ATTITUDE AND USE OF ELECTRONIC APPOINTMENT SYSTEM BY HEALTH WORKERS IN UNIVERSITY OF ABUJA TEACHING HOSPITAL, ABUJA

[1]Abdullahi Ibrahim [2]Nasiru Sani

[1]Maryam Abacha American University Maradi, Niger Republic
[2]Nasarawa state University, keffi
[1]ibrahimabdullahi438@gmail.com [2]nasirusanimusa@gmail.com

Abstract

This Paper examined the Attitude and Use of Electronic Appointment System by Health Workers in University of Abuja Teaching Hospital, Abuja. The study was guided by two objectives and two corresponding research questions. This study adopted the descriptive, cross-sectional research design. The area of study for this research was University of Abuja Teaching Hospital. The population of this study comprised 1, 610 which comprised all the staff of University of Abuja Teaching Hospital Abuja. The total sample for the study was 310 staff of federal medical centre, Abuja using a purposive sampling technique. The total sample was based on Cochran's (1977) formula. The nature/source of data for this work was the primary data which was collected using a semi-structured self-administered questionnaire. The collected data were cleaned and entered into a database, using MS Excel. Analysis and presentation of results were carried out using statistical package for social sciences (SPSS) version 28.0. The study concluded that health workers in University of Abuja Teaching Hospital, Abuja had average knowledge of electronic booking system and attitude to electronic booking system. However, the use was not commensurate with the level of knowledge and attitude exhibited by the respondents. This was probably due to associated factors such as government policies, inadequate ICT infrastructure, lack of basic ICT knowledge/skills, poor internet connectivity, access to the internet and financial issues/constraints. The study recommended among others that the management of the healthcare facilities should diversify the source of fund for the electronic appointment system in their various hospitals to ensure that electronic appointment system is sustained.

Keywords: Attitude, Electronic Appointment System, Health workers, University of Abuja Teaching Hospital, Abuja, Use

Introduction

In the present era, the utilization of Information and Communication Technology (ICT) has become an essential tool for multifaceted development across all sectors. The survival and growth of nations in a constantly evolving global environment depend heavily on the

implementation of ICT. The impact of IT on individuals, organizations, and society is revolutionary, transforming every aspect of life. The widespread adoption of IT is evident in various sectors, including institutions, government establishments, businesses, homes, and offices. The modernization of healthcare delivery in Nigeria has significant implications for the country's society. Health Information Management plays a crucial role in strengthening healthcare delivery in every country. It enables timely health policies planning, which improves the general health status of a country and serves as a vital element for individual health facilities in managing and improving healthcare delivery. The use of Information Technologies (ITs) in managing health records is essential, as it can capture, store, retrieve, analyze, and transmit bulk volumes of health information across various locations.

Universal Health Records play a crucial role in the field of health information technology, which has increasingly been adopted by industrialized nations to enhance healthcare services. Healthcare is widely recognized as one of the most vital services worldwide, as it directly impacts the well-being of society. However, healthcare remains a significant challenge in almost every corner of the globe. Whether it is the United States of America (USA), Asia, Africa, or Europe, most countries face struggles in improving healthcare services. These challenges include exorbitant healthcare costs, issues with the quality of medical care, corruption in the healthcare sector, limited resources, a shortage of healthcare professionals, and a lack of patient empowerment in managing their own healthcare.

E-health, the adoption of ITs in healthcare delivery, has been proven to enhance the reliability and effectiveness of health records, as well as strengthen healthcare delivery systems. This is achieved through the implementation of tailor-made innovative applications and programs like Electronic Health Records. In resource-constrained third world countries, where healthcare systems face financial, infrastructural, technical, and human resource limitations, the use of ICTs in healthcare delivery has become increasingly relevant. It enables better access to healthcare facilities for both patients and healthcare professionals, leading to improved quality of healthcare delivery. Ultimately, this contributes to productive labor and overall development of the country. Recognizing the significance of IT in enhancing general healthcare, governments and policy makers in developing countries are actively embracing it, especially as they strive to meet the Sustainable Development Goals (SDGs).

The Nigerian government is actively investing in Health Information Management Systems that are IT-based to enhance healthcare and the overall performance of public healthcare facilities. Both the government and private entities, including international clinic hospitals such as Kano and Abuja Clinics, as well as various institutions and international organizations, have provided financial support for the adoption of IT applications in the health sector. In Nigeria and Ghana, several pilot IT projects, as well as fully matured projects, have been implemented in government health facilities. These facilities include the Federal Medical Center Asaba in Delta State, international clinic hospital Kano, Abuja Clinics, EffiaNkwanta Regional Hospital, Korlebu Teaching Hospital, KomfoAnokye Teaching Hospital, Tamale Teaching Hospital, Ridge

Hospital, and Tema General Hospital (Adegbore & Omowumi, 2021). The Nigerian Government's objective is to ensure the delivery of high-quality, affordable, and up-to-date health services in an equitable and timely manner through enhanced communication and the utilization of information for planning, managing, and delivering healthcare services.

Hospitals play a critical role in the healthcare delivery system of any nation, as they are responsible for delivering high-quality and affordable healthcare to citizens. This underscores the importance of hospitals in the overall healthcare system (Ojo & Popoola, 2015). Accurate and comprehensive health records are crucial for ensuring effective healthcare, and the availability of such data is vital for proper planning, development, and maintenance of optimal healthcare services (Adeleke, 2014). The quality and quantity of information accessible to healthcare professionals directly impact patient care outcomes and continuity. In developing countries, there is a growing demand for medical information necessary for clinical decision-making. However, the organization and accessibility of medical information often fall short, leading to inappropriate decisions and medical errors. Therefore, the implementation of Electronic Health Information Management Systems (EHIMS) is considered essential for improving the accessibility and management of medical information (Bleich, Beckley et al. 1985).

Scheduling patient encounters, whether for primary or specialty care visits or elective surgeries, requires different processes for each environment. Additionally, unscheduled encounters such as walk-ins and urgent or emergency cases must also be accommodated. A well-designed appointment system aims to provide convenient and timely access to health services for all patients, while also improving workflow, reducing waiting room crowding, and accommodating patient and provider preferences.

Managing appointments in primary care, specialty care, and hospital services presents unique challenges due to their distinct characteristics. In primary care, the majority of patients require services that can be completed within a specific time frame. To accommodate this, primary care clinics typically divide the available provider time into equal-length timeslots. This allows for patients' needs to be accommodated in a standard appointment slot. However, for certain types of visits that require more time, clinics may assign multiple appointment slots. The main challenge then becomes finding a suitable match among the available time slots, considering the restrictions imposed by providers and the preferences of patients regarding the day, time, and service provider. For instance, providers may limit the number of physical exams or new patients that can be scheduled in a given session. Despite these efforts, matching supply and demand remains a complex task due to variations in patients' perceived urgency and their preferences for specific days and times.

Specialty care clinics experience significant variations in patient service times, which are dependent on the patients' diagnoses and other characteristics. This makes it impossible to divide provider time into standard time slots. Moreover, many specialty services require a referral from the primary care physician, and in such cases, appointments are scheduled by the referring doctor's medical assistant. These bookings may occur at regular intervals, such as at the end of

each day. Managing appointments for specialty care clinics is further complicated by two factors. Firstly, there is a need to reserve capacity for urgent appointment requests that require immediate attention. Secondly, there is a need to ensure optimal utilization of the time of more expensive specialists.

Scheduling surgical appointments is a highly intricate process that involves various factors. The duration of procedures can vary, and multiple pre-surgery appointments may be required for medical examinations. Additionally, there is a need to coordinate different service providers and resources, such as a well-equipped surgery room, specialized nursing staff, and anesthesiologists, to ensure the delivery of optimal services. In certain cases, surgery scheduling is done in two stages. Initially, patients choose from a range of available time slots, each spanning a week, indicating their preferred timeframe for the procedure. Subsequently, the physician's office confirms a specific day and start time for the surgery, which is known as the appointment.

In healthcare, an efficient scheduling system is crucial for patients to access clinics. If the schedule is poorly coordinated or inefficient, it can lead to long waiting times for patients, resulting in increased complaints and dissatisfaction. Understanding the importance of proper patient scheduling encourages outpatient clinics to adopt various scheduling techniques that balance patient satisfaction and resource utilization. Appointment systems are widely recognized by healthcare consumers as a sign of proficient service delivery, with positive impacts on patient accessibility and satisfaction. Currently, there are two commonly used scheduling methods in healthcare: walk-ins and appointment systems. Walk-ins allow for a steady patient flow, prioritizing patients on a first-come, first-serve basis. On the other hand, the appointment system designates specific time slots to accommodate patients who request or apply for an appointment on the same day. Both scheduling methods aim to optimize performance but may present challenges in achieving a balance between patient satisfaction and resource utilization, particularly in terms of appointment lead-time. Therefore, the healthcare system incorporates both scheduling methods to effectively meet the needs of patients and clinics. Adopting a HAS significantly reduces the appointment lead-time and provides greater flexibility to handle varying patient calls and physician service time" (Srinivas, et al., 2019).

Statement of the Problem

The procedure in a health care system is to schedule an appointment with the health practitioner before he/she avails him/herself for your services. Traditionally, this was made feasible by the person going physically to the health center to book and a times may not be attended to on the date he/she goes to the hospital. Handling queries manually can be a challenging task due to various issues associated with a poor patient booking system. These issues include long waiting times and the inability to attend to emergencies promptly, which can result in the unfortunate death of patients when manual processes are predominantly used. Managing all these tasks can be burdensome for everyone involved in appointment booking.

However, there are questions that are yet to be addressed as far as the Nigerian health sector is concerned. For instance, are the health workers in Nigeria aware of the electronic

booking system? What is their attitude towards it? Do they use it?. To the best of the knowledge of the researcher, there is a paucity of data on this topic. It is against this background that the present study is set to assess the attitude and use of electronic appointment system among health workers in tertiary teaching hospital, Nigeria.

Research Questions

- What is the attitude of health workers in university teaching hospital Abuja towards the use of electronic appointment system?
- Do health workers in university teaching hospital Abuja make use of electronic appointment system?

Literature Review

Attitude of Electronic Appointment System by Health Workers

An attitude is a positive, negative, or mixed evaluation of an object expressed at some level of intensity. It is an expression of a favorable or unfavorable evaluation of a person, place, thing, or event. These are fundamental determinants of our perceptions of and actions toward all aspects of our social environment. Attitudes involve a complex organization of evaluative beliefs, feelings, and tendencies toward certain actions.

In the field of psychology, an attitude refers to a collection of emotions, beliefs, and behaviors towards a specific object, person, thing, or event (Perlovsky, 2013). Attitudes are frequently shaped by past experiences or upbringing and possess the ability to significantly impact behavior and influence how individuals act in various circumstances. Although attitudes are enduring, they are also subject to change (Perlovsky, 2013)

Psychologists define attitudes as a learned inclination to assess things in a particular manner. This encompasses evaluations of individuals, issues, objects, or events, which often lean towards positivity or negativity, but can also be characterized by uncertainty. For instance, one may experience mixed feelings towards a specific person or issue. Researchers further propose that attitudes consist of multiple distinct characteristics (Perlovsky, 2013).

Attitude is a psychological construct, representing a mental and emotional entity that is inherent to or characterizes an individual. It reflects their approach or personal viewpoint towards something. Attitude encompasses one's mindset, outlook, and emotions. Attitudes are intricate and develop through personal experiences. They represent an individual's predisposed state of mind regarding a value and are manifested through responsive expressions towards oneself, others, places, things, or events (the attitude object), subsequently influencing one's thoughts and actions (Perlovsky, 2013)

In its simplest form, attitudes in psychology can be understood as the emotions individuals hold towards themselves and the world (Richard, 2016). Most contemporary perspectives on attitudes permit that people can also be conflicted or ambivalent toward an object by simultaneously holding both positive and negative attitudes toward the same object. This has led to some discussion of whether the individual can hold multiple attitudes toward the same

object (Pierre, 2012). Attitude can be defined as a set of emotions or beliefs towards a person, place or event. Attitude can also be referred to evaluations in terms of involving a preference for or against an object commonly referred to terms such as like, dislike, prefer or hate. When individuals express their attitudes such as "I like to go hiking ", or "I hate bugs", individuals are expressing the relationship between the object and oneself and this can be identified as either positive or negative. Attitudes are important part of how we perceive our behaviors and unique characteristics. Attitudes can have a profound effect on a person's behavior. (Pierre, 2012).

The adoption process of any eHealth system is significantly influenced by the attitude of healthcare workers towards the use of electronic health systems (Huryk, 2010). However, there has been minimal research conducted on healthcare workers' attitudes and behavior towards the use of eHealth systems. Several studies conducted in clinics, hospitals, and community health centers globally have focused on the adoption and use of eHealth systems, the barriers to adoption, and how individual intention to use these systems influences their implementation (Huryk, 2010)

Use of Electronic Appointment System by Health Workers

Generally, the successful implementation of EHR systems in healthcare facilities relies on the effective use and general satisfaction of users (Coeira, 2003; Vikkelsø, 2005). The adoption of EHRs is hindered by the identified key barricade of usability (Gans et al., 2005). In a comprehensive review of telemedicine applications, Perednia and Allen (1995) emphasized the importance of addressing managerial challenges, including user technology acceptance, for the definitive success of EHR. Payton (2000) also highlighted the significant role of physicians in the implementation process based on a study of interconnected organizational EHR systems. Consequently, Chau & Hu (2002) asserted the need to investigate factors essential to the acceptance of telemedicine technology by individual physicians. Therefore, usability testing should be an integral part of the pre-purchase assessment of EHR (Walker et al., 2005). Usability, in this context, refers to the characteristics of human-computer interactions within a system (Tang et al., 2006). Describing an EHR system as having good usability implies that it is easy to learn and remember, efficient to use, minimizes errors, and results in high user satisfaction (Nielsen, 1994; Tang et al., 2006).

Methodology

This paper examined the Attitude and Use of Electronic Appointment System by Health Workers in University of Abuja Teaching Hospital, Abuja. The study was guided by two objectives and two corresponding research questions.

This study adopted the descriptive, cross-sectional research design. The area of study for this research was University of Abuja Teaching Hospital. The population of this study comprised 1, 610 which comprised all the staff of University of Abuja Teaching Hospital Abuja. The total sample for the study was 310 staff of federal medical centre, Abuja using a purposive sampling technique. The total sample was based on Cochran's (1977) formula. The nature/source of data

for this work was the primary data which was collected using a semi-structured self-administered questionnaire. The self-structured questionnaire was presented to the project supervisor and two other professionals for validation to ensure its content and construct validity before being put to use. To further ascertain the reliability and internal consistency of the instrument, it was pilot-tested. Cronbach Alpha was used to test the reliability and internal consistency of the instrument using the Statistical Package for Social Sciences (SPSS). The collected data were cleaned and entered into a database, using MS Excel. Analysis and presentation of results were carried out using statistical package for social sciences (SPSS) version 28.0.

Results and Discussion

Table 1: Attitude of Health Workers on Electronic Appointment System

Sn	Item	Indifferent	%	Positive attitude	%	Negative attitude	%
	I don't feel okay with E-Appointment systems which are web-based applications allow people to make reservations via laptop, tablet, computer or smart phone in a safe and convenient way	6	1.9	181	58.4	123	39.7
	I don't like the way anyone can easily access online appointment systems by clicking the link provided by the healthcare provider to book appointment.	3	1	152	49.1	155	50
	Am at cross roads with the E-Appointment systems because of the automated text and email messages.	24	7.7	134	43.3	152	49
	I have my reservations with online appointment systems where patients can make an appointment quickly and easily from anywhere, whenever they want.	0	0	139	44.9	171	55.2
	With network challenges, I doubt if the online booking system will help to save time especially in times of emergencies.	0	0	54	17.4	256	82.5
	Cluster Responses	**6.6**	**2.12**	**132**	**42.62**	**171.4**	**55.28**

Table 1 showed the responses on the attitude of health workers on electronic booking system. The average responses indicated that, 2.12% of the respondents were indifferent on their attitude to electronic booking system, 42.62% had positive attitude to electronic booking system whereas, 55.28% had negative attitude to electronic appointment system.

Table 2: Use of Health Workers on Electronic Appointment System

Sn	Item	Not sure	%	used	%	Not used	%
	I have been using E-Appointment systems which are web-based applications allow people to make reservations via laptop, tablet, computer or smart phone in a safe and convenient way	0	0	83	26.8	227	73.3
	I employ the use of electronic booking system because anyone can easily access online appointment systems by clicking the link provided by the healthcare provider to book appointment.	0	0	92	29.7	218	70.3
	I use the E-Appointment systems because of automated text and email message reminders.	0	0	86	27.8	224	72.2
	I use online appointment systems where patients can make an appointment quickly and easily from anywhere, whenever they want to save time and cost.	0	0	74	23.9	236	76.1
	I use the online booking system to save time especially in times of emergencies.	6	1.9	66	21.3	238	76.7
	Cluster Responses	**1.2**	**0.38**	**80**	**25.9**	**229**	**73.72**

Table 2 showed the responses on the use of electronic booking system by health workers. The average responses indicated that, 0.38% of the respondents were indifferent on the use of electronic booking system, 25.9% demonstrated the use of electronic booking system whereas, 73.72% had not used of electronic appointment system.

Discussions

Attitude of Health Workers on Electronic Appointment System

The result of the study also indicated that the respondents' have negative attitude to electronic appointment system. The electronic booking system adopted by health workers has several potential limitations compared to conventional treatment approaches. It should not be seen as a replacement for the traditional healthcare system, but rather as a complement for certain minimal functions. One significant concern is the risk of hacking and unauthorized access to patients' medical data, particularly when using the electronic booking system on a public network or an unencrypted channel. In emergency situations, this technology may cause delays in medication administration, as doctors are unable to provide life-saving care or conduct necessary laboratory tests remotely. Additionally, the ability for physicians to practice medicine across state boundaries is limited by varying state regulations and licensing requirements. The attitudes of healthcare workers towards electronic health systems are pivotal in the adoption

process of any eHealth system, as noted by Huryk (2010). However, there has been minimal research conducted on the attitudes and behavior of healthcare workers towards the use of eHealth systems. Various studies have been carried out globally in clinics, hospitals, and community health centers to investigate the adoption and use of eHealth systems, the barriers to adoption, and the impact of individual intention on implementation.

In a study by Kortteisto et al. (2010), a cross-sectional online survey was conducted in Finnish healthcare organizations with healthcare professionals. The aim was to assess the relationship between attitudes towards behavior, subjective norms, perceived behavior control, and the intention of healthcare workers to use clinical practice guidelines in patient care and management decisions. The findings revealed that attitudes towards behavior, subjective norms, and perceived behavior control were significant factors influencing professionals' intention to use clinical practice guidelines.

Use of Electronic Booking System by Health Workers

According to the study, the use of electronic appointment systems was found to be more prevalent among the respondents. A Pearson correlation coefficient was calculated to determine the relationship between knowledge and usage of electronic appointment systems, and a significant correlation was found ($r = .222$; $P < 0.05$), leading to the rejection of the null hypothesis. This suggests that the knowledge and attitude of the respondents had a significant impact on their use of electronic appointment systems. Numerous empirical studies have been conducted to investigate the relationship between an individual's knowledge and usage. This finding is consistent with Tolulope et al's (2020) study on the level of knowledge of EMRs among frontline healthcare workers in a tertiary health institution in Jos, Plateau State, Nigeria, as well as Bayou et al's (2020) study on the knowledge, awareness, and associated factors of telemedicine services among health professionals at Amhara region Referral Hospitals, Northwest Ethiopia, 2020, which reported similar results.

Conclusion

Within the limitations of this study, it can be concluded that, health workers in University of Abuja Teaching Hospital, Abuja had average knowledge of electronic booking system and attitude to electronic booking system. However, the use was not commensurate with the level of knowledge and attitude exhibited by the respondents. This was probably due to associated factors such as government policies, inadequate ICT infrastructure, lack of basic ICT knowledge/skills, poor internet connectivity, access to the internet and financial issues/constraints.

Recommendations

18. There should be frequent seminars on the electronic appointment system to ensure that all the health workers are kept abreast of this global trend.
19. Standard, intense and continuous training activities should be provided for all medical/health personnel to improve their knowledge on the electronic appointment system.

20. The management of the healthcare facilities should diversify the source of fund for the electronic appointment system in their various hospitals to ensure that electronic appointment system is sustained.

References

Adeleke, I. T., Asiru, M. A., & Oweghoro, B. M. (2014). Computer and internet use among tertiary healthcare providers and trainees in a Nigerian public hospital. October. https://doi.org/10.11648/j.ajhr.s.20150306.11

Bayou, T.A., Adamu, T.J. & Araya, M.N. (2020). Knowledge, awareness and associated factors of telemedicine services among health professionals at Amhara Region Referral Hospitals, Northwest Ethiopia, 2020. *Research Square.*

Gans, D., Kralewski, J., Hammons, T., & Dowd, B. (2005). Medical groups' adoption of electronic health records and information systems. *Health Affairs*, *24*(5), 1323-1333.

Huryk, L. (2010). Factors influencing nurses' attitudes towards healthcare information technology. *Journal of Nursing Management, 18*, 606-612. doi:10.1111/j.1365-2834.2010.01084.x

Kortteisto, T., Kaila, M., Komulainen, J., Mantyranta, T. & Rissanen, P. (2010). Healthcare professionals' intentions to use clinical guidelines: a survey using the theory of planned behaviour. Implementation Science: 15 vol. 551.29 Jun. 2010, doi: 10.1186/1748-59085-51.

Nielsen, J. (1994). *Usability engineering*. Elsevier.

Payton, F. C., (2000) Lessons learned from three inter-organizational health care information systems. *Information and Management,* 37 (6); 311–322.

Perednia, D. A., & Allen, A. (1995). Telemedicine technology and clinical applications. *Journal of the American Medical Association*, *273*(6), 483-488.

Perlovsky, L.A (2013). Challenge to human evolution—cognitive dissonance. *Frontiers in Psychology*, 4. doi:10.3389/fpsyg.2013.00179.

Pierre, V. (2012). *Marketplace Lifestyles in an Age of Social Media. New York: M.E. Sharpe, Inc. ISBN 978-0-7656-2561-8.*

Richard, M.P. (2016). The Dynamics of Persuasion: Communication and Attitudes in the Twenty-First Century, Routledge.

Srinivas, S., & Khasawneh, M. T. (2017). Design and analysis of a hybrid appointment system for patient scheduling: an optimization approach. *International Journal of Operational Research*, *29*(3), 376-399.

Tang, Z., Johnson, T.R., Tindall, D., & Zhang, J. (2006). Applying Heuristic Evaluation to improve the usability of a Telemedicine system. *Telemedicine and E-health* 12; 24-34.

Tolulope, O.A., Zuwaira, I.H., Bulus, L.D., Bamkat, D.W., Abdulbasit, I.Z., Kayode, K.B., Akinyemi, O.D.O. & Gabriel, O.O. (2020). Knowledge of electronic medical records system among frontline health care workers in Jos University teaching hospital, Plateau

State Nigeria. *Int J Res Med Sci. 2020 November; 8(11): 3837–3843. doi:10.18203/2320-6012.ijrms20204867.*

Walker, J. M., Bieber, E. J., Richards, F., & Buckley, S. Eds (2005). *Implementing an electronic health record system*. Springer-Verlag, Secaucus, NJ, USA.