs. The two costs include hardware and software initial purchase costs, installation costs, the cost of system upgrading, technical support, and maintenance. In addition to these, it has been observed that healthcare organizations often incur a significant cost for training the

employees so that they can use the systems effectively. In this context, these costs might become highly unreasonable and burdensome for small practices and those practices operating under tight budgets to prevent the extensive acceptance of EMRs even though they offer several utilities (Gurley & Rose, 2004).

In the case of EHR systems, huge costs have to be borne initially for its implementation regarding hardware, software, and infrastructure. Aside from these, healthcare organizations should budget for system customization, data migration, and the interfacing of systems with legacy systems. Ongoing expenses cater to maintenance, software updates, and technical support. This may also involve training expenses for the staff in preparation to use the new system effectively (Menachemi & Collum, 2011).

As Devkota and Devkota further point out, high implementation and maintenance costs are some of the barriers to the adoption of EHRs (Devkota & Devkota, 2013). The upfront costs include the purchase of hardware and software, the setting up of IT infrastructure, and the customization of the system by the particular organizational needs of the healthcare organization. Other financial burdens include regular maintenance, software upgrades, and technical support. Training staff on using the new system effectively is also an added expense.

2.1.3.2 Privacy and Security Concerns

Security and privacy concerns are considered major disadvantages of Electronic Health Record (EHR) systems. The data accessibility features of the EHR, while increasing, also increase the risk of unauthorized access and information breach. The patient's sensitive information should be well-guarded using enhanced security provisions for encryption, access control features, and security audits at regular intervals. This paper highlights some challenges in ensuring compliance with privacy regulations like HIPAA, which make heavy investments in cybersecurity infrastructure and ongoing monitoring essential. Further, healthcare providers must balance the need for sharing data with the imperative of protecting patient confidentiality, making security and privacy a critical aspect of EHR management (Menachemi & Collum, 2011).

Universal EMRs can thus increase the efficiency of health care and patient outcomes. However, they come with the risks associated with a significant threat to sensitive patient information protection (McClenny, 2023). Universal access means increased unauthorized access, data

breaches, and cyberattack risks. Strict security measures like encryption, multi-factor authentication, and continuous monitoring are some of the essential practices in mitigating them. Moreover, strict adherence to privacy rules and the confidentiality of the patients are severe challenges that medical practitioners must overcome in striking a balance between the advantages of universal EMRs and the need to safeguard patient information.

2.1.3.3 User Resistance and Reduced Contact Time

The substitution of EMRs for paper records is also widely resented by the medical professionals that are habitual to old means of record keeping and find these information systems unwieldy and more time-consuming. This may contribute to resistance, which is also a development that may be further provoked by the fact that much learning is involved in taking on EMRs and, consequently, associated with frustrations and losses in productivity. Second, the use of EMRs implies data entry, which may erode the time healthcare providers spend with their patients, affecting the quality of patient-provider interaction and, thus, the quality of care. This change of focus of attention, from the patient's face to the data entry screen, is a significant challenge that must also be overcome if the implementation of EMRs is to proceed seamlessly (Gurley & Rose, 2004).

Indeed, according to Menachemi and Collum, the tendency on the part of healthcare providers is to resist the implementation of EHRs since the new technology is often perceived as challenging to master (Menachemi & Collum, 2011). This can cause negative implications for the implementation and use of EHRs. What is more, the data entry needs of the EHR can take much time that might have been used to spend with patients and, in the process, reduce the quality of patient interaction and care. The paper underlines that these challenges need to be addressed through appropriate training and support so that the EHR systems facilitate patient care rather than impede it.

2.1.3.4 Increased Workload and Decreased Productivity

Gregory, Russo, and Singh explore the effect of electronic health record (EHR) alert-induced workload on burnout among primary care providers. The study indicates an increase in workload because of the alerts, which are generated at high frequencies. The continuous need to respond to these alerts, sometimes annoying and time-consuming, relates to the alert rate. This additional

workload often reduces work output in that providers use more time manipulating these alerts and less time on direct patient care and other clinical activities (Gregory et al., 2017).

Mcclenny asserts that the implementation of standardized EMRs often puts pressure on the time of a health provider to be used in feeding and manipulating patient data, which is usually burdensome and time inefficient. This increased administrative burden detracts from time that could be spent on direct patient care, thus decreasing overall productivity. On the other hand, the paper highlights the fact that. In contrast, universal EMRs are expected to make health processes more accessible, they tend to increase the work of the providers instead and possibly lower the quality of care and satisfaction of the providers (McClenny, 2023).

From the results of the study, the impact that the Electronic Medication Management System (EMMS) had on working pharmacists at a pediatric hospital", it is evident that the introduction of the EMMS tended to increase the work burden among the pharmacists. This system introduced enormous demands for data entry, medication order processing, and the handling of system alerts that took up a considerable portion of their day in regular work life. This increased the workload of the pharmacists, while their productivity decreased, as less time was spent on clinical activities and direct care. The paper spots the need for system design improvements and workflow integration to alleviate such problems and make the work of pharmacists more productive (Baysari et al., 2019).

2.1.4 Factors that affect the success of EHR system

2.1.4.1 Training

'Training is an organized activity aimed at imparting information and/or instructions to improve the recipient's performance or to help him or her attain a required level of knowledge or skill' (Yu et al., 2009).

The paper by Yaghmaie and Jayasuriya focuses on the factors that affect the utilization of computer systems in the community health centers with regards to computer training and management support. This study also shows that aspects such as the perceived relevance and adequacy of the training received do affect the user's comfort and effectiveness with computer systems. There is a stress on the fact that effective, general and focused on the needs of users

training is necessary to improve the level of computer literacy among the health centers' staff. In addition, the study indicates that support from management by encouraging, understanding and providing constant help strengthens the advantages of training and the utilization of computer systems within healthcare facilities (Yaghmaie & Jayasuriya, 2004).

Another similar study 'Training Medical Practice Staff on New Technology' which focuses on the effects of computer training to the staff of medical practices particularly in relation to EHR. The study recommends that training interventions needs to be targeted to the needs of the jobs and also underscores the importance of ongoing support. The identified strategies includes assessing the staff's starting level of computer literacy by using survey questionnaires to determine the need for training, and assign "super users" as internal specialists, as well as offer constant, position-based training. It also stresses the need to use not only the classical training in the classrooms but also the individual support during the first time when the new technology is being introduced as well as the constant online training to maintain the staff's interest and their ability to work with the new tool effectively (Colwell, 2015, July/August).

2.1.4.2 Self-efficacy

Self-efficacy is conceptualized as one's belief in his or her own capacity to use an EHR system, in analogy with the well-established definition of computer self-efficacy (Compeau & Higgins, 1995).

The paper by Venkatesh et al offers an elaborate framework that integrates all the existing theoretical models of technology acceptance. Self-efficacy being one of the many factors, the study points out that this factor is a key factor that determines user acceptance and usage behavior. Perceived self-efficacy defined as a person's belief in his or her ability to use IT, has significant influence on the perceived ease of use and perceived usefulness of the technology. According to the model, self-efficacy acts to boost the confidence in performing IT tasks, thus increasing the probability of technology acceptance and continued use. These results emphasize the need to adress self-efficacy in contexts related to IT training in order to enhance the acceptance and use of innovations among users (Venkatesh et al., 2003).

Another study focuses on the self–efficacy factor in the acceptance and use of information technology; it uses the Technology Acceptance Model (TAM) as a framework. This research

confirms that self-efficacy has a positive correlation with perceived ease of use and perceived usefulness of IT systems with impact on users' behavioral intention to use the technology. Self-efficacy has a direct positive influence on users' confidence and skills in applying Information Technology thus improving its acceptance and use. The results of the study imply that to enhance the use of IT among the users, training programs that enhance self-efficacy should be conducted (Agourram et al., 2019).

2.1.4.3 System quality

System quality is a system's total effectiveness from the standpoint of users (DeLone & McLean, 2003). In the paper, system quality is among the key variables used in the evaluation of information systems. In this sense, system quality can be viewed in many perspectives. The first one is its reliability; this is the ability of the system to perform its functions consistently and accurately to its expected extent without failure. A dependable system minimizes downtime thus making the users confident in the system (Petter et al., 2008).

Another attribute of system quality is usability which captures the ease with which the users can engage the system. The level of ease of use means that the system is not difficult to learn especially for the new users, does not take so much time in performing the various tasks, and is generally satisfactory to the users (DeLone & McLean, 2003).

Other facets of system quality include integration capabilities that has to do with the system's ability to exchange data with other systems in the organization or with third parties. They also enhance data sharing since it prevents the development of data silos, enhances the quality of data and fosters cross-functional working across different departments or entities (Petter et al., 2008).

According to DeLone and McLean, these components of system quality as the main factors that define the success of an information system. A good and effective system improves the users' satisfaction, organizational efficiency, provides better decisions due to accurate and timely data, and helps to achieve the organizational goals and objectives. Hence, it could be concluded that enhancing the quality of the systems is absolutely essential for long run success and making the most out of the IS in organizations (DeLone & McLean, 2003).

2.1.4.4 Information quality

Information quality is the looked for characteristics of the system output, like outcome reports. Thus, to evaluate the success of information systems (IS), the paper of Petter, DeLone, and McLean is the most appropriate as it offers a detailed framework for this purpose. In this area, the authors speculate on information quality as a key dimension that defines the overall IS success. Information quality is defined by attributes such as accuracy, completeness, relevance and timeliness of the information. Effective information helps in decision-making, user satisfaction, and the use of systems. In line with this, the paper also stresses the importance of information quality where it was established that users' satisfaction and net benefits depend on it, which requires that organizations ensure that the information disseminated through their IS is accurate, complete, relevant, and timely to meet set objectives. Ways that have been provided by the authors in the above sections of this paper provide the interconnection between these dimensions of IS success to show that betterment of information quality can extend to overall IS success (Petter et al., 2008).

The paper by Hartman et al, investigates the relationship between quality management, IS usage and organizational performance in healthcare and non-healthcare organizations. Concentrating on the information quality, the study points out that the decision making and operational efficiency require quality information systems. The paper discovers that there is a positive relationship between quality management practices and high-quality information systems and organizational performance. This implies improved patient care, better clinical results and efficiency in management of resources in the healthcare institutions. According to the study, information quality is a key factor in the use of information systems in organizations, and it determines the reliability and relevance of data used in organizational activities. This clearly shows why it is critical for healthcare organizations to engage in quality improvement programs from time to time to ensure that the quality of the information systems being used in organizations is enhanced (Hartman et al., 2002).

2.1.4.5 Technical support system

According to Petter et al, Technical support system quality is a measure of the quality of support given by the IS department or service provider seen from the users' perspective. This dimension

comprises elements like; responsiveness, reliability, empathy, and assurance. A high quality technical support system makes sure that users are favored with immediate and efficient help, which in turn keeps the users satisfied and will help them to use the system frequently. The authors also draw attention to the fact that the quality of technical support system is an important factor that determines the level of IS success because it is associated with the levels of user satisfaction and the perceived net benefits of the system. It is the argument of the study that improving the quality of the technical support system can increase the levels of IS success thus the call for organizations to embrace quality support services for their information systems (Petter et al., 2008).

2.1.5 Workload of Pharmacy Professionals

The research work by Shao et al. (Shao et al., 2020) studies the impact that workload imposes on the performance of pharmacy services. They conducted a retrospective cohort study with data from Taiwan, looking at the relationship between a pharmacist's workload and their adequate provision of pharmacy services. The factors making up the workload were the number of prescriptions being processed per pharmacist and the frequency of medication counseling delivered by the pharmacist. This all implies that workload is significantly and positively associated with reducing performance within pharmacy services, which is evidently shown by an increase in dispensing errors and a reduction in medication adherence counseling. This therefore means that management of workload is critical in pharmacy services to protect quality and safety, whereby strategies need to be sought out to intensify such requirements for the patient care outcomes to be optimized (Shao et al., 2020).

A paper authored by Lea et al reviewed some of the studies on the consequences of workload for community pharmacists concerning job satisfaction and stress. The review showed that several studies across the board concluded that high workloads are instrumental in significantly affecting pharmacists' job satisfaction, hence affecting the satisfaction derived from the job, generally. Sources of these high workloads were identified through dispensing volumes, prescription complexities, administrative tasks, and patient interactions. Overworked pharmacists experience burnout and fatigue, while the quality of patient safety and care is affected. This paper, therefore, underlines the importance of sorting out workload issues through organizational support,

technological developments, and workload management strategies to reduce stress and improve job satisfaction among community pharmacists (Lea et al., 2012).

Eden et al. use an exploratory study to assess the impact of workload pressure on newly qualified pharmacists' intention to leave the profession (Eden et al., 2009). The findings confirm that a high workload, particularly from dispensing volumes and time pressures, significantly affects the decisions of pharmacists to leave their careers possibly. Contributing factors to the pressure of work are staffing levels, increased demand for services, and administrative burdens. Pharmacists subjected to such an intense workload would experience more stress and job dissatisfaction, potentially leading to burnout or resulting in their seeking other career paths away from the pharmacy profession. The quality of patient care is reliant on these interventions, which are directed at managing the workload, increasing job satisfaction, and retaining pharmacists within their respective professions (Eden et al., 2009).

Among the increased prescription numbers, extended healthcare roles, and regulatory requirements, Gidman identifies the triggers for increased workload (Gidman, 2011). All combined, these factors increase time pressures and stress levels among pharmacists, thus reducing their capacity to render quality service and maintain patient safety. The outcome of the overwork effects reduced job satisfaction, burnout, and dispensing errors in medication. Gidman states that there is an urgent need to develop strategies toward reducing the workload of pharmacists, such as suitable workloads, effective workflow, and fostering supportive working conditions if the negative consequences are to be outweighed by the positive effects on both the health of the pharmacists and patient outcomes (Gidman, 2011).

Shao et al. went further to investigate the association between pharmacist workload and the quality of pharmacy services in Taiwan. A retrospective cohort study design was applied to workload-based indicators, including the number of prescriptions filled per pharmacist and medication counseling rate. The findings suggested that higher workloads, particularly those related to dispensing volume and patient interaction demands, were associated with performance in pharmacy services. More pharmacists with heavy workloads are likely to result in a greater rate of dispensing errors and an increased chance that those pharmacists will not make time for counseling the patient on medications—both of which contribute to reduced patient safety and adherence. This study further supports the critical effect of managing workloads on pharmacy

services' effectiveness and, by extension, expounds upon strategies aimed at optimum workload distribution with pharmacist support in delivering quality care under increasing demand (Shao et al., 2020).

Gupta et al. carried out an analysis aimed at exploring aspects relating to the staffing, working environment and productivity of the pharmacists working in community hospitals. The workload and work pressure of pharmacy professionals are discussed as influenced by these factors in the paper (Gupta et al., 2006). They assess staffing density in terms of prescription turnover and other figures associated with the pharmacy to come up with ratios that maintain proper staffing levels in the pharmacy in relation to the workload. This study has shown that undermining negatively affects staffing pressures on pharmacists and may adversely affect the delivery of effective and efficient medication administration services. The research points out the significance of implementing staff float plans to estimate changes of workload on the staffing levels of community hospital pharmacies to reduce stress in pharmacy staff and enhance the proper execution of treatment management responsibilities relating to patients' medication (Gupta et al., 2006).

The study by Chui, Bond, and Keon is based on survey data for community pharmacists located in the United States, and hence, dimensions like time pressure, cognitive demands, and emotional stressors are considered. They discovered that higher perceived workload, especially for time pressure and cognitive demand, is related to lower care quality and poor work life among pharmacists. Pharmacists experiencing heavier workloads report more significant stress and burnout, are less job-satisfied, and have reduced job satisfaction potential, lowering patient safety and service quality. The researchers provide an essential need for solutions in successful workload management, pharmacist care, and improving general pharmacy practice results (Chui et al., 2014).

Kinney et al. provide a paper on the Pharmacy Dashboard – using Workforce Intelligence Systems and Technologies as a strategy to address pharmacy workload and productivity in a hospital setting. The Pharmacy Dashboard, a feature of the disposed solution, incorporates different measures of workload, including prescriptions per hour, time taken to process medication orders, and pharmacists' action. The functionality of this instrument allows access and control the capacity load by the pharmacy staff and their working hours to improve the

pharmaceutical workflow. In this way the Pharmacy Dashboard is going to effectively assist pharmacists manage workload in a better way by offering them suggestions regarding workload to be discharged, due to which the work pressure of pharmacists is expected to decrease. This study will point to the fact that in order to enhance the workload capacity of the pharmacy, enhance the performance of the pharmacy and consequently the patients' care results in a hospital, pharmacy personnel should be provided with technology to assist them in managing the workload (Kinney et al., 2017).

2.1.6 Pharmacists and EHR

Generally, the EHR system supported pharmacists to maintain accurate patients' medication lists (Andrus, 2012). Health information technology provided a chance for pharmacists to become involved indispensable members in patients' care (Anderegg & Gumpper, 2012). EHR system supported pharmacists to have better productivity measures and enhanced medication safety by reducing prescribing errors to avoid harming patients (Horning, 2011). In the beginning, pharmacists were resistant to change, but they realize there is no way to avoid using or implementing the system instead, they started to learn other ways in the system (Chalmers et al., 2018).

Horning found that most pharmacists reported comfortable and confident of using the EHR system after six months of initiating implementing the system, especially pharmacists stop entering the physicians order manually from hand-writing prescriptions (Horning, 2011). From the perspective of pharmacologists, there is an improvement in the process of recording the adverse events of medications, which supported them to improve their recording habits(de Hoon et al., 2017). The percentage of clarification, incorrect doses from pharmacists after implementing the EHR system was lower (Singer & Duarte Fernandez, 2015).

In a study conducted by Pedersen, Schneider, and Scheckelhoff (2016), after implementing the EHR system, the percentage of reviewed ordered medications increased before patients take their medications. Thus, there was a dramatic decline in the rate of unreviewed medications order (Pedersen et al., 2016). Also, the availability to analyze data and design progress note format was higher after implementing an EHR system, quicker access to patients' information, and improved

the quality of care (Jawhari et al., 2016). And it opens the door for evaluating the performance at hospitals and accurate statistical reporting (O'SULLIVAN et al., 2011)`.

Moreover, pharmacists supported the use of the system as a factor of reducing medical errors, which enhance a required patients' safety and deliver high quality of care (Shahmoradi et al., 2017) . Also, (Akhu-Zaheya et al., 2018), describe the use of the EHR as a better system than the paper used in term of quality, quantity, and structure. Furthermore, (Hawley et al., 2017) supported the use of the system as it improves and enhances the higher level of coordination and integration among healthcare professionals. Johnson and Brownlee explained in their study that EHR allows providing comprehensive pharmacists services to their patients (Johnson & Brownlee, 2018).

Nonetheless, (Andrus, 2012) found that pharmacists reported as disadvantages of the EHR system it does not discontinue the completed course medications, nor capture over-the-counter medications, which means the medication list is not updated. Thus, the medications list accuracy is not continually verified, which is directly affecting the medication reconciliation practice in hospitals. Moreover, according to(Horning, 2011), pharmacists supported reducing the overload medication errors, which may be caused by the EHR system by stopping allowing more than one patient's information at a time on the computer screen by healthcare professionals.

2.2 Empirical Review

2.2.1 The Effect of EHR on The Workload Of Health Professionals

The study conducted by Bae and Encinosa is about the effect of EHRs on primary care physician workload. There was a significant shift in physicians' workloads because the national data told volumes about the adoption of EHRs. Although EHRs are designed to support improving operations and efficiency in patient care, the study revealed that this often increased time demands placed on physicians for documentation and order entry tasks. This increase in workload is attributed to the extra time spent on inputting data into EHR systems compared to traditional paper records, indicating that while EHRs appear to have potential benefits, they also come with challenges, the resolution of which is necessary to optimize their utility in primary care settings (Bae & Encinosa, 2016).

The purpose of the study by Gregory, Russo, and Singh was to investigate electronic health record (EHR) alert-related workload and its contribution to burnout for primary care providers. The study indicates that when there are high levels of overwhelming EHR alerts, then the burden among primary care providers is high, leading to increased stress and burnout in general. The authors are reported to indicate that the cognitive load caused by the attention saturation of handling various alerts, for instance, notifications and reminders, was deemed to be negative on workflow. One would argue that there needs to be an improvement in the design and management of EHR alert systems to reduce workload and limit burnout among providers (Gregory et al., 2017).

One study demonstrates that the workload increases markedly in the initial stages when familiarizing the new EHR. With time, it is seen that there is a gradual improvement in usability where both the providers and the nursing staff come to perceive it; these slowly reduce workload. This was a positive aspect, although the study found that the first period following transition is associated with significant increases in the workload, necessitating proper training and support strategies to counteract such transitional growing pains (Lopez et al., 2021).

Research has also shown that frequent interruptions during the use of EHRs by nurses significantly increase their mental workloads, elevating them with potential stresses and decreases their job performance, and job satisfaction. These interruptions are mainly driven by the demands of multitasking and the constant alert notifications, which disturb the cognitive process necessary for using EHR with an economy of action. This research, therefore, highlights the call for strategies to reduce work interruptions to ease the mental burden of nurses and improve EHR task efficiency and job satisfaction (Shan et al., 2023).

A study by Carayon et al. indicates that the EHR system may improve the ability to access patient information and clinical decision-making but certainly brings about significant challenges and increases the physicians' workload in the ICU. There are major problems: how difficult it is to input data, the requirements of time, and the navigating process besides dealing with inefficiencies and interruptions because of the systems. These factors introduce an increasing cognitive load and workflow disruptions, which highlight that although EHRs have potential benefits, the current design and implementation of these systems may adversely affect the workload of physicians in the ICU setting (Carayon et al., 2015).

A study by Ahmed et al., investigates how different electronic health record user interfaces influence task load, cognitive errors, and performance of intensive care providers. Comparing two different EHR interfaces, the study concludes that a well-designed and usable interface leads to improvements in provider workload. Poorly designed ones increase task load, cognitive errors, and overall performance reduction. The latter, whereby a user-friendly interface will lead to reduced task load and cognitive error, makes providers efficient and effective. The results of this study validate the proposition that EHR interface design has salient importance for the management of workloads in an ICU environment (Ahmed et al., 2011).

In their research paper, Webb et al. (2023) studied the use of the electronic health record (EHR) embedded Modified Risk Calculation-ICU (MRC-ICU) as a measure to evaluate critical care pharmacists' workload. From this, the study concludes that including the MRC-ICU metric within the EHR system provides a feasible and effective process to quantify and monitor the work of pharmacists within an ICU environment. These results will, therefore, estimate reasonably the complexity and intensity of the tasks among pharmacists to provide a better management of workload and resourcing (Webb et al., 2023).

What is more essential to indicate is that real-time workload assessment made possible through the EHR-embedded MRC-ICU metric identifies periods of high demand and, hence, potential areas of bottleneck. Such a tool would result in more effective scheduling and staffing decisions since it provides actionable data, thereby increasing the general effectiveness and efficiency of critical care pharmacy services. The importance of the incorporation of advanced metrics in an EHR system to support workload management and improvement in healthcare delivery in intensive care units is highlighted by the study (Webb et al., 2023).

According to Mohammed, Mehrez, and Aladel, while EHRs come with various benefits for instance, increased access to patient information and coordination of care they also dramatically affect the work demands placed on professionals. This increased workload is primarily due to the time-consuming nature of data entry, the need for interface interaction, and added cognitive demands attributed to electronic documentation management. The study concludes that despite the benefits that EHRs potentially contribute, they frequently translate into more significant time pressures and increasing workload challenges for providers (Mohammed et al., 2021).

This can also be easily understood in a study conducted by Baysari et al., which was on an electronic medication management system (EMMS) introduced in one of the pediatric hospitals about its impact on work when the concerned pharmacists were under study. The EMMS has changed the pharmacists' workflow to a much greater extent and put in an added workload. This increased the cognitive burden because the ease and intuition on working with the interface for EMMS is quite complex. The system had great potential in improving medication safety and accuracy; through this study, though, it was found at the expense of workload increase and the need for pharmacists to change substantially (Baysari et al., 2019).

In one study by Kossman, discussing nurses' perception of the impact of EHR on their work, it is seen that they recognized certain benefits from using an EHR, such as better access to patient data and improved communication. At the same time, subjects in this study reported a significant workload attributed to extra time spent on data entry and navigating through the EHR system, resulting in overtime hours and an increased cognitive workload. Nurses also add that their work process is interrupted, and time invested in the direct care of patients is probably reduced. Overall, in the end, the study, therefore, results in a mixed impact of EHRs, eliciting the need for the design of systems to be better and, along with training, to be applied to avoid excessive workload on nurses (Kossman, 2006).

2.2.2 Gap analysis

Although much research has been conducted on the general benefits and challenges of EHRs in health facilities, little attention has been paid to how such systems affect the workload of pharmacy professionals, particularly in developing countries like Ethiopia. Most prior research has focused on the impacts of EHR on physicians and nurses. Less attention has been paid to pharmacists, who encounter special challenges in their respective fields such as medication order processing, inventory management, and patient counseling. Furthermore, little research has examined whether short-term versus long-term implementation of EHR differently affects workload. With the full implementation of SPHMMC at the end of 2023, no comprehensive studies have been conducted regarding SPHMMC to understand the influence EHR has on the perceived workload of pharmacy professionals. This study attempts to fill that gap by presenting a quantification of the impact of the EHR on the workload of pharmacy professionals based on system quality, training, information quality, and technical support. This therefore means that the

study will bring into great light, for future policy and implementation strategies in Ethiopia, an understanding of the role EHR could play in pharmacy operations.

2.3 Conceptual Framework

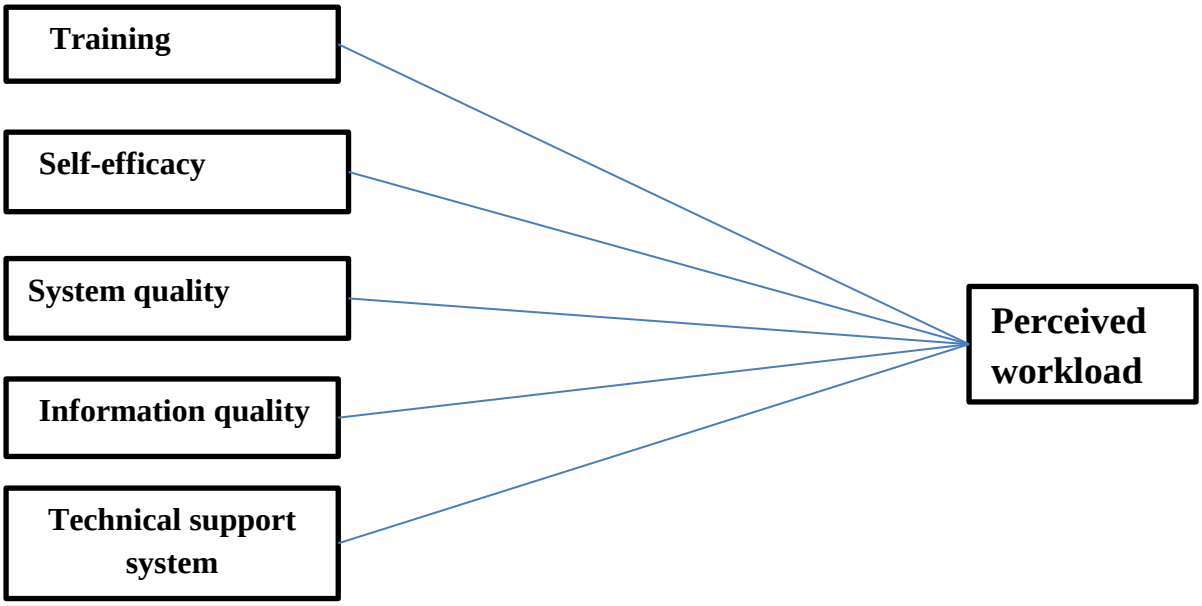


Figure 2.1: A conceptual framework (Yu & Qian, 2018) and (Reid & Nygren, 1988)

The conceptual framework of this study explores the relationship between the dependent variable, perceived workload, and five independent variables: EHR training, self-efficacy, system quality, information quality, and technical support. Each independent variable plays a distinct role in influencing how pharmacy professionals perceive their workload after the implementation of the EHR system.

Training: Training is the organized activity aimed at imparting information and/or instructions to improve the recipient's performance or to help him or her attain a required level of knowledge or skill (Yu et al., 2009). Yaghmaie and Jayasuriya suggest that health staff with better computer training have more positive attitudes toward computers, less computer anxiety and more awareness of others' expectations about computer use than untrained staff (Yaghmaie & Jayasuriya, 2004).

Self-efficacy: Self-efficacy is conceptualized as one's belief in his or her own capacity to use an EHR system, in analogy with the well-established definition of computer self-efficacy (Compeau & Higgins, 1995).

System quality: System quality is a system's overall performance, as perceived by users (DeLone & McLean, 2003).

Information quality: Information quality is the desirable characteristics of the system output, such as outcome reports (Petter et al., 2008).

Technical support system: According to Petter et al., service quality refers to the quality of the support that system-users receive from the IS department and support personnel (Petter et al., 2008).

Perceived Workload: The amount of work the pharmacy professionals perceive they have which is influenced by a vast array of factors, with EHR implementation being just one of them.

3 RESEARCH METHDOLOGY

This unit focuses on the methodology used in the study, which includes the methods of the research, source of the data, sampling technique, data gathering instruments, procedure of data collection, and method of data analysis.

3.1. Research Design

In the case of research design, descriptive analysis and explanatory research design was used. Descriptive analysis was utilized to characterize the features of the data, generate insightful analysis, and draw conclusions. This study has also adopted an explanatory research design to explore the relationships that exist between the independent variable, screening EHR training, self-efficacy, system quality, information quality and technical support system and perceived workload as the dependent variable. The use of this design makes it possible to investigate how each one of these factors contributes to the work burden on the pharmacy professional at SPHMMC. In the explanatory approach, such variables are analyzed in a systematic manner through the application of quantitative methods, predominantly regression analysis, to establish the strength and direction of these associations.

3.2 Research Approach

Research approaches are plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. It is all about which approach is better used to study the topic at hand. Basically, there are three types of research approached namely Qualitative, Quantitative, and mixed approach.

For this research, a quantitative approach is used. It is an approach for testing objective theories by examining the relationship among variables. The final written report has a set structure consisting of introduction, literature and theory, methods, results, and discussion.

3.3. Target population

The target population is the specific, conceptually bounded group of potential participants to whom the researcher may have access that represents the nature of the population of interest (Casteel & Bridier, 2021).

This study employs a census method, targeting the entire population of pharmacy professionals at SPHMMC. By utilizing the census approach, the research aim to include every pharmacy professional who interacts with the EHR system, ensuring comprehensive and accurate data collection. This method eliminates sampling bias and provides a complete picture of the perceived workload across the entire population. Given the critical insights required for this study, a census method is particularly suitable as it allows for detailed analysis and robust conclusions, reflecting the experiences and perceptions of all relevant professionals within the organization.

3.4 Sources of the data

The data in this research was gathered from primary as well as secondary sources to have credible evidence as well as show the study relates to existing research. The primary data was prepared using a survey tool questionnaire which was distributed by the researcher where 64 pharmacy professionals were participated.

3.3.1 Tools

3.3.1.1. Questionnaire

The questionnaire was developed from the PLOS ONE EHR System Success Model Questionnaire (Yu & Qian, 2018) which incorporated most of the system characteristics by categorizing them into five groups (system quality, information quality, technical support quality, training and self-efficacy) and the Subjective Workload Assessment Technique (SWAT) which is a well-validated tool for measuring perceived workload across various dimensions, including time load, mental effort load and psychological stress load (Reid & Nygren, 1988).

The questionnaire contains three main sections with closed-ended questions. The first section of the questionnaire focuses on the respondents' general information. The second part is associated with the five critical variables for EHR success (system quality, information quality, technical support quality, training and self-efficacy). The last part of the questionnaire addressed the questions related to the perceived workload measurements of respondents.

The second and the third part of the questionnaire used the 7-point Likert scale, anchored between 1-‘strongly disagree’ to 7-‘strongly agree’. By using this particular scaling technique,

the research study was able to show that it was capable of analyzing the responses and quantifying them in order to identify trends and assess research ideas.

3.5 Data Analysis Method

The quantitative data collected from the questionnaire was analyzed by using regression analysis and statistical analysis by using SPSS version 24 to know the research questions and the impact of the independent variable on the dependent one.

Interpretation, rearrangement, ordering and manipulation of data into a form that is easily understood by the reader is known as descriptive analysis, and is the process of converting raw data into a form that can be easily analyzed. Thus, here, descriptive analysis was applied to analyze the data including the demographic and basic information and mean score of the EHR parameters and perceived workload. The analyzed data is presented in tabular, graphical and descriptive narrations.

This study employed an explanatory research design through which the associations of the independent variables, which were EHR training, self-efficacy, system quality, information quality, and technical support, were studied with respect to the dependent variable through regression analysis of perceived workload. Regression analysis permitted examination of significant predictors of workload by way of determining the strength and direction of each variable's influence. This study, by doing so, identified which variable set best explains the workload of pharmacy professionals at SPHMMC.

Proper organization of the data can really help in saving time and avoiding many mistakes. The questionnaires are recorded and then the data is coded which is the first step in the process hence data is put into some systematic form. In general data is summarized, edited, coded and tabulated and then analysis is made.

3.6 Model Specification

Multiple regression is a statistical technique that can be employed in order to study the relationship between a one dependent variable and two or more independent variables. The purpose of multiple regression analysis is to predict the value of the single dependent variable by using the independent variables whose values are known (Wagner et al., 2006). In this research, I

have tried to see the effect of EHR on perceived workload. The EHR components are Training, Self-efficacy, System quality, Information quality and Technical support system. As a result, the general model which contains all the variables to test the hypothesis of the research is as follows.

$$Y = a + b1x1 + b2x2 + \ldots + bnxn + \mu$$

Independent Variables	**Dependent Variable**
Training [Tr]	Perceived workload [PW]
Self-efficacy [SE]	
System quality [SQ]	
Information quality [IQ]	
Technical support system [TS]	

PW = a + b1 (Tr) + b2 (SE) + b3 (SQ) + b4 (IQ) + b5 (TS) + μ

a = Constant term μ = Error Term

3.7. Reliability

A measure's consistency is its reliability. A research instrument is deemed dependable if the results can be repeated with a similar methodology. Researchers typically utilize Cronbach's alpha (α) to test the internal consistency of the research tool employed in this study. Cronbach's alpha is a method used to assess the reliability of the measurement of the questionnaire's component parts and to show whether the adopted or developed questionnaire is appropriate for its intended usage (Taber, 2018).

As a general rule, the acceptable scale needs to be at least 0.70 and higher, according to Lee Cronbach. Typically, the Cronbach's alpha reliability coefficient falls between 0 and 1. The internal rate of return increases with the coefficient's proximity to 1.0. For this research, the overall value is 0.904 for all the mentioned variables therefore the data collected from the respondents confirms reliability and consistency test.

Table 3.1 Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
.904	25

Source: survey (2024) SPSS output

Table 3.2 Reliability test for each variable

Variable	Cronbach's Alpha	N of Items
Training	0.701	3
Self-efficacy	0.65	2
System quality	0.884	4
Information quality	0.845	4
Technical support system	0.752	3
Perceived workload	0.965	9

Source: survey (2024) SPSS output

3.8. Validity

When discussing validity, we refer to the extent to which a method or tool precisely measures what it is intended to measure. It refers to how well the scores from a measurement accurately represent the variable they are meant to depict. Validity refers to the extent to which a theory is precisely assessed in a quantitative study (Heale & Twycross, 2015). When research has high validity, it suggests that the findings accurately reflect the true characteristics and attributes of the physical world. The research questionnaire is crafted by drawing on previous studies and supported by related literature.

The choice of the validated questionnaire from PLOS ONE to measure the independent variables in this study is well thought out and justified. Despite its original application for the purpose of measuring ‘user satisfaction’ and ‘net benefit’ of EHR systems, the constructs that it measures: self-efficacy, training, system quality, information quality, and service (technical support) quality are all related to the factors that affect perceived workload. The validity and reliability that has been achieved for the questionnaire guarantees that the data collected will be accurate and

consistent. Moreover, the use of this comprehensive tool enables the identification of the specific interconnections between these independent variables and the workload of pharmacy professionals.

Including this questionnaire supplements the Subjective Workload Assessment Technique (SWAT) utilized in capturing the dependent variable; perceived workload. The integration of these two powerful methods allows for a comprehensive assessment of the effect of EHR on the perceived workload of pharmacy professionals. Using an already proven tool, the study does not compromise the methodological quality of the research, and resources and time are optimized. This is a common approach in academic research where the instruments that have been developed and validated for one construct are used for a related construct to ensure that the data collected is consistent and is also obtained in depth. The combination of the PLOS ONE EHR System Success Model Questionnaire and SWAT results in a thorough assessment of the complex effects of EHR implementation on workload, enhancing the validity and reliability of the study's conclusions.

3.9. Ethical considerations

The questionnaires that formed the data collection instruments to be completed by the respondents were handled with a lot of care to ensure their rights and privacy. A survey with the research questions was prepared and was distributed for the all pharmacy professionals that were available during data collection time. The subjects in the research study were given an option to either be part of the study or not, and they can be out at any time with no consequences.

To further enhance the comfort of the respondents, the objective of the study was stated. Their replies were excluded from personally identifiable data so that the data cannot be associated with other data.

4. DATA ANALYSIS PRESENTATION AND DISCUSSION

This chapter presents an analysis and discussion of the findings for the assessment of the effect of EHR on the perceived workload of pharmacy professionals in SPHMMC. The chapter provides the output from the data gathered through questionnaire as data presentation, analytic results, and discussion of findings. The variables that indicate characteristics of EHR and perceived workload are provided in the form of a frequency distribution table, mean, standard deviation, correlation, and regression analysis.

4.1 Response rate of respondents

Table 4.1: Respondents' response rate

Questionnaires Distributed	***Questionnaires Returned***	***Percentage***
64	61	95

Source: Own survey, 2024

As shown in table 4.1 above about response rate, 64 questionnaires were distributed to respondents and 61 were appropriately filled and returned with the rate of 95%. According to Cooper and Schindler, 50% response rate is adequate for analysis, while 60% is good and 70% and above is excellent response rate for analysis. Therefore, with this response rate, 61 (95%) is excellent to the next data analysis is undertaken (Cooper & Schindler, 2014).

4.2 Description Analysis

4.2.1 Background Information of the Respondents

The initial phase of the questionnaire provides general information that encompasses demographic characteristics, including age, gender, years of experience as a pharmacist, and the type of pharmacy setting. It was necessary to analyze and interpret the collected data to verify its reliability and validity.

Table 4.2 Age Category

Age group of the participants			
		Frequency	Percent
Valid	20-30 years	22	36.1
	31-40 years	32	52.5
	41-50 years	5	8.2
	50-60 years	2	3.3
	Total	61	100.0

Source; survey (2024) SPSS output

As shown in the table above, 36.1% (22) of participants were aged 20-30, 52.5% (32) were 31-40, 8.2% (5) were 41-50, and the remaining 3.3% (2) were 51-60. From this we can say that most of the employees who answered are in the 31 to 40 age range. This indicates that the company has young and energetic staff members who have the ability and potential to make greater contributions and remain with the company in the long term.

Table 4.3 Gender Category

Gender of a Participant			
		Frequency	Percent
Valid	Male	47	77.0
	Female	14	23.0
	Total	61	100.0

Source; survey (2024) SPSS output

As we can see from table 4.3, 23% (14) were female and 77% (47) of the respondents were male. The survey showed that there were more male respondents as compared to females.

Table 4.4 Year of Experience

Years of experience as a pharmacist			
		Frequency	Percent
Valid	1-5 years	25	41.0
	6-10 years	28	45.9
	More than 10 years	8	13.1
	Total	61	100.0

Source; survey (2024) SPSS output

Concerning the year of work experience, 41% (25) of the respondents have experience between 1 and 5 years. 45.9% (28) respondents' experience falls in between 6 to 10 years. The remaining percentage 13.1% (8) has more than 10 years working experience. From this we can conclude that the respondents can answer each of the items objectively indirectly no information gap.

Table 4.5 Type of pharmacy setting

Type of pharmacy setting			
		Frequency	Percent
Valid	Inpatient	42	68.9
	Outpatient	19	31.1
	Total	61	100.0

Source; survey (2024) SPSS output

Regarding the type of pharmacy setting, the respondents that are working in different outpatient pharmacies of the facility are 31.1% (19) and 68.9% (42) of the respondents are working in different inpatient pharmacies of the Hospital. . This could indicate a higher demand for pharmacy services within inpatient care, possibly due to the nature of patient needs and the complexity of medication management in hospitalized settings.

4.2.2 Descriptive Statistics of the Variables

This section reviews the descriptive analysis of the variables used in this study, i.e., the dependent variable (perceived workload) and the independent variables (training, self-efficacy, system quality, information quality, and system technical support) analyzed so far. Respondents were asked to rate their answers on a 7-point Likert-type scale ranging from 1 – "Strongly Disagree" to 7 – "Strongly Agree". The mean and standard deviation of the parameters of the EHR system received from the respondents will be examined as follows.

Table 4.6 Descriptive Statistics of the Variables

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Training	61	3.67	6.67	4.8798	.71241
Self_Efficacy	61	3.00	6.50	5.2213	.87333
System Quality	61	4.00	6.00	4.9549	.53133
Information Quality	61	4.00	6.50	4.9672	.59944
Technical Support System	61	3.00	6.33	4.7596	.74816
Perceived Workload	61	4.00	5.78	4.8379	.56166
Grand mean				**4.936783**	

Source; survey (2024) SPSS output

The use of percentiles and dividing scales into equal intervals is a common method in survey research and data analysis. This approach is often used to categorize continuous data into ordinal categories for easier interpretation and communication of results. From this when the mean scale is from 1.00 - 3.00, the level is Low, from 3.01 – 5.00, the level is medium and from 5.01 – 7.00, the level said to be High.

An overall grand mean for the variables in your study of 4.937 would suggest that on the scale most likely running from 1 to 7, the overall perception of the EHR system's impact on workload is moderately positive but not exceptionally strong. What does it mean?

Mild agreement: A grand mean near 5 from the 7-point Likert scale means that, overall, pharmacy professionals agree that the EHR system is somewhat effective but may still pose a challenge. Their responses indicate that they neither strongly agree nor strongly disagree with the statements in respect to factors such as training, system quality, information quality, and technical support.

Room for Improvement: The perception isn't negative, but neither is it at the highest level it could be, closer to 7. It would mean that there is much room for improvement in the EHR system, be it in further training of staff, in the better performance of the system itself, or in better technical support.

Balanced outlook: The mean shows that the perception of pharmacy professionals is balanced or neutral, which indicates that they do recognize the benefits accompanying the EHR system but at the same time face certain difficulties in exploiting its full potential due to certain ongoing issues or limitations.

With regards to standard deviation, when the value of the standard deviation is smaller, it is considered as good. Based on the above analysis, the mean score of EHR system parameters ranges from 4.76 – 5.22 showing that most of the respondent's answer is somewhat similar and concentrated around the mean. From this, the mean score of all EHR system parameters falls within the range of 4.76 – 4.97 having a medium agreement except self-efficacy with a High mean of 5.22.

Training had a mean score of 4. 88 (SD = 0. 71) this means that the respondent's opinion is moderate in the level of agreement. This implies that on a mean scale, pharmacy professionals had somewhat an agreeable perception that they had sufficient time to become more familiar with the EHR system, and that there was continuous accessibility to training and that the training was pertinent.

Self-efficacy received a mean of 5. 21 (SD = 0. 87) which indeed is a relatively high score, suggesting that the pharmacy professionals were confident and comfortable using the EHR system. For this reason, this high level of self-efficacy means that they have confidence in their ability to use the EHR system.

On system quality, the mean score obtained was 4.95 (SD = 0. 53), which suggested moderate satisfaction with the EHR system's ease of use, perceived usefulness, ease of learning, and information search effectiveness. This implies that although the system is tolerable, there could be areas for enhancement.

Regarding information quality, the mean score found was 4. 97 (SD = 0. 6), which indicated that the respondents have a moderate level of agreement to the statement that the information obtained from the EHR system are relevant, accurate, easily understood and made available in a useful format.

The mean of technical support system found was 4.84 (SD = 0. 75), indicating that pharmacy professionals' perception towards the reliability, attentiveness and preparedness of the support services is relatively moderate. This implies that there is potential for improvement in support service to be rendered to the users.

Perceived workload was responded to with a mean of 4. 84 (SD = 0. 56), which means that the workload pharmacy professionals feel when using the EHR system is moderate. They somewhat agree that they do not seem pressured, have enough time to do things, do not need to work quickly, do not think the tasks are too challenging or require much thinking.

In summary, a grand mean of 4.937 indicates a moderate level of satisfaction with the influence of the EHR system on workload, with areas for further improvement in order to maximize this positive impact fully.

Note - It is important to note that a higher mean in perceived workload is an improvement in workload (positive outcome) because the questionnaire was designed that way.

The mean and standard deviation of each parameter used in the research are attached in Appendix – B Descriptive statistics.

4.3 Correlation Analysis

The relationship or association between two (or more) quantitative variables is referred to as correlation also noted as correlation analysis. It is employed to determine whether dependent and independent variables have a substantial relationship. This approach quantifies the degree or

intensity of a correlation between the variables together with its direction. A correlation study yields a correlation coefficient, which has a range of values from -1 to +1. A correlation coefficient of +1 denotes a perfect positive (linear) relationship between the two variables, a correlation coefficient of -1 denotes a perfect negative (linear) relationship, and a correlation coefficient of zero denotes no linear relationship at all between the two variables under investigation (Gogtay & Thatte, 2017). If the coefficient value is between 0.1and 0.29, there is poor relation, if the value is between 0.3 and 0.49, it implies there is moderate relationship and if it is >= 0.5, it shows that there is strong relation between the variables. Accordingly, as shown in the table below, the Pearson correlation coefficients for the EHR parameters and perceived workload is computed.

Table 4.7 Correlation of EHR parameter and perceived workload

Correlations							
		Training	Self-Efficacy	System Quality	Information Quality	Technical Support System	Perceived Workload
Training	Pearson Correlation	1					
	Sig. (2-tailed)						
Self-Efficacy	Pearson Correlation	.459**	1				
	Sig. (2-tailed)	.000					
System Quality	Pearson Correlation	.642**	.448**	1			
	Sig. (2-tailed)	.000	.000				
Information Quality	Pearson Correlation	.719**	.508**	.816**	1		
	Sig. (2-tailed)	.000	.000	.000			
Technical Support System	Pearson Correlation	.296*	.100	.336**	.431**	1	
	Sig. (2-tailed)	.021	.444	.008	.001		
Perceived Workload	Pearson Correlation	.700**	.405**	.890**	.857**	.355**	1
	Sig. (2-tailed)	.000	.001	.000	.000	.005	
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source; survey (2024) SPSS output

As it can be seen from the above table, it represents the correlation Matrix between the dependent and the independent variables. Based on the results, the following conclusions were put together.

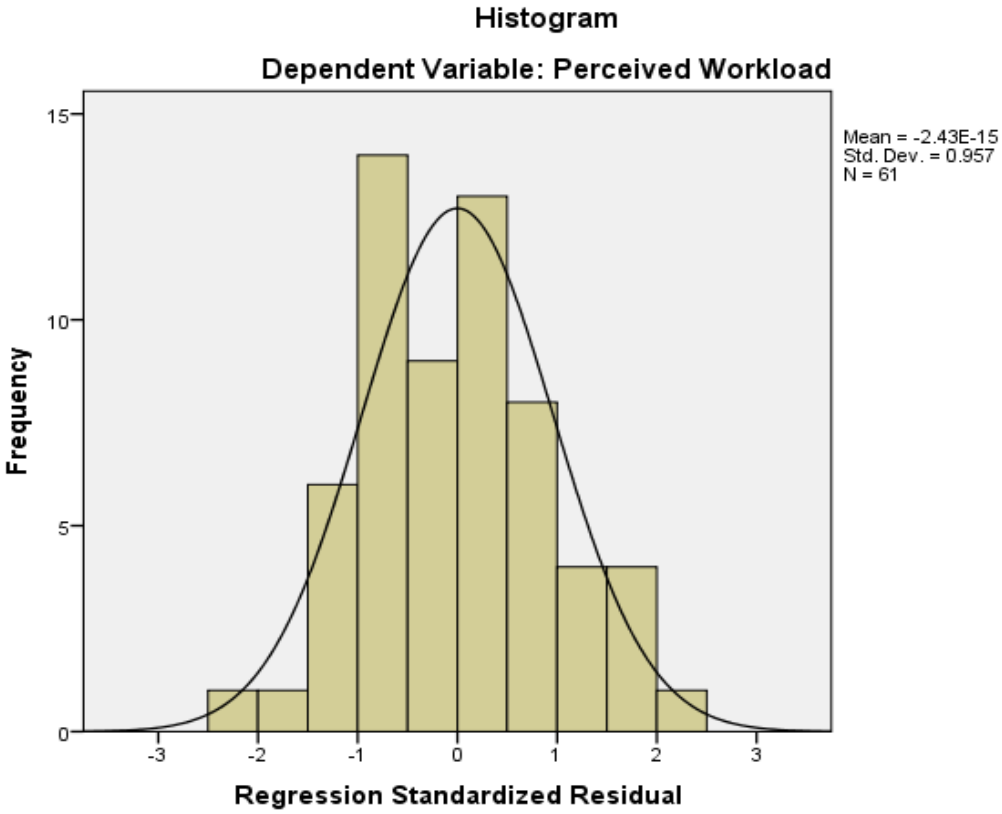
System quality, information quality and training have a strong positive correlation with improving the perceived workload of pharmacy professionals with the Pearson correlation coefficient value of 0.89, 0.857 and 0.7 respectively. The significance level is 0.000, which means the relationship is highly significant. When more training is provided for the employee, it can be said that there will be an improvement in perceived workload. Improvements in the ease of use, usefulness, and learning capabilities of the EHR system are linked to an enhancement in perceived workload. Pharmacy professionals who find the information from the EHR system relevant, accurate, and easy to understand tend to experience a lighter perceived workload.

The next items with moderate and positive relationship with the enhanced perceived workload variable are self-efficacy with correlation coefficient of 0.405, and technical support system with correlation coefficient 0.355. Pharmacy professionals who are more confident and comfortable using the EHR system tend to perceive their workload as less burdensome. Dependable and attentive support services moderately help improve the workload perceived by pharmacy professionals.

4.4 Testing Regression Model Assumptions

4.4.1 Normality Assumption Test

The sampling distribution of the mean should be normal, according to one of the assumptions of regression. The normality test of the histogram is used to examine the distribution of the values of the dependent variables in the model related to the independent variables. The distribution's shape is represented by a symmetrical, bell-shaped histogram, where the highest scores are concentrated in the middle and the remaining scores are spread toward the extremes as scores move farther from the center and become less frequent.



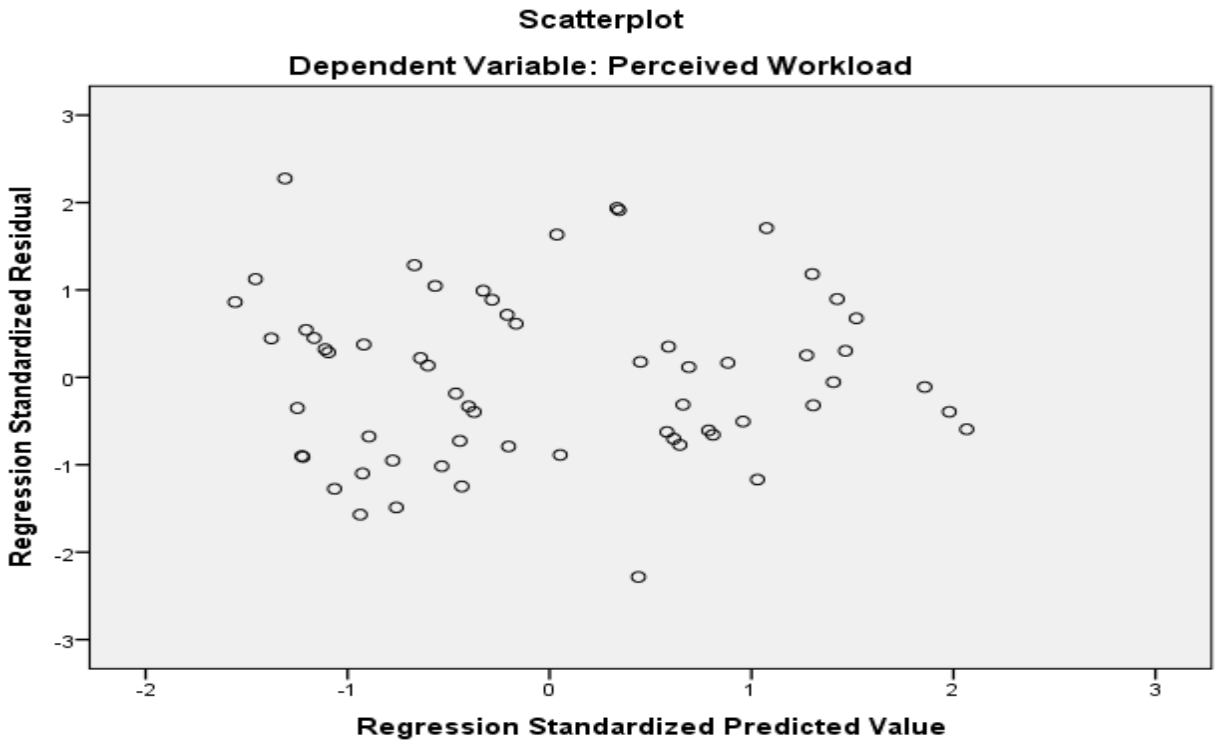
Source; survey (2024) SPSS output

Figure 4.1: Normality Assumption Test

From the following figure, it can be concluded that it does not show any major abnormality of normality assumption since the data is symmetrical and centered at the middle of the bell-shape curve. Therefore, it can be concluded that normality is guaranteed since the histograms of their data is normally distributed.

4.4.2. Homoscedasticity Assumption Test

The meaning of homoscedasticity shows a situation when the variance of the error term is the same for all values of the explanatory variables. If variance of the residuals differs materially over the Values of the measured variable, then it is an instance of heteroscedasticity. In observing the residuals, the funnel or cone shape implies heteroscedasticity which violate the basic regression assumption. In this research, scatter plot test was conducted to test for heteroscedasticity in order to be able to tell that it was absent.



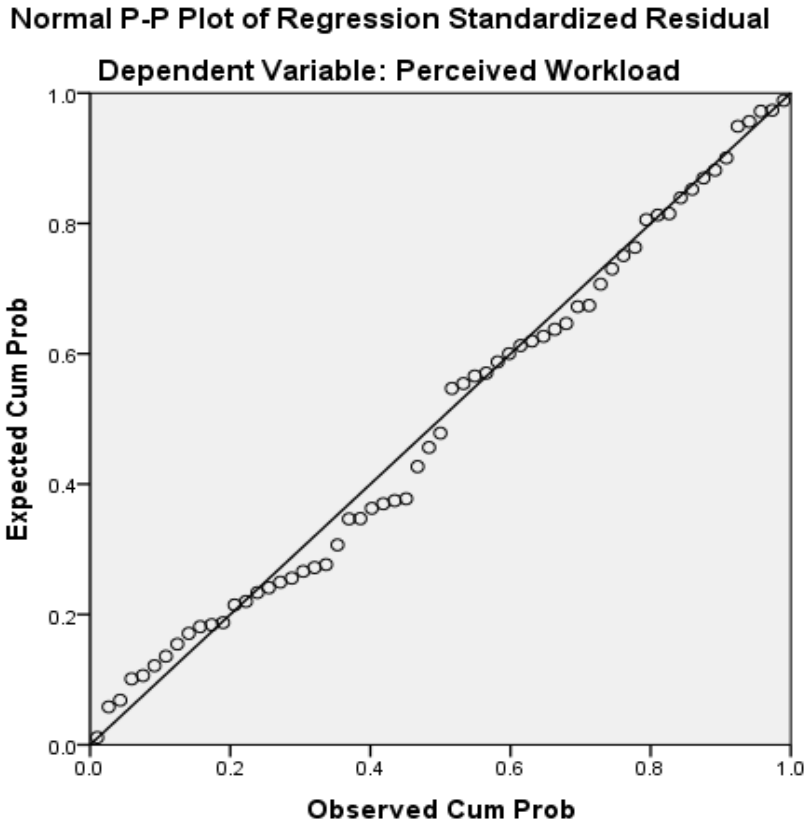
Source; survey (2024) SPSS output

Figure 4.2 Homoscedasticity Assumption Test

When analyzing Figure 4. 2, it indicates that the plots of the residuals have constant variance and evenly distributed. Therefore, lack of heteroscedasticity means one of the assumptions of regression is met and our results of analysis are accurate.

4.4.3 Linearity Assumption Test

The standard multiple regression analysis can only provide a good prediction of the relationship between the dependent and independent variables when the relationship is linear. If the IV (independent variable) and DV (dependent variable) are not related linearly, the results of the regression analysis will under-estimate the true relationship (Waters & Osborne). In order to test this assumption in this research, the use of a P-P plot is made.



Source; survey (2024) SPSS output

Figure 4.3 Linearity Assumption Test

The above figure shows that independent variables (IV) in the regression have a straight-line pattern with the dependent variable (DV) representing a Linear relationship. In conclusion, the normally distributed plot portray the Linearity assumption is fulfilled.

4.4.4 Multicollinearity Assumption Test

It is a very good idea to make sure the multicollinearity assumption is met before performing any regression. Multicollinearity will arise from correlated explanatory variables in a regression, and a high degree of correlation between variables will complicate the interpretation of the outcome. The researcher employed collinearity tolerance and the variance inflation factor (VIF) to test this hypothesis. Ranjit Kumar Paul states that empirical evidence suggests that when any of the VIFs surpasses 5 or 10, it suggests that the corresponding regression coefficients are inadequately assessed due to multicollinearity (Paul, 2006). The other way to measure multicollinearity in multiple regression is Tolerance Level. Low tolerance levels indicate high levels of

multicollinearity. Anytime a tolerance levels get somewhere below 10%, then multicollinearity exist (Adeboye et al., 2014).

Table 4.8 VIF and Tolerance Statistics for Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Training	.463	2.159
	Self_Efficacy	.706	1.416
	System Quality	.327	3.062
	Information Quality	.237	4.214
	Technical Support System	.795	1.258

Source; survey (2024) SPSS output

From the description above, Table 4.8 demonstrate all the VIF values are less than 5 and a tolerance level of above 10% suggest that there is no multicollinearity among the explanatory variables.

4.4.5 Autocorrelation Assumptions Test

Durbin-Watson statistic is used for testing the autocorrelation. It can be applied to a data set by statistical software. The Durbin-Watson test results lie between 0 and 4. An outcome between 1.5 and 2.5 means a very low level of autocorrelation. An outcome less than to 1.5 means that there is a higher positive autocorrelation, and an outcome higher than 2.5 indicates a higher negative autocorrelation. The following is the computed Durbin Watson value for the study at hand.

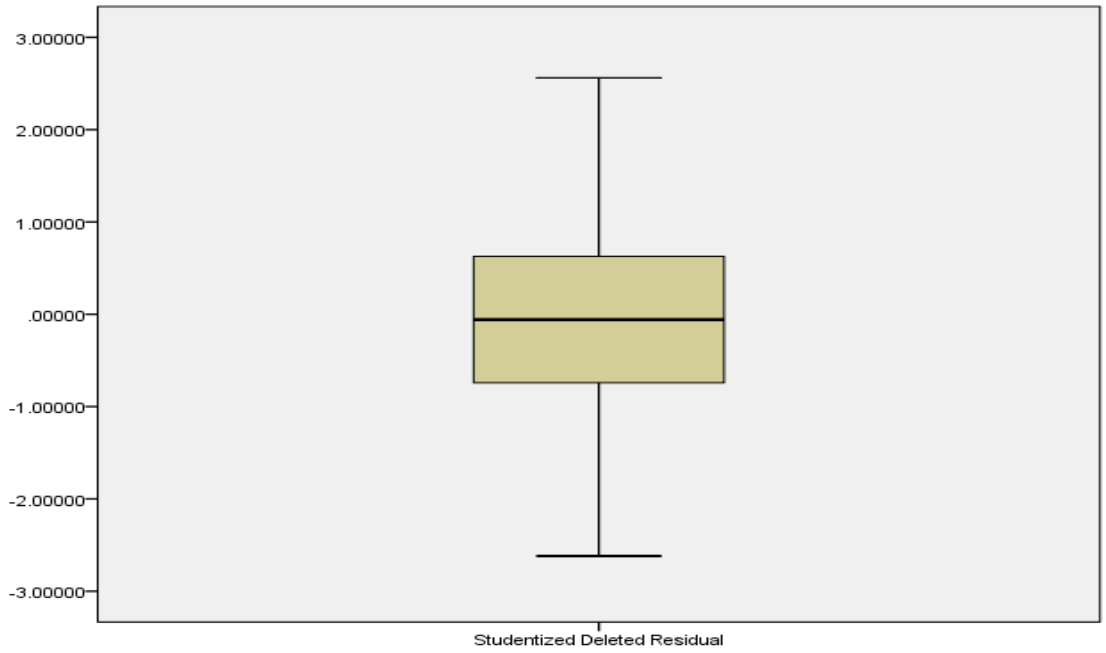
Table 4.9 Durbin Watson Test Result

Model	**Durbin-Watson**
1	**2.255**

Source; survey (2024) SPSS output

As it can be seen from the table above, the Durbin-Watson test applying SPSS calculated it as 2.255. Based on the analysis above, the result falls under the acceptable range that is between 1.5 and 2.5. As a result, it can be concluded that the assumption is met and there is no violation of Autocorrelation.

4.4.6 Test of outliers



Source; survey (2024) SPSS output

Figure 4.4 Test of outliers result

If there are no circles or asterisks on the either end of the box plot, this is an indication that no outliers are present. Therefore the regression assumption is met.

4.5 Regression Model

Regression is a model for the relationship between a dependent variable and a collection of independent variables. To define the level to which the EHR parameters explain the variance in the dependent variable, which is perceived workload, multiple regression analysis was performed.

4.5.1 Model Summery

Table 4.10 Model Summery

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.924[a]	.855	.841	.22367	2.255

Source; survey (2024) SPSS output

The model summary gives information about the goodness of fit and coefficient of determination of the regression model. R: 0. 924, this is the regression coefficient of the observed and predicted values of the dependent variable (Perceived Workload). An R value of 0.924 shows a strong relationship between the actual and predicted values of the dependent variable.

The coefficient of determination, or R-square, can be understood as a measure of how well the regression model fits the observed data. It describes the percentage of the variance in perceived workload that can be accounted for by the independent variable in the regression model, the EHR parameters. An R^2 of 0.855 means that 85.5% of the variability in perceived workload can be explained by the five independent variables (Training, Self-Efficacy, System Quality, Information Quality, and Technical Support System).

A modified form of R-squared known as "adjusted R-squared" takes into account the number of independent variables in the model. The adjusted R-square value in this study is 0.841, or 84.1%. This indicates that the five independent variables included in the model account for 84.1% of the changes in perceived workload associated with the EHR system.

4.5.2 ANOVA Model Fitness

The impact of the independent variable on the dependent variable can be ascertained using the ANOVA test. It also illustrates the model's overall significance.

Table 4.11 Analysis of Variance (ANOVA)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.176	5	3.235	64.670	.000[b]
	Residual	2.751	55	.050		
	Total	18.928	60			
a. Dependent Variable: Perceived Workload						
b. Predictors: (Constant), Technical Support System, Self-Efficacy, Training, System Quality, Information Quality						

Source; survey (2022) SPSS output

The impact of the independent variable on the dependent variable can be ascertained using the ANOVA test. It also illustrates the model's overall significance. The F-value tests whether at least one of the predictors is significantly related to the dependent variable. A high F-value (64.670) indicates that the model is significant. The p-value (Sig.) of 0.000 indicates that the model is statistically significant. This means that the likelihood of the relationship between the independent variables and the dependent variable being due to random chance is extremely low.

4.5.3 Regression Coefficients

Regression coefficient was also used to determine the relative value of each EHR parameter, as shown in the table below. The numbers generated below were used to replace the unknown beta values from the output shown below. This time, the unstandardized coefficient is applied. They show the direction of the relationship and indicate that for every unit change in the independent variable, there will also be a change in the dependent variable.

Table 4.12 Coefficients of Regression Analysis

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.093	.296		.313	.755
	Training	.099	.060	.126	1.664	.102
	Self_Efficacy	-.055	.039	-.085	-1.391	.170
	System Quality	.591	.095	.559	6.210	.000
	Information Quality	.338	.099	.361	3.422	.001
	Technical Support System	-.013	.043	-.017	-.290	.773

Source; survey (2024) SPSS output

The coefficients table gives the extent of the effect of each independent variable on the dependent variable. When looking at the coefficients, it is noted that the system quality has the highest impact on the perceived workload (β = 0. 591, p = 0. 000) followed by the information quality (β = 0. 338, p = 0. 001). This shows that any improvement in these areas is associated to a great positive modification in perceived workload.

In contrast, training (β = 0.099, p = 0.102), self-efficacy (β = -0.055, p = 0.170), and technical support system (β = -0.013, p = 0.773) didn't indicate statistically significant relationships with perceived workload. This tells us that differences in training, self-efficacy, and technical support have less straight influence on perceived workload in the current context.

Therefore, from these results, it is recommended that system and information quality should be given much attention to in order to address the perceived workload among the pharmacy professionals using the EHR system.

5. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The research's general conclusions are presented in this chapter. It includes the researcher's recommendations and conclusions. It was carried out utilizing various metrics that effectively explain the EHR in accordance with the goals established about the impact of the EHR on perceived workload.

Note - It is important to note that a higher mean in perceived workload is an improvement in workload (positive outcome) because the questionnaire was designed that way.

5.2 Summary of the Findings

The targeted population of this research was the pharmacy professionals at SPHMMC, where most fell in the age category of 31 to 40 years, thus rendering a relatively younger group working in the service. There is a higher proportion of male participants compared to females. Most of the respondents reported having between 6 to 10 years of experience in the pharmacy profession, thus making the group relatively sound and with relevant experience. Also, most of the professionals were employed in an inpatient pharmacy setting, though a smaller percentage were based in outpatient pharmacies. This demographic distribution gives an overall understanding of the workforce involved in the study and perhaps puts the findings into context regarding perceived workload.

The test of the ANOVA model for confirmation of the statistical significance of the regression model showed that the independent variables jointly have a significant effect on the perceived workload of the pharmacy professionals. The general mean of the variables is 4.937, showing a moderately positive perception of the impact the EHR system has. This score shows that even while pharmacists acknowledge the advantages of the EHR system, more challenges remain to be addressed in optimizing use and further reducing workload.

The Pearson correlation analysis then showed that the strongest negative correlations with perceived workload were system quality and information quality. This would, therefore, provide a basis for suggesting that improvement in the two areas greatly reduces the workload of pharmacy professionals. On the other hand, EHR training and technical support revealed

moderate negative associations, whereas the self-efficacy had a far weaker association. Moreover, the mentioned associations were further corroborated by the created regression model, as reflected in an R^2, which pointed to the high proportion of variance in perceived workload, accounted for through the selected independent variables. Predictors in order of strength included system quality and information quality, followed by EHR training and technical support. It is against this backdrop that future strategies should focus their interventions with a view to ensuring efficiency and reducing the perceived workload among the pharmacy staff.

5.3 Conclusion

The conclusion section provides a deeper analysis of the relationship of independent variables and perceived workload for the pharmacy professionals of SPHMMC. It is important to note that a higher mean in perceived workload is an improvement and thus lets us conclude this way.

What is the effect of EHR training on perceived workload?

The results of the regression analysis indicate that there is a marginal positive relationship between training and perceived workload which is however, non-significant; ($\beta = 0.099$, $p = 0.102$). This shows that when training is increased, this slightly enhances the perceived workload, though not to a large extent. Therefore, although training is useful, it would not appear to be sufficient by itself to improve workload perceptions significantly. It is necessary for the best training programs to focus on the level of skill, the level of difficulty of the tasks and the amount of improvement.

What is the effect of EHR self efficacy on perceived workload?

The self-efficacy standardized regression coefficient is negative, but non-significant ($\beta = -0.055$, $p = 0.170$). This means that increased self-efficiency does not appear to enhance the work load manageability to a considerable degree. While confidence regarding EHR system usage is important, it has no substantial correlation to the workload. Hence, backing self-efficacy development with promptly actionable instruments and approaches is recommended to guarantee that increased assurance yields to improve work load efficiency.

What is the effect of EHR system quality on perceived workload?

Consequently, system quality is positively related to perceived workload (β = 0. 591, p = 0. 000). From the above findings, it is implied that the quality of the EHR system being utilized strongly impacts the perceived workload manageability of the pharmacy professionals. Therefore, it is highly recommended to spend money on high quality and easy to use systems that would have a significant positive impact on the efficiency and manageability of perceived workloads.

What is the effect of EHR information quality on perceived workload?

In the same way, perceived workload has a positive significant correlation with information quality as represented by the coefficient β = 0. 338, p = 0. 001. This states, better level of information quality provided from the EHR system will improve the perceived workload of the pharmacy professionals. The study shows that increased information quality assists in decision making, decreases the cognitive burden and influences the workload perceptions. Hence, improvement in the quality of the information being provided should include the issues of accuracy, relevance and user friendliness in order to enhance workload management.

What is the effect of EHR technical support system on perceived workload?

Technical support system presents a coefficient; (β = -0. 013, p = 0. 773) which portrays a very slight negative but insignificant correlation with perceived Workload. This thus implies that the technical support and its quality does not significantly influence the workload's manageability. On the other hand, the support work does not seem to have a direct impact on how the workload is perceived by the pharmacy professionals since it focuses more on problem solving and carrying out activities to make things run smoothly. However, effective, efficient, and readily available technical support that the user can rely on is still of paramount importance to sustenance of overall system efficiency and user satisfaction of the health information system.

Collectively, these findings stress a key message: it is necessary to engage in a balance approach to improving the EHR system and empowering the pharmacy personnel. Thus, better workload perceptions are attained if not only system and information quality is improved to a large extent,

but training is optimized, self-efficacy is boosted through practical tools, and the technical support provided is excellent.

5.4 Recommendations

The following recommendations can be postulated from the findings of the study to improve the perceived workload among pharmacy professionals through modifications of EHR systems and others concerning factors identified through the regression analysis results at SPHMMC.

System Quality

The findings from the study indicate that system quality significantly reduces perceived workload from the pharmacy professionals at SPHMMC. In light of improving system quality, therefore, investment in periodic evaluations and updates of the user interface of the EHR system, and its overall functionality, should be warranted by the hospital. It will enhance the ease of use, reduce system downtime, and be easier to navigate. It will enhance the efficiency of the pharmacy professionals but most importantly, other healthcare professionals, nurses, and physicians who interact with the system.

It is also essential that the technical support should be enhanced through quicker response time and deeper assistance in solving system issues without wasting any time. A feedback loop whereby staff can report issues and suggest areas of improvement would be very useful in sustaining quality for the system. It must not target the professionals who work at the pharmacies alone but also nursing, administrative, and clinical workers because all need the system for their critical operations.

Information Quality

Other significant influential variables included information quality. Data accuracy, relevance, and timeliness are the essence to ensure that the EHR system contributes as much as possible to an increase in mental workload and decision-making time for each pharmacy professional and other related healthcare professionals. It is very important that protocols be more strict on data entry and validation in order to avoid errors or old information in the system. This will be possible if the entire facility is put on board to standardize procedures in updating all data

concerning patients throughout the hospital: from physicians to nurses, and down to administrative personnel.

In addition, data contained within the system should be audited after a period of time to check for errors or inconsistencies and correct them. Development of training programs on data management skills in the various staff roles can also be recommended as another strategy that ensures every department elicits its potential towards the provision of high-quality information. Of immense benefit this would be not only to pharmacy professionals but to all other staff dependent upon correct information for clarifying clinical decisions, providing patient care, and performing administrative tasks. The employing of improved information quality will reduce workload, improve patient outcomes as staff is working with updated and accurate information.

Training, Self-efficacy and Technical support system

In improving EHR training, self-efficacy, and technical support for better workload reduction, SPHMMC should go further with its training on more comprehensive and frequent sessions designed for pharmacy professionals, nurses, physicians, and administrative staff. Such training should have the effect of building users' confidence in using the system efficiently and effectively, reducing the learning curve, and increasing productivity. Additionally, continuous learning through refresher courses and on demand training materials sustains a highly competent working environment. Enhancement of technical support is just as important: timely and proper assistance can reduce system issue-related downtime and frustration. This then again emphasizes the need to provide a more responsive and easy-to-reach technical support team that can accelerate problem solving and personal guidance to enable all staff to manage their workloads more smoothly, thus enhancing the overall EHR experience.

5.5 Direction for Further Research

As such, it is recommended that future studies focus on how and when the different antecedent factors affect perceived workload and within the context of the organization. In particular, wider longitudinal studies can give more information on trends in the workload concerning changes in the training programs, system improvements, and support tools. Moreover, electronic questionnaires or interviews and focus groups with pharmacy personnel could reveal more

detailed information regarding the contributing factors and advantages of EHR software. Investigating the role of other potential variables, such as workflow integration and user satisfaction, could further enhance understanding and lead to more comprehensive strategies for optimizing EHR systems in healthcare settings.

References:

Adams, S. L. (2015). Nurses knowledge, skills, and attitude toward electronic health records (EHR).

Adeboye, N., Fagoyinbo, I., & Olatayo, T. (2014). Estimation of the effect of multicollinearity on the standard error for regression coefficients. *Journal of Mathematics*, *10*(4), 16-20.

Agourram, H., Alvarez, J., Sénécal, S., Lachize, S., Gagné, J., & Léger, P.-M. (2019). The Relationship Between Technology Self-Efficacy Beliefs and User Satisfaction – User Experience Perspective. In M. Kurosu, *Human-Computer Interaction. Design Practice in Contemporary Societies* Cham.

Ahmed, A., Chandra, S., Herasevich, V., Gajic, O., & Pickering, B. W. (2011). The effect of two different electronic health record user interfaces on intensive care provider task load, errors of cognition, and performance. *Critical care medicine*, *39*(7), 1626-1634.

Ajami, S., & Arab-Chadegani, R. (2013). Barriers to implement electronic health records (EHRs). *Materia socio-medica*, *25*(3), 213.

Akhu-Zaheya, L., Al-Maaitah, R., & Bany Hani, S. (2018). Quality of nursing documentation: Paper-based health records versus electronic-based health records. *Journal of clinical nursing*, *27*(3-4), e578-e589.

Anderegg, S. V., & Gumpper, K. F. (2012). What meaningful use means for pharmacy. *American journal of health-system pharmacy*, *69*(10), 890-894.

Andrus, M. R. (2012). Student pharmacist initiated medication reconciliation in the outpatient setting. *Pharmacy practice*, *10*(2), 78.

Aspden, P., Corrigan, J. M., Wolcott, J., & Erickson, S. M. (2004). Key capabilities of an electronic health record system: Letter report. In *Patient Safety: Achieving a New Standard for Care*. National Academies Press (US).

Bae, J., & Encinosa, W. E. (2016). National estimates of the impact of electronic health records on the workload of primary care physicians. *BMC health services research*, *16*, 1-11.

Baysari, M. T., Hardie, R. A., Barclay, P., & Westbrook, J. I. (2019). Effects of an electronic medication management system on pharmacists' work in a paediatric hospital. *Journal of Pharmacy Practice and Research*, *49*(4), 317-323.

Blaya, J. A., Fraser, H. S., & Holt, B. (2010). E-health technologies show promise in developing countries. *Health affairs*, *29*(2), 244-251.

Carayon, P., Wetterneck, T. B., Alyousef, B., Brown, R. L., Cartmill, R. S., McGuire, K., Hoonakker, P. L., Slagle, J., Van Roy, K. S., & Walker, J. M. (2015). Impact of electronic health record technology on the work and workflow of physicians in the intensive care unit. *International journal of medical informatics*, *84*(8), 578-594.

Casteel, A., & Bridier, N. L. (2021). DESCRIBING POPULATIONS AND SAMPLES IN DOCTORAL STUDENT RESEARCH. *International Journal of Doctoral Studies*, *16*(1).

Chalmers, J., Siska, M., Le, T., & Knoer, S. (2018). Pharmacy informatics in multihospital health systems: opportunities and challenges. *The Bulletin of the American Society of Hospital Pharmacists*, *75*(7), 457-464.

Chui, M. A., Look, K. A., & Mott, D. A. (2014). The association of subjective workload dimensions on quality of care and pharmacist quality of work life. *Research in Social and Administrative Pharmacy*, *10*(2), 328-340.

Colwell, J. (2015, July/August). Training medical practice staff on new technology. . *Physicians Practice.* .

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *Mis Quarterly*, 189-211.

Cooper, D. R., & Schindler, P. (2014). *Business research methods*. Mcgraw-hill.

de Hoon, S. E., Hek, K., van Dijk, L., & Verheij, R. A. (2017). Adverse events recording in electronic health record systems in primary care. *BMC Medical Informatics and Decision Making*, *17*, 1-6.

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems*, *19*(4), 9-30.

Devkota, B., & Devkota, A. (2013). Electronic health records: advantages of use and barriers to adoption. *Health Renaissance*, *11*(3), 181-184.

Eden, M., Schafheutle, E. I., & Hassell, K. (2009). Workload pressure among recently qualified pharmacists: an exploratory study of intentions to leave the profession. *International Journal of Pharmacy Practice*, *17*(3), 181-187.

Evans, R. S. (2016). Electronic health records: then, now, and in the future. *Yearbook of medical informatics*, *25*(S 01), S48-S61.

Gidman, W. (2011). Increasing community pharmacy workloads in England: causes and consequences. *International journal of clinical pharmacy*, *33*, 512-520.

Gogtay, N. J., & Thatte, U. M. (2017). Principles of correlation analysis. *Journal of the Association of Physicians of India*, *65*(3), 78-81.

Gregory, M. E., Russo, E., & Singh, H. (2017). Electronic health record alert-related workload as a predictor of burnout in primary care providers. *Applied clinical informatics*, *8*(03), 686-697.

Gupta, S. R., Wojtynek, J. E., Walton, S. M., Botticelli, J. T., Shields, K. L., Quad, J. E., & Schumock, G. T. (2006). Monitoring of pharmacy staffing, workload, and productivity in community hospitals. *American journal of health-system pharmacy*, *63*(18), 1728-1734.

Gurley, L., & Rose, B. (2004). Advantages and disadvantages of the Electronic Medical Record. *American Academy of Medical Administrators*.

Hartman, S. J., Fok, L. Y., Fok, W. M., & Li, J. (2002). Relationships among quality management, IS use and organizational performance in the health care and non-health care setting. *Total Quality Management*, *13*(7), 927-943.

Hawley, G., Hepworth, J., Jackson, C., & Wilkinson, S. A. (2017). Integrated care among healthcare providers in shared maternity care: what is the role of paper and electronic health records? *Australian Journal of Primary Health*, *23*(4), 397-406.

Häyrinen, K., Saranto, K., & Nykänen, P. (2008). Definition, structure, content, use and impacts of electronic health records: a review of the research literature. *International journal of medical informatics*, *77*(5), 291-304.

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence-based nursing*, *18*(3), 66-67.

Hoerbst, A., & Ammenwerth, E. (2010). Electronic health records. *Methods of information in medicine*, *49*(04), 320-336.

Horning, R. (2011). Implementing an electronic medical record with computerized prescriber order entry at a critical access hospital. *American journal of health-system pharmacy*, *68*(23), 2288-2292.

Jawhari, B., Ludwick, D., Keenan, L., Zakus, D., & Hayward, R. (2016). Benefits and challenges of EMR implementations in low resource settings: a state-of-the-art review. *BMC Medical Informatics and Decision Making*, *16*, 1-12.

Johnson, T. J., & Brownlee, M. J. (2018). Development and innovation of system resources to optimize patient care. *The Bulletin of the American Society of Hospital Pharmacists*, *75*(7), 465-472.

Kinney, A., Bui, Q., Hodding, J., & Le, J. (2017). Pharmacy dashboard: an innovative process for pharmacy workload and productivity. *Hospital pharmacy*, *52*(3), 198-206.

Klinis, S., Markaki, A., Kounalakis, D., & Symvoulakis, E. K. (2012). Monitoring reasons for encounter via an electronic patient record system: the case of a rural practice initiative. *International journal of medical sciences*, *9*(8), 704.

Kohli, R., & Tan, S. S.-L. (2016). Electronic health records. *Mis Quarterly*, *40*(3), 553-574.

Kossman, S. P. (2006). Perceptions of impact of electronic health records on nurses' work. *Stud Health Technol Inform*, *122*, 337-341.

Lea, V. M., Corlett, S. A., & Rodgers, R. M. (2012). Workload and its impact on community pharmacists' job satisfaction and stress: a review of the literature. *International Journal of Pharmacy Practice*, *20*(4), 259-271.

Lopez, K. D., Chin, C.-L., Azevedo, R. F. L., Kaushik, V., Roy, B., Schuh, W., Banks, K., Sousa, V., & Morrow, D. (2021). Electronic health record usability and workload changes over time for provider and nursing staff following transition to new EHR. *Applied ergonomics*, *93*, 103359.

McClenny, Z. (2023). Exploring the Advantages and Disadvantages of Universal Electronic Medical Records.

Menachemi, N., & Collum, T. H. (2011). Benefits and drawbacks of electronic health record systems. *Risk management and healthcare policy*, 47-55.

Mohammed, A., Mehrez, A., & Aladel, L. (2021). Investigating the impact of electronic health record on healthcare professionals.

Nambisan, P., Kreps, G. L., & Polit, S. (2013). Understanding electronic medical record adoption in the United States: communication and sociocultural perspectives. *Interactive Journal of Medical Research*, *2*(1), e2437.

O'SULLIVAN, T. A., Billing, N. A., & Stokes, D. (2011). Just what the doctor ordered: Moving forward with electronic health records. *Nutrition & Dietetics*, *68*(3), 179-184.

Paul, R. K. (2006). Multicollinearity: Causes, effects and remedies. *IASRI, New Delhi*, *1*(1), 58-65.

Pedersen, C. A., Schneider, P. J., & Scheckelhoff, D. J. (2016). ASHP national survey of pharmacy practice in hospital settings: monitoring and patient education—2015. *American journal of health-system pharmacy*, *73*(17), 1307-1330.

Petter, S., DeLone, W., & McLean, E. (2008). Measuring information systems success: models, dimensions, measures, and interrelationships. *European journal of information systems*, *17*(3), 236-263.

Ramaiah, M., Subrahmanian, E., Sriram, R. D., & Lide, B. B. (2012). Workflow and electronic health records in small medical practices. *Perspectives in Health Information Management/AHIMA, American Health Information Management Association*, *9*(Spring).

Ray, P. The Advantages and Disadvantages of Electronic Health Records.

Reid, G. B., & Nygren, T. E. (1988). The subjective workload assessment technique: A scaling procedure for measuring mental workload. In *Advances in psychology* (Vol. 52, pp. 185-218). Elsevier.

Richards, R. J., Prybutok, V. R., & Ryan, S. D. (2012). Electronic medical records: Tools for competitive advantage. *International Journal of Quality and Service Sciences*, *4*(2), 120-136.

Safdari, R., Ghazisaeidi, M., & Jebraeily, M. (2015). Electronic health records: critical success factors in implementation. *Acta Informatica Medica*, *23*(2), 102.

Shahmoradi, L., Darrudi, A., Arji, G., & Nejad, A. F. (2017). Electronic health record implementation: A SWOT analysis. *Acta Medica Iranica*, 642-649.

Shan, Y., Shang, J., Yan, Y., & Ye, X. (2023). Workflow interruption and nurses' mental workload in electronic health record tasks: An observational study. *BMC nursing*, *22*(1), 63.

Shao, S.-C., Chan, Y.-Y., Lin, S.-J., Li, C.-Y., Kao Yang, Y.-H., Chen, Y.-H., Chen, H.-Y., & Lai, E. C.-C. (2020). Workload of pharmacists and the performance of pharmacy services. *PLoS One*, *15*(4), e0231482.

Singer, A., & Duarte Fernandez, R. (2015). The effect of electronic medical record system use on communication between pharmacists and prescribers. *BMC family practice*, *16*, 1-6.

SPHMMC. (2024). *Saint Paul's Millennium Medical College – OUR SPECIALITY, YOUR WELL-BEING. (n.d.).* https://sphmmc.edu.et/. Retrieved September from

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education*, *48*, 1273-1296.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *Mis Quarterly*, 425-478.

Wagner, M. M., Wallstrom, G., Wagner, M., Moore, A., & Aryel, R. (2006). Methods for algorithm evaluation. *Handbook of biosurveillance*, *301*, 310.

Webb, A. J., Carver, B., Rowe, S., & Sikora, A. (2023). The use of electronic health record embedded MRC-ICU as a metric for critical care pharmacist workload. *JAMIA open*, *6*(4), ooad101.

Yaghmaie, F., & Jayasuriya, R. (2004). The roles of. *Journal of Innovation in Health Informatics*, *12*(3).

Yehualashet, G., Asemahagn, M., & Tilahun, B. (2015). The attitude towards and use of electronic medical record system by health professionals at a referral hospital in northern Ethiopia: Cross-sectional study. *Journal of Health Informatics in Africa*, *3*(1).

Yu, P., Li, H., & Gagnon, M.-P. (2009). Health IT acceptance factors in long-term care facilities: a cross-sectional survey. *International journal of medical informatics*, *78*(4), 219-229.

Yu, P., & Qian, S. (2018). Developing a theoretical model and questionnaire survey instrument to measure the success of electronic health records in residential aged care. *PLoS One*, *13*(1), e0190749.

Appendix A: Questionnaires

ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
SCHOOL OF COMMERCE
DEPARTMENT OF PROJECT MANAGEMENT

Dear Respondent, my name is Ruth Yilma. I am a student of Master of Project Management in Addis Ababa University. I am conducting this research as partial requirement to fulfill my master's degree.

I, Purpose of the questionnaire

The purpose of this questionnaire is to assess the effect of Electronic Health Record on the perceived Workload of Pharmacy Professionals at Saint Paul Hospital Millennium Medical College.

II. Subjects permission

By completing this questioner, you agree that you have used the Online Pharmacy Electronic Health Record System and give your voluntary consent to participate. If you have any discomfort with this question, you are free to ask for further clarifications

PART ONE ; Demographic and Contextual Information

Gender	☐ Male	☐ Female
Years of experience as a pharmacist	☐ Less than 1 year ☐ 6-10 years	☐ 1-5 years, ☐ More than 10 years
Age group	☐ 20-30 years, ☐ 41-50 years,	☐ 31-40 years, ☐ 51-60 years
Type of pharmacy setting	☐ Inpatient	☐ Outpatient

PART TWO

The following part mentions factors that may affect workload. Therefore, please express your level of agreement by circling the number on the descriptive scale based on your own experiences and feelings. There are no good or bad answers.

Ratings:
1 = strongly Disagree 2 = Disagree 3 = Slightly disagree 4 = Neutral 5 = Slightly agree 6 = Agree 7= Strongly Agree

NO	Description	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
	Training							
1	There was enough time for me to familiarize with the system.	1	2	3	4	5	6	7
2	I have access to ongoing training.	1	2	3	4	5	6	7
3	The training I received was relevant to how I should use the EHR system.	1	2	3	4	5	6	7
	Self-efficacy							
1	When I enter data into the computer, I feel confident about what I am doing.	1	2	3	4	5	6	7
2	I feel comfortable to use the EHR system.	1	2	3	4	5	6	7
	System quality							
1	The EHR system is easy to use.	1	2	3	4	5	6	7
2	The EHR system is useful.	1	2	3	4	5	6	7
3	The EHR system is easy to learn.	1	2	3	4	5	6	7
4	I can retrieve information I need easily from the EHR system.	1	2	3	4	5	6	7
	Information quality							
1	Information from the EHR system is relevant to my work.	1	2	3	4	5	6	7
2	Information I get from the EHR system is accurate.	1	2	3	4	5	6	7
3	It is easy to understand information from the EHR system.	1	2	3	4	5	6	7
4	The information is presented in a useful format.	1	2	3	4	5	6	7
	Technical support system							
1	The support services for the EHR system are dependable.	1	2	3	4	5	6	7
2	The support services give me individual attention.	1	2	3	4	5	6	7
3	Overall, the support services meet my needs.	1	2	3	4	5	6	7

	Perceived Workload							
1	I don't feel rushed when using the EHR system.	1	2	3	4	5	6	7
2	I have sufficient time to complete tasks using the EHR system.	1	2	3	4	5	6	7
3	I don't need to work very fast to keep up with EHR-related tasks.	1	2	3	4	5	6	7
4	The tasks I need to perform using the EHR system are not very complex.	1	2	3	4	5	6	7
5	The EHR system doesn't requires a lot of concentration.	1	2	3	4	5	6	7
6	I don't feel mentally fatigued after using the EHR system.	1	2	3	4	5	6	7
7	I don't feel stressed when using the EHR system.	1	2	3	4	5	6	7
8	I don't get frustrated while performing tasks on the EHR system.	1	2	3	4	5	6	7
9	I don't feel anxious when using the EHR system.	1	2	3	4	5	6	7

Appendix B: Descriptive Statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
Training			
There was enough time for me to familiarize with the EHR system.	61	5.03	.875
I have access to ongoing training	61	4.74	.964
The training I received was relevant to how I should use the EHR system.	61	4.87	.974
Self-efficacy			
When I enter data into the computer, I feel confident about what I am doing.	61	5.16	1.172
I feel comfortable to use the EHR system.	61	5.28	.933
System Quality			
The EHR system is easy to use.	61	5.02	.866
The EHR system is useful.	61	4.79	.755
The EHR system is easy to learn	61	4.92	.759
I can retrieve information I need easily.	61	5.10	.831
Information Quality			
Information from the EHR system is relevant to my work.	61	5.07	.964
Information I get from the EHR system is accurate.	61	4.89	.777
It is easy to understand information from the EHR system.	61	4.93	.772
The information is presented in a useful format.	61	4.98	.957
Technical Support System			
The support services for the EHR system are dependable.	61	4.89	1.066

The support services give me individual attention.	61	4.75	.943
Overall, the support services meet my needs.	61	4.64	.949
Perceived Workload			
I don't feel rushed when using the EHR system.	61	4.51	.788
I have sufficient time to complete tasks using the EHR system.	61	4.97	1.032
I don't need to work very fast to keep up with EHR-related tasks.	61	4.64	.949
The tasks I need to perform using the EHR system are not very complex.	61	5.13	.903
Using the EHR system doesn't requires a lot of concentration.	61	4.59	.955
I don't feel mentally fatigued after using the EHR system.	61	4.90	.907
I don't feel stressed when using the EHR system.	61	5.07	.814
I don't get frustrated while performing tasks on the EHR system	61	4.85	1.078
I don't feel anxious when using the EHR system.	61	4.89	1.050
Valid N (listwise)	61		