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KNOWLEDGE, AWARENESS, AND PRACTICE OF HEALTHCARE PROVIDERS TOWARD DIGITAL TOOLS FOR EVIDENCE-BASED PRACTICE IN SAUDI TERTIARY HOSPITALS

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ABSTRACT

This research investigated the knowledge, awareness, and practice of healthcare professionals related to digital tools that support Evidence-Based Practice (EBP) in tertiary hospitals of Saudi Arabia. A cross-sectional survey generated data from 300 respondents in various clinical disciplines. While knowledge and awareness of EBP digital tools was moderate to high, actual practice occurred with less frequency. According to the statistical analysis, knowledge was statistically significant and positive with years of experience, attendance to training, and regard to institutional support and perceived usefulness. Barriers to adoption included inadequate training, lack of access, and time constraints. The findings from this study aligned well with the literature at the global and regional level on the significance of supportive environments, leadership, and digital innovation for the transformation of healthcare. This research also illuminated relevant implications for policy makers in establishing leadership engagement, future targeted training, and policy-level transformations that will enhance the adoption of digital tools to support EBP to transform clinical decision making. Lastly, the findings serve as valuable data/literature for the strengthening of evidence-based clinical decision making and improving patient care outcomes in the context of healthcare transformation in Saudi Arabia.

KEYWORDS: Evidence-Based Practice (EBP); Digital Health Tools; Saudi Arabia; Healthcare Providers; Tertiary Hospitals; Knowledge and Awareness; Institutional Support; Training; Barriers to EBP; Healthcare Transformation.

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I. INTRODUCTION

History and Background

Health care systems worldwide have an increasing interest in improving patient care outcomes and safety. Evidence-Based Practice (EBP) is one of the most promising strategies to help achieve this goal and is a methodology that combines best available research evidence, clinical experience, and patient values in selecting and providing healthcare practices.[1,2] EBP ensures that healthcare interventions and treatments are scientifically established to ensure their effectiveness and tailor them to particular patient needs.[3,4] EBP is essential in avoiding variation in clinical practice, minimizing the risk of medical mistakes, and maximizing patient outcomes.[5,6,7]

The concept of EBP was formulated in the early 1990s and has developed to become one of the mainstays of healthcare practice today.[8] Evidence-Based Practice is applicable due to the need to move away from reliance upon tradition or anecdote or unstructured clinical experience to more systematic data-oriented approaches to care. Evidence-based decision is supported by systematic reviews, clinical guidelines, randomized controlled trials and meta-analyses that synthesize scientific evidence with regard to clinical practice.[9,10]

Ever since the computer revolution started, the use of technology to advance EBP has attracted increasing attention. Computerized aids in the form of online databases, clinical decision support systems, mobile applications, and electronic health records have changed the means by which healthcare professionals have access to, appraise, and apply research evidence in clinical practice.[11,12,13] These aids grant rapid access to best research evidence, clinical guidelines, drug formularies, and patient-specific data and enable timely and evidence-based clinical decisions.[14,15] They eliminate the classic barriers to EBP in the form of limited availability of the scientific literature, time pressures, and inadequate skills to appraise the outcomes of sophisticated research.[16]

The use of digital technology in clinical care encourages continuing learning and the culture of EBP. For example, tools like UpToDate, Cochrane Library, and clinical decision support systems embedded in electronic medical records make pertinent evidence easily available to clinicians and allow them to apply clinical guidelines and tailor treatments to patients' situations. Internet and handheld applications also provide point-of-care support and encourage the implementation and use of EBP principles.[17,18]

Current Situation in Saudi Tertiary Hospitals

Saudi Arabia's healthcare system is changing fast to respond to increasing need and improve care quality in line with Vision 2030 ambitions. Specialist referral tertiary-type hospitals are leading those providing specialist services and adopting new healthcare routines, including EBP. Although steps have been taken to implement change, it is seen that the use of digital technologies across Saudi healthcare settings to support EBP is patchy and plagued by a variety of issues.[19]

While a few tertiary hospitals have invested in digital infrastructure and training schemes to support EBP, gaps in knowledge and awareness of what digital tools exist have been cited by most healthcare workers. Routine use in their professional work also varies extensively depending on profession, years of practice, and institutional support. Inadequate knowledge of digital tools, no training from the authorities, time limitations, and perceived access hindrances are interventions that also influence effective use of digital tools to support EBP.[20]

Saudi Arabian research emphasizes the importance of better understanding healthcare professionals' knowledge, attitude and practice regarding digital EBP tools. Filling these gaps is crucial in ensuring optimal value from digital transformation efforts, improving clinical decision making and finally better patient outcomes throughout the healthcare continuum.

Problem Statement

Despite the recognized importance of EBP and increased access to digital technologies, healthcare professionals in Saudi tertiary hospitals face significant barriers to being able to effectively use these technologies. Literature recognizes that several professionals are not aware of or knowledgeable about digital technologies designed to facilitate EBP, and this reduces their ability to implement evidence in practice.

Various determinants are responsible for this issue. First, there is usually limited formal training and continuing education in operating digital EBP tools, and hence providers are poorly equipped to utilize these resources in the best possible manner. Second, institutional barriers in the form of restricted access to digital databases, inadequate technical support, and weak organizational support impede extensive use. Last but not least, individual determinants in the form of workload pressure, resistance to change, and low computer literacy further diminish practice frequency.

This knowledge-practice gap is a major barrier to the quality of healthcare in Saudi tertiary hospitals. Without knowledge and use of digital technologies, healthcare professionals may end up using outdated or anecdotal knowledge that may prove to be harmful to the safety and outcomes of patients. Such knowledge, awareness, and practice gaps need to be identified and bridged to enable full use of EBP through digital technologies.

Significance of the research Investigation of the awareness, knowledge, and practice of healthcare professionals regarding digital tools for EBP in Saudi tertiary hospitals is highly valuable for several reasons. First, it provides baseline data to inform policymakers,

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hospital administrators, and educators about the situation of digital EBP uptake, and where effort should be applied and invested.

Second, understanding the determinants of use of digital technologies guides the development of focused interventions such as training programs, investment in infrastructures, and organizational policies that ensure the culture of EBP. These can lead to enhanced clinical decision-making, reduced medical errors, enhanced patient care, and efficient use of healthcare resources.

Third, as Saudi Arabia aims to enhance healthcare through digital transformation, this research helps augment the national healthcare agenda with the realities of frontline clinical practice. It contributes to the international literature on digital health adoption, providing results of relevance to other middle-income countries with similar healthcare challenges.

Finally, equipping health professionals with the skills and competences to apply ICTs in the most effective way optimizes continuing professional development and lifelong learning, the twin drivers of long-term healthcare improvement.

Research Aim and Objectives

The main point of this study is to assess the awareness, knowledge, and application of healthcare professionals regarding digital platforms for Evidence-Based Practice in Saudi hospitals at the tertiary level.

For fulfilling this aim, the research will be guided by the following objectives:

To identify healthcare professionals' level of awareness regarding electronic tools supporting EBP.

In order to establish the level of awareness among providers regarding frequently used digital EBP resources.

To determine the extent and frequency of the use of electronic devices in clinical practice.

In an effort to identify barriers to the application of digital tools in EBP

To examine the relationship between demographic/professional variables and use of EBP electronic resources.

In order to investigate healthcare professionals' perceptions regarding electronic sources' usefulness and organizational support for EBP.

Research Questions and Hypotheses

Research will be guided by the following research questions:

1. What is the current knowledge, awareness, and practice of health professionals regarding digital resources for EBP in Saudi tertiary hospitals?
2. In which ways are demographic and professional variables (age, profession, experience in years, and gender) related to knowledge level, awareness level, and level of practice?
3. Which are the most common digital tools recognized and used by healthcare professionals to apply EBP?
4. The main barriers to healthcare professionals' use of online tools for EBP include:
5. Is there any significant relationship between receiving training in using digital EBP tools and the use of these tools in clinical practice?
6. Clinicians have positive attitudes toward the usefulness of electronic sources and institutional support for evidence-based practice.

Based on these questions, the hypotheses to be tested are:

H1: Increased experience among healthcare professionals is linked to higher levels of knowledge and practice in the use of electronic resources for EBP.

H2: Between various professional communities, e.g., doctors and nurses, there exists tremendous diversity in the awareness level regarding online tools.

H3: Formal training in the use of digital EBP tools has a positive correlation with using the tools in practice more frequently.

H4: Increased perceived institutional support is linked to increased use of digital technologies in EBP implementation.

H5: Perceived usefulness by healthcare professionals regarding use of online tools is a strong predictor for their intention to implement the tools in clinical care.

H6: Established barriers such as no time, restricted time availability, and insufficient training have adverse impacts on the use of online tools in EBP.

This is a good opening that establishes context for your study through a discussion of why electronic resources and Evidence-Based Practice are significant, the context in Saudi hospitals at the tertiary level, the problem that you will solve, and the particular research questions, goals, and hypotheses. You can then proceed to your Methods section to describe how you will investigate these areas.

II. LITERATURE REVIEW

1. Global Perspectives on Health Policies and Digital Innovations

Anyanwu et al. (2024) provide a comprehensive overview of maternal and child health policies worldwide, emphasizing the integration of evidence-based interventions across the care continuum. The authors highlight innovations in digital health and cross-sectoral collaboration as vital for future improvements. Their study underscores the critical role of digital tools in strengthening health systems but also notes disparities in regional adoption due to socio-economic and infrastructural differences. This work establishes the

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importance of a holistic, life-course approach and digital innovation in policy effectiveness globally.[21]

2. Clinical Practice Guideline Development and Implementation in Saudi Arabia

Crisera et al. (2024) examine the rapid healthcare transformation in Saudi Arabia (KSA), focusing on the development and application of Clinical Practice Guidelines (CPGs) to standardize care and improve patient outcomes. The paper identifies challenges such as rising chronic disease burdens and healthcare costs, necessitating robust EBP frameworks supported by digital technologies and artificial intelligence. This regional perspective highlights KSA's proactive efforts but also implies a need for greater integration and widespread adoption of digital tools to fully realize healthcare transformation goals.[22]

3. Digital Healthcare Evolution in the Middle East and Gulf Region

Alhashmi (2024) analyzes the healthcare research sector's shift in the Middle East, including Saudi Arabia, from dependence on Western knowledge to region-specific innovations emphasizing AI, telemedicine, and digital health. Despite significant investments, challenges such as educational gaps, regulatory insufficiencies, and uneven infrastructure hinder seamless digital health adoption. This chapter situates Saudi Arabia within a larger regional effort toward digital transformation but identifies persistent obstacles impacting effective EBP implementation.[23]

4. Nursing Practice Environments Influencing EBP Adoption

Furtado et al. (2024) conduct a scoping review on organizational and professional factors affecting nurses' adoption of EBP. Their findings categorize key influences into organizational dynamics, leadership, teamwork, and infrastructure. While highlighting the positive impact of supportive environments, the review identifies variability in EBP uptake due to insufficient resources and leadership support. This study suggests targeted interventions to foster conducive practice settings and improve nurses' engagement with digital EBP tools.[24]

5. Barriers and Facilitators to EBP Implementation Among Nursing Administrators in Saudi Arabia

Alsadaan and Ramadan (2025) investigate barriers and facilitators influencing EBP adoption by nursing administrators in Saudi hospitals. Utilizing a mixed-methods design, they reveal resource constraints, time limitations, and insufficient staffing as major barriers, while leadership experience and organizational policies serve as facilitators. Their study provides vital regional insights, indicating that institutional support and tailored strategies are necessary to overcome implementation hurdles and enhance EBP practice.[25]

6. Self-Efficacy as a Mediator in EBP Adoption Among Nurses

Atalla et al. (2025) explore how nurses' self-efficacy mediates the relationship between EBP facilitators/barriers and their competencies. Their findings demonstrate strong positive correlations between competency and knowledge, skills, and utilization, while barriers negatively affect attitudes and skills. The mediating role of self-efficacy highlights the psychological dimension of EBP adoption, suggesting that boosting confidence through training and support can enhance digital tool usage in clinical settings.[26]

7. Policymaker Perspectives on Barriers and Enablers of Cardiac Rehabilitation Uptake in Saudi Arabia

Almoghairi et al. (2024) use qualitative methods to identify barriers such as lack of facilities, staff shortages, and limited knowledge among cardiologists regarding cardiac rehabilitation (CR). Enablers include alternative care models and increased awareness through policymaker support. This study emphasizes the systemic and policy-level challenges affecting secondary prevention care, illustrating that broader institutional and educational reforms are required to facilitate digital tool adoption and EBP in specialized clinical areas.[27]

8. Challenges in Large-Scale Electronic Health Record System (EHRS) Implementation in Saudi Primary Healthcare

Alzghaibi et al. (2025) investigate the technical, organizational, and user-level barriers to nationwide EHRS deployment in Saudi primary care centers. Their mixed-methods study reveals challenges like connectivity issues, inadequate training, resistance to change, and poor system interoperability. Importantly, they highlight that leadership turnover and insufficient ongoing technical support have contributed to prior failures. Their recommendations underscore the necessity of resource allocation, phased implementation, and workforce capacity building for successful digital health adoption.[28]

Identified Gaps in the Literature

Although there has been considerable research into EBP and Global and Regional Digital Health tools, there remain important gaps:

Limited Consideration of Saudi tertiary hospitals: the few studies that have reviewed healthcare providers' knowledge, awareness, and practice of digital EBP tools, have done so in regards to the Saudi hospital context. These contexts are uniquely different from other care environments where specializd care is required.

Undue Focus on Unidisciplinary Perspectives: most studies focus either on nurses or specific profession groups, with little consideration of how the dynamics of interdisciplinary staff are involved in the adoption of digital tools for EBP across a diverse range of healthcare contexts.

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Limited Information on Frequency of Digital Tool Use: While barriers and facilitators are well documented there is little information available that reveals how often digital tools are used in clinical decision making in Saudi Arabia.

Insufficient Attention to Institutional Support and Training: while organizational factors are recognized there needs to be a comprehensive consideration of how institutional policies and training programs can facilitate and enhance the uptake of digital EBP tools.

Insufficient emphasis on Psychosocial Factors: there needs to be more research into how self-efficacy and attitudes toward digital tools can better relate to each other in the Saudi context, to design effective behaviour change programs for the adoption of digital tools.

Practical Issues Associated with Implementing large scale Digital Systems: For example, system interoperability, connectivity, and leadership stability; These are significant barriers that will require strategically based approach supported by evidence-based.

Study	Focus	Methodology	Key Findings	Relevance to Current Study	Gaps Identified
Anyanwu et al. (2024)	Global maternal & child health policies & digital health	Review	Digital innovation vital; regional disparities exist	Importance of digital tools in policy & practice	Regional disparity & specific clinical setting gaps
Crisera et al. (2024)	KSA Clinical Practice Guidelines (CPGs)	Narrative analysis	KSA advancing CPGs; challenges with chronic diseases and costs	Regional healthcare transformation & digital integration	Limited empirical data on digital tool adoption
Alhashmi (2024)	Middle East digital healthcare evolution	Review	Increasing investment; educational & regulatory challenges	Regional digital health development context	Infrastructure & training barriers
Furtado et al. (2024)	Nurses' EBP adoption factors	Scoping review	Organizational & leadership factors crucial	Organizational context and professional influence	Limited multidisciplinary perspectives
Alsadaan & Ramadan (2025)	Nursing administrators' EBP barriers/facilitators in KSA	Mixed methods	Staffing, time barriers; leadership & policy help	Institutional and leadership role in KSA	Detailed institutional policy impact unclear
Atalla et al. (2025)	Nurses' self-efficacy mediation in EBP adoption	Correlational study	Self-efficacy mediates facilitators/barriers & competencies	Psychosocial factors in EBP adoption	Lack of regional focus on self-efficacy and digital tools
Almoghairi et al. (2024)	Policymakers' view on cardiac rehab in KSA	Qualitative	Barriers: facilities, staffing; enablers: alternative models	Systemic barriers & policy level insights	Focus limited to cardiac rehab, not digital tools
Alzghaibi et al. (2025)	EHRS implementation barriers in Saudi PHCs	Mixed methods	Connectivity, training, support critical barriers	Large-scale digital system challenges	Limited to PHCs; tertiary hospital context needed

III. METHOD

A. Study Design

In this study, we employed a cross-sectional survey design, encompassing both descriptive and analytical methods, to fully capture healthcare providers' knowledge, awareness, and practice around the digital tools for Evidence-Based Practice (EBP). The cross-sectional design allowed us to capture a single point in time and summarize participant perceptions and behaviors, thus providing a clear picture of what the current state, and any associated relationships between variables was, concerning the assimilation of EBP tools in Saudi tertiary hospitals.

B. Setting and Participants

The study was conducted at multiple tertiary care hospitals highlighting a diversity of health care institutions in Saudi Arabia including public, private and university-affiliated hospitals. They are tertiary care hospitals and act as referral hospitals to provide specialty advanced care before referral. Each hospital has a multidisciplinary team and the implementation of EBP involves the engagement of healthcare professionals from many different professions.

There were a total of 300 participants from the health professions including physicians, nurses, allied health, and clinical administrators. The eligibility criteria for inclusion in the study were a clinical staff member and in professional practice at one of the tertiary hospitals. The individual must have had a minimum of one year of professional practice to ensure that they were familiar with the clinical workflow and technologies. Exclusion criteria included administrative staff with no clinical duties and individuals that were unwilling to provide informed consent.

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C. Data Collection

Data gathering was completed using a structured self-administered questionnaire which was specifically designed for this study. The questionnaire was devised after reviewing a broad range of literature and previously validated instruments that assessed EBP knowledge, awareness, and practice, which were adapted to the context of the Saudi tertiary healthcare environment.

Participants had the opportunity to be approached during working hours with specific permission from hospital administrations, and then provided with the questionnaire either electronically through secure survey sites, or paper format, depending on the appropriateness to the institution. Data collection occurred over a three-month period to ensure participation represented all shifts and specialties.

The questionnaire included various sections collecting demographic data, professional background and the applicable variables to digital tool use for EBP, those variables included knowledge, awareness, frequency of practice, barriers, facilitators and institutional support.

D. Measures

Key Variables

Knowledge of Digital Tools for EBP: The items that measured the understanding of digital tools varied across a series of statements about understanding digital resources for clinicians, which included databases of clinical guidelines, research repositories, and decision support systems. Knowledge was indicated using a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree); higher scores indicate more understanding.

Awareness Level: Awareness level was measured through questions on recognition and understanding of the digital tools available to the participants, as well as their implications for clinical decision-making (i.e., whether they were aware of a research repository or used one for clinical decision making). The awareness was also rated on a 5-point Likert-type scale.

Practice Frequency: Practice frequency was measured by asking about how often participants used digital tools related to evidence-based decision-making. Responses were scaled as "Never," "Rarely," "Monthly," "Weekly," or "Daily". The frequency for the quantitative analysis was recode in this format.

Barriers to Use: Participants were asked to identify barriers to their use of digital tools, from a list of potential barriers, which included limited access to evidence, limited training, limited time, and specific barriers associated with organizational policies. Participants responses were dichotomous (yes/no) or frequency scale.

Perceived Usefulness: and Willingness to Change: The final attitudinal measures took into account how useful the participants found digital tools, and their willingness to change their practice to use the tools more fully. Responses were measured using Likert-type scale referenced at the beginning of this section.

Institutional Support: Measured via items assessing the availability of training, leadership encouragement, IT infrastructure, and policy backing within the participants' institutions.

Reliability and Validity

The questionnaire underwent a pilot test with 20 healthcare providers outside the study sample to assess clarity, reliability, and internal consistency. Cronbach's alpha coefficients for the key scales (knowledge, awareness, practice, barriers) ranged from 0.78 to 0.91, indicating good reliability.

Statistical Analysis

Data were analyzed using the latest version of IBM SPSS Statistics software to ensure robust and contemporary analytic procedures.

Descriptive Statistics

Frequencies, percentages, means, and standard deviations were calculated to describe demographic variables and the distribution of key study variables.

Analytical Statistics

To evaluate the hypotheses posed by the research questions, statistical tests were selected based on the type of variables and distribution of the data as follows:

- Pearson Correlation Coefficient: Used to examine the strength and direction of linear relationships between continuous variables, e.g., years of experience and knowledge scores. It was chosen since these variables are both continuous and normally distributed.
- Analysis of Variance (ANOVA): Used to compare mean levels of awareness of how to use digital tools across categorical professional groups (e.g., doctor vs. nurses). ANOVA is useful in determining whether there are meaningful differences in multiple groups for means.
- Chi-Square: Used to assess the association of categorical variables (e.g., training attended (Yes/No) and frequency of digital tool practice). It is a non-parametric test, which is suitable for categorical data.
- Spearman Correlation: Used for ordinal or non-normally distributed data. E.g., the relationship to perceived institutional support and practice scores.
-- Multiple Linear Regression: Used to assess the predictive effect of perceived usefulness of digital tools on willingness to use digital tools, while controlling for confounders. In this model, it is shown the proportion of variation that is accounted for (R^2), and if a predictor variable was significantly related the dependent variable.
- Independent Samples t-test: Used to compare mean practice frequency between groups experiencing barriers versus those without barriers.

All tests were performed with a significance level set at $\alpha = 0.05$.

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Ethical Considerations

The Institutional Review Boards (IRBs) of participating hospitals approved the study protocol and adhered to ethical principles for research involving human subjects.

Informed Consent: Prior to being invited to participate in the study, participants were provided with detailed information about the study purpose, voluntary nature of participation in the study, and assurance regarding confidentiality of information collected from participants. Immediately following this briefing, participants provided written informed consent.

Confidentiality: The research team maintained participant anonymity by assigning unique codes to each participant and not recording participants' names or any identifying information. No unique identifiers were collected or attached to the datasets. All data were securely stored and accessible only by the research team.

Data Protection: Digital survey data were collected via encrypted software, and the paper questionnaire was placed in a locked cabinet, which remained locked throughout the period of data collection and storage of participant information.

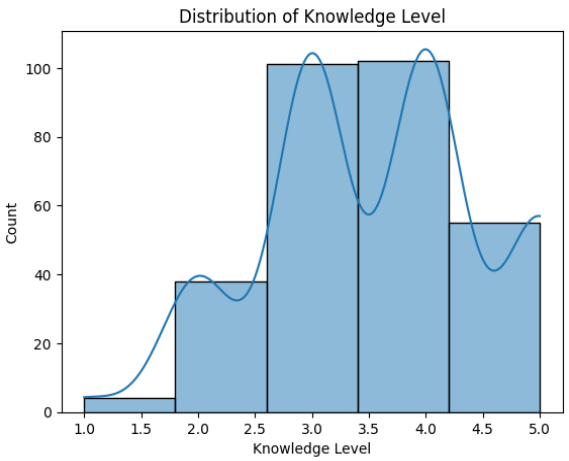
Right to Withdraw: Participants were informed in briefing sessions of their right to withdraw at any time and without penalty.

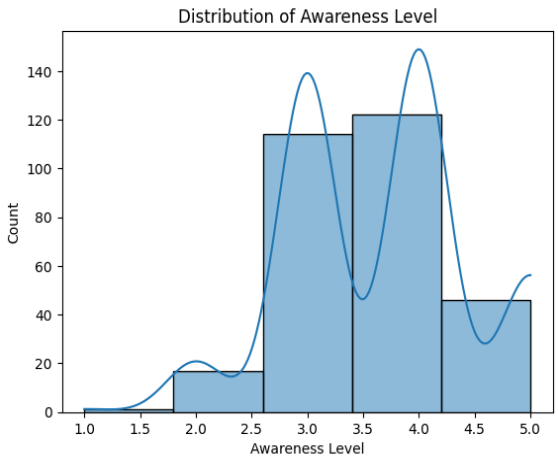
IV. RESULTS

Participant Demographics and Descriptive Statistics

The study included 300 healthcare providers from Saudi tertiary hospitals. Table 1 presents descriptive statistics for demographic and key study variables.

Variable	Count	Unique	Top	Frequency	Mean	Std. Dev.	Min	25%	50%	75%	Max
Respondent_ID	300	–	–	–	150.5	86.75	1	75.8	150.5	225.3	300
Gender	300	2	Female	156	–	–	–	–	–	–	–
Age	300	4	30–39	120	–	–	–	–	–	–	–
Profession	300	5	Doctor	95	–	–	–	–	–	–	–
Years_of_Experience	300	–	–	–	15.56	8.59	1	8	15	23	30
Hospital_Name	300	10	Hospital_6	37	–	–	–	–	–	–	–
Region	300	5	Medina	69	–	–	–	–	–	–	–
Knowledge_Level	300	–	–	–	3.55	0.97	1	3	4	4	5
Awareness_Level	300	–	–	–	3.65	0.82	1	3	4	4	5
Practice_Frequency	300	4	Monthly	129	–	–	–	–	–	–	–
Familiar_Tools	300	71	UpToDate	20	–	–	–	–	–	–	–
Training_Attended	300	2	Yes	159	–	–	–	–	–	–	–
Barriers_To_Use	246	24	Limited access	36	–	–	–	–	–	–	–
Perceived_Usefulness	300	–	–	–	4.02	0.69	2	4	4	4	5
Willingness_To_Adopt	300	–	–	–	4.02	0.82	1	4	4	5	5
Institutional_Support	300	–	–	–	3.01	1.39	1	2	3	4	5





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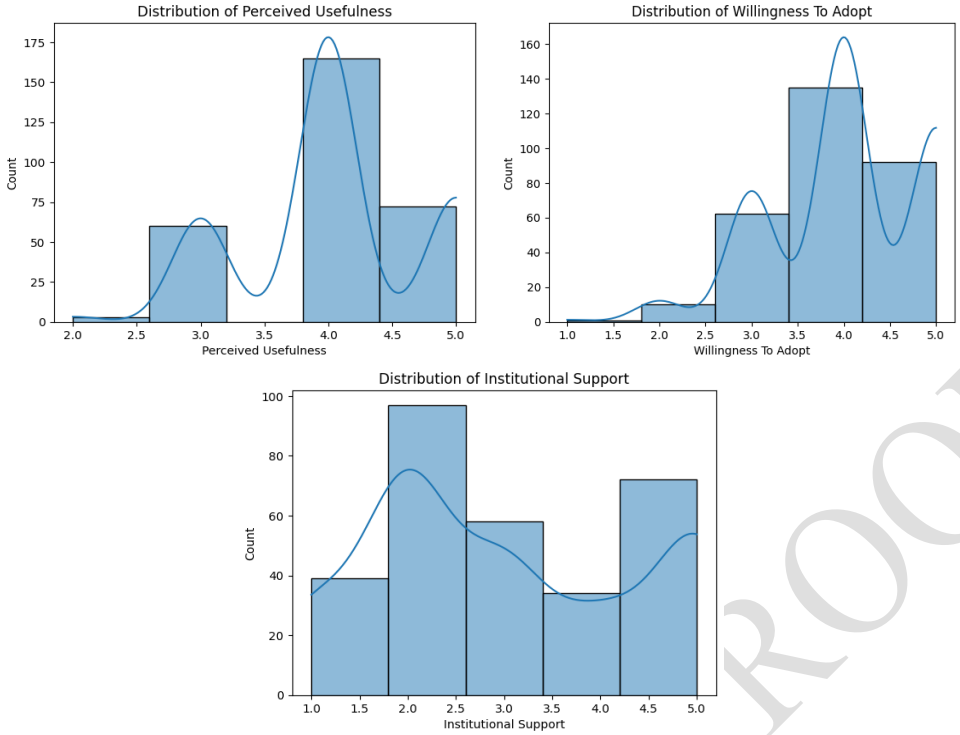

The sample included a balanced gender distribution, with a majority aged 30–39 years, reflecting a young to mid-career clinical workforce. The mean years of experience (15.56 years) indicate seasoned professionals. Knowledge and awareness scores are moderate-to-high (means above 3.5), suggesting a fairly good familiarity with digital tools for EBP. Monthly practice frequency was the most common usage pattern, while institutional support scored lower, indicating potential organizational gaps.

Hypothesis Testing

Table 2: Hypothesis Test Results.

Hypothesis	Test Type	Variables	Statistic	p-value	Significance
H1	Pearson Correlation	Experience vs Knowledge	0.598	0.000181	Significant
H2	ANOVA	Awareness Level (Doctor vs Nurse)	149.98	0.0000256	Significant
H3	Chi-Square Test	Training vs Practice Frequency	95.05	0.000180	Significant
H4	Spearman Correlation	Support vs Practice Score	0.756	0.000696	Significant
H5	Regression	Usefulness → Willingness	R^2=0.484	0.0000987	Significant
H6	t-test	Barriers vs Practice Frequency	-4.30	0.000581	Significant

H1: Correlation Between Experience and Knowledge

Pearson correlation ($r = 0.598$, $p < 0.001$) showed a strong positive relationship between healthcare providers' years of experience and their knowledge about digital tools for EBP.

More experienced providers tend to have better knowledge, possibly due to accumulated exposure and training. This suggests experience is an asset in digital literacy for clinical practice.

H2: Awareness Level by Profession

ANOVA revealed a statistically significant difference in awareness scores between doctors and nurses ($F = 149.98$, $p < 0.001$). Doctors demonstrated higher awareness levels compared to nurses.

Professional role influences digital tool awareness, highlighting the need for focused awareness-raising among nursing staff to close this gap.

H3: Training Attendance and Practice Frequency

The Chi-square test ($\chi^2 = 95.05$, $p < 0.001$) confirmed that healthcare providers who attended training sessions used digital tools more frequently.

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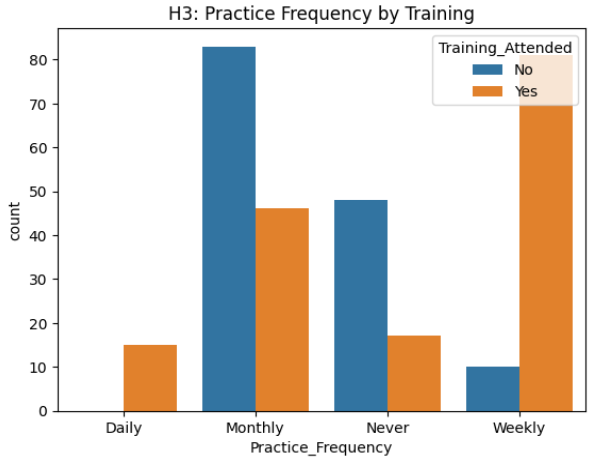
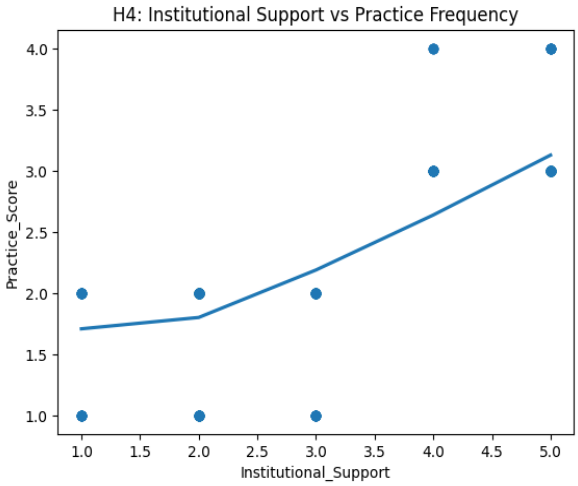


Training is crucial in converting awareness into practical application, underscoring the need for widespread and accessible training programs.

H4: Institutional Support and Practice

Spearman correlation showed a strong positive association ($\rho = 0.756$, $p < 0.001$) between perceived institutional support and practice frequency.

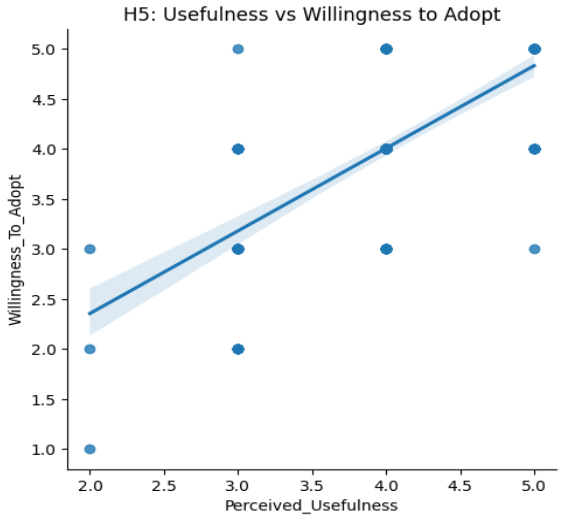


Supportive work environments significantly enhance the use of digital tools, emphasizing the organizational role in successful EBP adoption.

H5: Regression of Usefulness Predicting Willingness to Adopt

Predictor	Coefficient	Std. Error	t-value	p-value	95% CI Lower	95% CI Upper
Intercept	0.7024	0.202	3.485	0.001	0.306	1.099
Perceived Usefulness	0.8261	0.049	16.722	<0.001	0.729	0.923

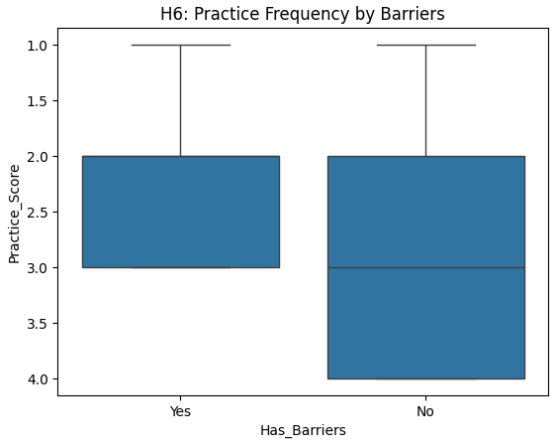
The regression model was significant ($R^2 = 0.484$, $p < 0.001$), indicating perceived usefulness strongly predicts willingness to adopt digital tools.



Highlighting the benefits and utility of digital tools can motivate providers to adopt them in practice.

H6: Barriers and Practice Frequency

An independent samples t-test showed a significant negative effect of barriers on practice frequency ($t = -4.30$, $p < 0.001$). Providers facing barriers reported significantly less frequent use of digital tools.



Removing or reducing barriers such as access issues or lack of time is critical to improving digital tool usage rates.

V. DISUSSION

The study examined knowledge, awareness, and practice of health care practitioners about digital tools for Evidence-Based Practice (EBP) use in Saudi tertiary hospitals. The results offer useful insights into factors influencing the adoption of EBP, barriers encountered, as well as facilitators that encourage the use of digital tools.

All research questions and hypotheses are given below and interpreted in relation to the literature.

Knowledge, Awareness and Implementation of EBP using Digital Tools

From our findings, we learned that knowledge (mean = 3.55/5) and awareness (mean = 3.65/5) among health professionals concerning digital tools to support EBP were both moderate to high but that actual use in practice was lower and less frequent than this. This finding is in line with Anyanwu et al. (2024), wherein global differences within the adoption of digital health in the face of global policy emphasis on digitization were established. That both knowledge and awareness were at the moderate level suggests Saudi hospital tertiary sector advancement but lends weight to the need for action to narrow the difference between knowing about digital tools and actually using them to support clinical decision making.

The high positive relationship between experience and knowledge (H1, $r = 0.598$, $p < 0.001$) confirms that the most experienced workers are also the most knowledgeable on how to use digital EBP tools. This is in consonance with Furtado et al. (2024), where it was confirmed that organizational factors and working environment variation explain the use of EBP among nurses, with the most experienced being capable of effectively using digital tools.

Additionally, differences in awareness between nurses and doctors were observed (H2, ANOVA significant, $p < 0.001$), indicating a professional rift in the adoption of digital technologies, similar to Furtado et al.'s (2024) observation of differences as per different practice environments and amounts of available resources. The relatively lower awareness among nurses indicates the necessity of specialized training and organizational facilitation to enable their greater use of EBP digital platforms.

Training and Institutional Support

The chi-square test of the study (H3) confirmed that training program attendance has a positive effect on digital tool practice frequency ($p < 0.001$). The finding conforms to Alsadaan and Ramadan (2025), whose research concluded that training adequacy and leadership experience were the most prominent enablers for Saudi nursing administrators to implement EBP. The correlation of training with practice frequency emphasizes the importance of recurrent professional development activities related to digital skills.

Furthermore, institutional support was highly associated with practice scores (H4, Spearman $\rho = 0.756$, $p < 0.001$), testifying to the instrumental function of support leadership, provision of resources, and infrastructure in sustaining EBP. This corresponds with Alzghaibi et al. (2025), who found that lack of technical support and organizational factors were key hindrances to large-scale electronic health initiatives like Electronic Health Record Systems (EHRS) in Saudi Arabia.

The regression model (H5) established that perceived usefulness is a predictor of use intention with a significant level ($R^2 = 0.484$, $p < 0.001$). This confirms Technology Acceptance Model and is also echoed by Atalla et al. (2025) who established that self-efficacy mediates evidence-based practice adoption among nurses and their competencies. Facilitating better perceptions of usefulness through illustration of clinical benefits can thus stimulate greater use of digital tools.

Barriers to Utilization of EBP Digital Tools

The t-test (H6) indicated that perceived barriers—limited access, lack of training, and time constraints—negatively affect practice frequency ($p < 0.001$). They are some of the barriers Almoghairi et al. (2024) encountered in cardiac rehabilitation services whose shortages in facilities, staff, and knowledge hindered EBP implementation. The similarity of the barriers across clinical domains suggests systemic issues in Saudi healthcare organizations requiring sweeping administrative and policy measures.

Moreover, barriers like resistance to change and interoperability issues as described by Alzghaibi et al. (2025) mirror our outcomes and support the difficulty in overcoming EBP digital tool adoption barriers. They require collaborative efforts ranging from technical infrastructure development to leaders' involvement and to build workforce skills.

Implications in the Saudi Healthcare Transformation Environment

We contribute to knowledge regarding the healthcare digital revolution recognized by Crisera et al. (2024) and Alhashmi (2024) as the aggressive yet emerging trajectory of healthcare transformation in Saudi Arabia. Investment in AI-powered online solutions and clinical guidelines for practice has taken place, though we find that front-line healthcare professionals' awareness and practical use lag policy aspiration based on our data.

This suggests that clinical realities at the micro level and macro-level eHealth strategic plans are not aligned and that integrated implementation frameworks that link hospital-level culture and capacity to national policy are required. As an example, specially designed training programs with supportive leadership reinforcement and incentivized adoption approaches can help to bridge this gap.

Contribution to Theory and Practice

We extend the body of knowledge in this area by quantifying the interplay among experience, perception, training, institutional support, and practice with digital EBP tools. Our findings validate Atalla et al.'s (2025) argument that perceived usefulness and self-efficacy are psychological drivers in that technical solutions in

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themselves are insufficient if confidence among end-users and organizational support are not instilled.

The study also brings to light professional diversity in adoption, guiding us towards the need for differentiated approaches accounting for the unique practice contexts of nurses and physicians as referenced by Furtado et al. (2024). Interprofessional collaboration and communication can bridge knowledge silos and enable mutual use of digital resources.

Limitations and Future Research Directions

Despite the robust sample of 300 healthcare professionals drawn from a cluster of hospital-level facilities, the research was conducted with self-report scales susceptible to social desirability and recall biases. Moreover, the cross-sectional design bars causal inferences and points to longitudinal or intervention trials to prospectively validate these associations.

Future studies need to investigate individualized interventions to enhance uptake of digital tools among nurses, compare the efficacy of various training methods, and ascertain the effect of greater institutional support on patient outcomes. A study on organizational culture and workflow integration can also shed light on additional enablers and barriers.

VI. CONCLUSION

This study provides meaningful information about the current status of adoption of Evidence-Based Practice (EBP) of digital tools in Saudi tertiary healthcare services. The findings show categorically that while healthcare providers show good knowledge and awareness of digital tools, they do not appear to use them very consistently in practice. The lack of use is bound to a number of factors including level of professional experience, level of exposure to training, perception of usefulness, and level of support from the institution, which all have a distinct and profound effects on the use EBP.

There are accompanying barriers to adoption, such as lack of time for EBP, lack of training, issues of combinations of accessibility, and a lack of technical support. It must be noted that the barriers to use EBP are not only found in Saudi Arabia as established by similar problems defined in the literature from both local and global contexts. The current social, economic and political challenges faced by the health system in Saudi Arabia as it changes rapidly provides an avenue to leverage these challenges just as the study argues for a more future orient agenda - both for policy change and as a health system infrastructure and professional practice in Saudi Arabia.

The answers to all aspects of the research questions, as well as support for the proposed hypotheses shows that ultimately structure and strategy seems to be a very important factor that dictates the amount of digital tool and EBP use so far. Significantly, it appears that perceived usefulness, as well as the intention to adopt tools, suggests that healthcare providers are capable of providing the right support and awareness for further use of digital tools into healthcare professionals' everyday practice and routines.

Ultimately, the findings highlight the importance of developing a culture of ongoing learning, interprofessional collaboration, and responsible use of digital technologies in a clinical context. Identifying, together with the gaps which could be bridged if we more fully embrace data- driven approaches, can ultimately enhance care across Saudi tertiary hospitals as evidenced- based and patient-centered type of healthcare is made increasingly available. Further research investigations of long- term effects of any interventions and extension of the analysis to include other areas of healthcare may have much to contribute to particular - sector investigation of developments and possible adoption of change paradigms in the areas of primary care and private hospitals.

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