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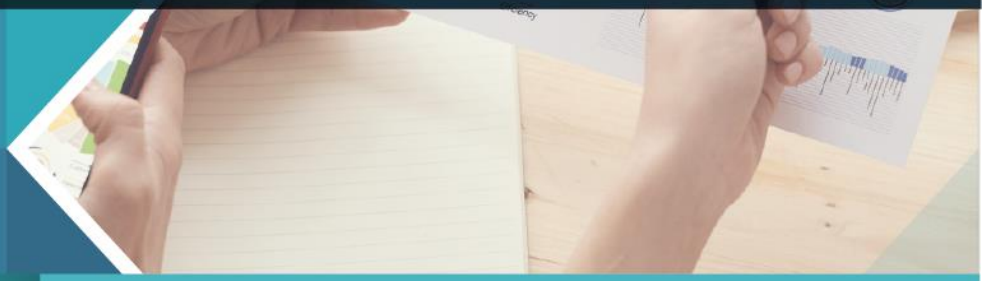

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EFFECTIVE APPLICATION OF M HEALTH AND THE ROLE OF REGULATORY COMPLIANCE TO ADVANCE THE HEALTH CARE SECTOR.

"CASE STUDY APPLIED TO WORKERS IN THE HEALTH CARE SECTOR"

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The IMPACT OF EFFECTIVE MOBILE HEALTH IMPLEMENTATION AND THE ROLE OF REGULATORY COMPLIANCE ON THE ADVANCEMENT OF THE HEALTHCARE SECTOR.

"A field study on the health care sector"

Abstract:

Purpose: This study investigates the utilization of mobile health technologies (M Health) because of technological advancement and underscores the significance of regulatory compliance in its management to bolster and improve the provision of healthcare services.

This is accomplished through a field study approach involving a sample of healthcare workers. The study underscores the importance of effectively utilizing mobile health applications via regulatory compliance to ensure the administrative and ethical framework surrounding the implementation of this tool in the healthcare sector. By analyzing the experiences of healthcare workers, the study offers insights into the practical challenges and opportunities related to the adoption of M Health and regulatory compliance.

Design/methodology/approach: An online survey conducted using a systematic questionnaire among a sample of health sector workers who use digital streaming services. In addition, based on previous studies, the questionnaire included dependent and independent variables. The questionnaire consisted of nine questions covering both dependent and independent variables.

It has been divided into three main sections in accordance with the research hypotheses and objectives.

The first section includes personal and demographic data such as Gender, and how did you learn about these health apps?

The second section of the questionnaire includes six questions to measure the extent of knowledge, effectiveness, and prevalence of mobile phone use, with a total score calculated from all questions.

The final section of the questionnaire contains six questions to measure the second and third axes: "Attitudes and Practices", with the total score calculated from all questions.

Findings: The study's findings contribute to understanding strategies for improving mobile health interventions while ensuring compliance with regulatory standards, thereby advancing healthcare delivery and quality within the healthcare sector.

Originality/value: this study delves into the importance of mobile health and the benefits of its applications, which can help solve many issues within the healthcare sector, a critical service-oriented sector, it differs from previous studies by offering suggestions on effectively implementing mobile health mechanisms to support their dissemination, efficacy, and sustainability.

Keywords: *health applications, Mobile Health, Enterprise Regulatory Compliance, Behaviour Change, E-health, virtual care, healthcare system.*

1- Introduction

The swift advancement in technology has begun to significantly influence numerous service sectors in Egypt and across the globe. Among these sectors, the health sector stands out as particularly important, given its role in catering to all strata of society. Consequently, it has become imperative to delve into the repercussions of this ongoing progress and explore ways to leverage it effectively. This entails advocating for the adoption of these advancements in a manner that not only enhances the quality of service but also maximizes the benefits within this crucial sector.

With the global embrace of diverse cultures and the influence of international developments on local contexts, there has been a noticeable surge in the use of mobile phones. This surge represents a significant facet of technological advancement worldwide. Consequently, mobile health, an electronic health tool, has emerged as a direct result of the widespread adoption of mobile phones across the globe. M Health is user-friendly and enjoys broad acceptance. Given the paramount importance of the healthcare sector in Egypt, it became imperative for us to explore avenues for its multifaceted development and leverage global trends to enrich it with innovative practices. This involves not just offering practical mobile Health applications, but also establishing a regulatory framework and regulations to ensure the effective and sustainable deployment of this modern mechanism (M Health). This ensures a tangible and positive impact on healthcare services.

The use of mobile devices by healthcare professionals is leading to a transformation in clinical practice. Many medical software applications can now assist in tasks ranging from information and time management, maintenance and access to health records, data collection, and patient management and monitoring, to decision-making in healthcare delivery.[1]

[1] Mohamad Alameddine et AL , 2020, Patient Attitudes Toward Mobile Device Use by Health Care Providers in the Emergency Department: Cross-Sectional Survey, Vol 8, No 3, doi: 10.2196/16917

- ***Therefore, the main problem of this study:***

It is currently known that, with the widespread use of technology and the increase in health applications, implementing mobile health technologies (M Health) is simple. However, ensuring that M Health applications are effective and sustainable to maximize their benefits is currently a challenge, especially in light of job insecurity and the resulting concerns among medical and patient staff about this technological leap. This emphasizes the importance of regulatory compliance, which is a pivotal role in developing the healthcare sector and ensuring its continuity.

Therefore, the basic problem of this study revolves around two points:

First, to gauge the extent to which the extensive use of technology and smart apps, particularly mobile phones, impacts the effectiveness of relying on these mobile health applications.

Secondly, the absence of clear strategies and roles for those concerned with implementing mobile health.

Hence, the study focuses on the role of relevant institutions in achieving the sustainability and effectiveness of implementing mobile health applications and developing clear procedures in order to benefit from this development in advancing the health care sector.

This is consistent with the indicators indicating the importance of the field of mobile health globally and the necessity of benefiting from this development in increasing the quality of the health sector through the effectiveness of its application in Egypt, Which shows that by 2025, the digital health market is projected to reach 38 billion Based on this, the prospect and the current usage of digital technologies in healthcare can be understood[2]

2.1 The main question is:

What factors influence the effective implementation of M Health technologies and the role of regulatory compliance in advancing the healthcare sector, particularly among healthcare workers?

Branched into the following questions:

How does healthcare workers' perception of job insecurity influence their willingness to adopt and effectively utilize mobile health technologies in their professional practices?

What specific challenges and barriers do healthcare organizations face in ensuring regulatory compliance when implementing mobile health technologies, and how do these factors affect the overall effectiveness and sustainability of M Health applications?

[2] Digital health - statistics & facts , (2021), Online; accessed 7-October-2022, https://www.statista.com/topics/2409/digital-health.

- *To what extent does organizational commitment among healthcare workers affect the successful implementation and adoption of mobile health applications, and are there any significant differences in this regard based on gender or other demographic factors?*

3. ***This study aims*** *to elucidate the impact of increased technological advancements and smartphone usage on the emergence of modern mechanisms like mobile health, which affect the healthcare sector. Additionally, the study seeks to highlight the importance of effectively implementing these modern mechanisms to support their sustainability in advancing the services provided in the healthcare sector and facilitating access to its services.*

4. Literature reviews

4.1 (Studies on The impact of technological progress and smartphones on the health sector and the emergence of mobile health.):

Artificial intelligence tools are considering one of the basics that support the idea of digital health applications. Therefore, many studies have discussed the importance of artificial intelligence tools in applying digital health and the extent of the benefit that accrues from utilizing artificial intelligence tools in this as follows:

- ***A study entitled "Revolutionizing healthcare: the role of artificial intelligence in clinical practice", 2023.***

This study discussed the advantages of integrating artificial intelligence tools in the field of health care, as it explained that integrating artificial intelligence into healthcare has many excellent capabilities that help improve disease diagnosis, treatment selection, and clinical laboratory tests.

AI tools can exceed human performance in many aspects of healthcare, providing increased accuracy, lower costs, and timesaving while reducing human error.

- ***A study entitled "Designing and implementing M Health technology: the challenge of meeting the needs of diverse communities", 2023.***
- This study discusses the importance of leveraging increased access to mobile technology to alleviate the many pressures faced by healthcare systems in developing countries.

This study brings the views of many informatics professionals into discussions, whether as researchers or as health system builders, and their work has greatly enhanced the clarification of optimal strategies and settings in the world's most challenging healthcare field.

- The study also explained that there are many challenges in the field of M Health, which included problems with cellular connectivity or restricted internet, differences in literacy, cultural factors, and attitudes toward technology among some groups.

It emphasized that the lack of standardized, optimal methods for implementing M Health interventions can hinder the best intentions by those seeking to apply the technology.

- ***A study entitled "Health Care Employees' Perceptions of the Use of Artificial Intelligence Applications: Survey Study", 2019.***

- ***This study supports the opinions and results that came in the previous study, as workers in the health care sector have the same opinion about the importance of artificial intelligence tools in applying digital health, as this*** *study talked about advances in healthcare information technology and the emergence of artificial intelligence.*

Which helps in the emergence of tools to improve the quality of various healthcare processes.

- *Also discussed a few employee perceptions about the application of artificial intelligence in Saudi Arabia and the Arab world. Additionally, I investigated the*

influence of employee familiarity and job title on the perception of AI implementation in the workplace.

The results of this study showed that a large percentage of participants feared that AI would replace employees and had a general lack of knowledge regarding AI. In addition, most participants were not aware of the importance and advantages of AI in the health sector, which indicates the need for training. The results also showed that technicians are the most affected by artificial intelligence applications due to the nature of their jobs that do not require a lot of direct human interaction.

- *We find that this study discussed an important point, which is the extent of the impact of fear on the part of some doctors and workers in the health care sector regarding the increase in digital health programs through artificial intelligence tools, so that technology does not replace them or reduce their usual roles.*

As this is what actually happens regarding change in any institution, which is the fear of development or the fear that the roles that each individual is accustomed to will change.

Therefore, to benefit from the advantages of technology in advancing the health sector, workers in all categories must made aware of the importance of technology as a factor that helps them advance and develop for the better and facilitate the task process.

- ***A study entitled "Mobile cell phone technology puts the future of health care in our hands, Kumanan Wilson, 2018."***

This study affirmed that *the rise of smartphone tech and mobile apps has impacted mobile healthcare and its reach. It underscored that these apps cater to both healthcare providers and the public, giving patients more control over their healthcare.*

The study also noted that *despite the uptick in smartphone use and downloading of health apps, the challenges in integrating mobile healthcare into practical use have intensified. These hurdles include transitioning mobile healthcare tech from pilot studies to*

broader dissemination, determining the evidence needed for widespread acceptance, establishing proper regulatory frameworks, and assessing research practices in a field where tech is always evolving.

The study's findings *validate the advantages of smartphones over mobile health apps when it comes to application activation, as cell phone tech provides an easy and effective alternative to physical examinations. As the authors highlight, besides potential health benefits, efforts should be made to surmount these obstacles to fully capitalize on the advantages of M Health.*

- This is what the current study states about the importance of the role of social responsibility and individuals cooperating in training and spreading awareness for individuals in general*.*

4.2 (Studies on the role of effective M Health implementation and regulatory compliance on increasing development in healthcare services).

- *From the point of importance of artificial intelligence tools in supporting and applying digital health tools, we move to the complementary aspect of this point, which is the importance of digital health in raising the level of the health care sector, and this is what some previous studies have talked about, including the following:*

- ***A study entitled "A digital mobile health platform increasing efficiency and transparency towards universal health coverage in low- and middle-income countries", 2022.***

This study focused on low- and middle-income countries where achieving universal health coverage remains a challenge due to inadequate and fragmented financing, as well as limited access to quality health care.

The study aimed to clarify the possibility of benefiting from the mobile health platform, which considered a powerful tool to address these problems. This paper also explained how to analyse data collected from a mobile health platform helps improve networks of health care providers, monitor patient flows, and evaluate the quality and equity of access to care.

In addition, this paper demonstrated how mobile health platforms could be used to generate valuable insights into access and quality of care. Healthcare financing can be consolidated through mobile health platforms to reduce fragmentation of financing.

It can be useful for funders, health managers and policy makers to improve the implementation of universal health coverage programs in low- and middle-income countries.

- This study demonstrated the benefits that accrue from using mobile health platforms in increasing the efficiency and quality of health care, and this is consistent with the current study, which stipulates the necessity of striving to apply digital health tools efficiently in order to advance the health care sector and increase progress in providing health services to all groups.

** The speed at which life moves at the present time and the increase in technology has greatly accelerated the transformations of the health care sector, and this affects how services are obtaining as the time has come when the patient does not need to wait for several days to obtain an appointment with the doctor.*

However, he can conduct a regular check-up through a real-time video chat, and this is what M Health provides. However, although there are so many positive changes in healthcare application development services, challenges facing digital health tools still exist.

3.3 Commentary on Previous Studies

- *The presented literature reviews provide valuable insights into the role of artificial intelligence and technological development in supporting digital health implementation tools on the one hand and the widespread use of mobile phones and their progress in healthcare development, other studies emphasize the importance of*

effective implementation of mobile health as one of the digital health tools and its benefits in enhancing health care services, which is in line with the focus of the current study on mobile health as one of the digital health tools.

- ***On the other hand, previous studies also focused on*** *an important point, which is the necessity of having specific mechanisms for each country as conditions for the success of mobile health in different countries. This underscores the importance of adapting to international regulations, providing marketing support, and evaluating mobile health applications for social acceptance. Increased collaboration between clinicians, pharmaceutical manufacturers, and IT stakeholders is essential to harness the potential of M Health, which can become a cornerstone of successful healthcare reform.*

- ***The current study aligns with prior literature by focusing on*** *the independent factor, which is the effective utilization of the M Health system through organizational commitment with all stakeholders, and its impact on the dependent variable, which is the development of the health service, provided.*
- ***It also concurs with earlier research in*** *acknowledging numerous forthcoming challenges, including ethical and legal dimensions, for the effective implementation of this technology and the maximization of its benefits.*
- ***While this study differs from*** *previous ones in that it aims to present recommendations by drawing from existing literature and international perspectives on the efficient adoption of mobile health mechanisms to bolster their dissemination, efficacy, and longevity within the healthcare sector in Egypt.*

4. **The importance of this study** lies in its recognition of the global trends' impact on the local context of each country individually. The study elucidates the increasing reliance on technology and mobile phones in the current era among all individuals in society, along with the availability of some health applications. This serves as evidence of the availability of the independent variable dimension, which is the main basis for the existence of mobile health mechanisms, leading to the proliferation of mobile health applications.

On the other hand, its significance lies in its affirmation that despite the availability of the main basis for mobile health and the existence of health applications, Egypt lacks effective implementation and management of these modern mechanisms to support their sustainability.

Therefore, this study emphasizes the importance of regulatory compliance and underscores its significance in completing the dimensions of the independent variable of the study, which has a significant impact on the development and facilitation of services in the healthcare sector in Egypt (the dependent variable).

4.1 Scientific Importance: This study contributes to understanding strategies for improving mobile health interventions while ensuring compliance with regulatory standards. It thereby enhances healthcare delivery and quality within the healthcare sector.

4.2 Practical Importance: By delving into the significance of mobile health and its application benefits, this study can aid in addressing numerous issues within the healthcare sector, a vital service-oriented sector.

5. Research model

5.1 This study includes independent aspects:

That are fundamental to the topic, namely the role of effective implementation of M Health and regulatory compliance.

5.2 When we mention the dimensions of mobile health and Organizational Regulatory Compliance:

We find that they rely on several factors.

- ***Firstly, the availability of technology*** *serves as a fundamental factor in forming these applications.*

  Then *comes* ***the usability of these systems*** *and applications, where the dimensions manifest in linking the dimensions of mobile health to this sentence: "ISO 9241-11 describes three measurable dimensions for measuring system usability, namely: Effectiveness, Efficiency, and Satisfaction.*[3]

- ***The availability of specific regulations*** *to implement these applications effectively.*

5.3 Development of health care services as a dependent variable.

- The dependent variable: *It includes the desired results of the independent variable (effective implementation of M Health).*

Among the variable dimensions of the advancement of the health care sector: achieving several results, including:

- *Easy access to healthcare services for all groups without long waiting periods.*
- *Facilitating the tasks performed by healthcare workers can achieve this while saving time and effort.*

- ***The current study made a concerted effort to delve into these dimensions by elucidating the impact of the independent variable in the study on the dependent variable.***

[3] A. Hussain, H. I. Abubakar, and N. B. Hashim, "Evaluating mobile banking application: Usability dimensions and measurements," Conf. Proc. - 6th Int. Conf. Inf. Technol. Multimed. UNITEN Cultiv. Creat. Enabling Technol. Through Internet Things, ICIMU 2014, no. 1, pp. 136–140, 2015.

6. Hypotheses.

H1: *There is a non-significant correlation between measuring the effectiveness and spread of mobile phone use and measuring trends in accepting the mobile health application.*

H2: *There are non statistically significant differences between the samples according to (gender and about discovering these health applications) for mobile health and the role of organizational commitment in activating applications.*

7. Research Methodology.

The research relied on a descriptive-analytical approach, distributing a questionnaire to a sample of healthcare sector workers and patients to assess the effectiveness of mobile healthcare apps and underscore the importance of regulatory compliance.

Data processing involved statistical estimates and analyzing how the independent and dependent variables relate.

The questionnaire had responses based on a five-point Likert scale, ranging from "1" for strongly disagree to "5" for strongly agree.

Processing or analyzing the primary data is a critical step needed before doing further statistical analyses.

The primary data was analyzed through the following stages:

1. *Conducting reliability and validity tests.*

2. *Employing statistical methods to analyze the data.*

7.1 Sample Selection

The questionnaire questions *designed to measure the viewpoints of the study sample on a critical overarching topic: the surge in mobile phone usage in the modern era and the proliferation of health applications via these smartphones.*

The questionnaire broadly distributed to a subset of employees and visitors within the healthcare sector (specifically, the Psychiatry Center of Ain Shams University Hospitals).

The small sample size highlights the challenges the researcher faced in obtaining useful answers for the study.

The presence of only 25 units in the sample also led the researcher to choose to use non-parametric analysis.

The scope of the study includes *examining the impact of global trends on the local context of each country, with a focus on Egypt, In addition, determining the extent of the increasing dependence on technology and mobile phones among individuals in Egyptian society.*

As well as the extent of availability *and use of health applications. In addition, the study evaluates the importance of regulatory compliance in supporting the sustainability of mobile health mechanisms, thus increasing the efficiency, development, and facilitation of services provided within the Egyptian health care sector.*

8. What is M Health?

Today's smartphones are becoming increasingly vital and precise, acting as computers engineered to capture data and transmit it to remote storage devices. They possess the capability to gather and log data on smartphones to aid patient engagement, bolster self-care monitoring, and refine patient treatment plans.[4]

So mobile healthcare, or "mobile health technology," refers to the utilization of mobile devices, such as mobile phones and patient monitors, in medicine. In essence, mobile healthcare technology encompasses everything from healthcare applications to electronic healthcare records to home healthcare.

The World Health Organization's Global Observatory for M Health defines it as "medical and public health practice supported by mobile devices, such as [cell] phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices." Mobile health devices and apps can be employed to monitor various data points, ranging from fitness levels and heart rates to medication dosages and sleep cycles..[5]

Mobile Health offers a different and distinct healthcare model compared to today's mainstream medicine. Moreover, mobile health promotes the development of advanced, non-invasive sensor-based technologies to capture parallel information from multiple areas of the body in real time[6]*, and it has various formats summarized as it facilitates communication*

[4] Niles, Laurie Fridley, "A Best Practice Guide for the Usage of Mobile Health Applications" (2016), Paper 8.

[5] Non-Profit Trusted Source of Non-Commercial Health information" The Original Voice of the American Academy of Anti-Aging, Preventative, and Regenerative Medicine, https://www.worldhealth.net/news/ mobile-health-tools-benefits-and-applications/

[6]Sergey Pankratov, Tatiana Znamenskaya , Mobile Health (M Health): A Conceptual View ,Universal Journal of Public Health 2(2): 35-49, 2014, http://www.hrpub.org DOI: 10.13189/ ujph.2014.020201.

between the patient and the doctor or health institution and facilitates periodic follow-up through the mobile device.

Due to the increasingly widespread use of mobile technology and devices, the use of mobile technologies to support the implementation and effectiveness of "mobile health" has the potential to change the face of health service delivery worldwide.

There are now over 5 billion wireless subscribers; over 70% of them reside in low- and middle-income countries. The GSM Association reports commercial wireless signals cover over 85% of the world's population.[7]

Therefore, it is expected that we will see a greater acceleration in the development of mobile health and focus on the weaknesses that prevent its widespread adoption.

- The importance of M Health and The future of mobile health

The use of AI in healthcare has increased in recent years, which can significantly help individuals and healthcare professionals prevent and manage chronic diseases in a distinctive way.[8]*,It is one of the promising solutions to overcome the current challenges of chronic care.*[9]*, Mobile devices have become increasingly widespread around the world.*[10]

Therefore, Mobile health plays a pivotal role, providing unparalleled opportunities to enhance healthcare delivery, especially for healthcare workers. By leveraging M Health applications, workers can access vital patient information, communicate efficiently with colleagues, and facilitate remote patient monitoring. This improves overall effectiveness and efficiency in healthcare services. Additionally, M Health ensures precise and timely data collection, aiding evidence-based decision-making. Regulatory compliance guarantees adherence of these technological advancements to ethical and legal standards, preserving patient privacy and data security. Understanding the importance of mobile health and regulatory compliance is essential for improving healthcare practices, ultimately leading to enhanced patient outcomes and advancements in the healthcare sector.

[7] M Health: New horizons for health through mobile technology, https://www.afro.who.int/publications/ mhealth-new-horizons-health-through-mobile-technologie.

[8] Quality, Usability, and Effectiveness of mHealth Apps and the Role of Artificial Intelligence: Current Scenario and Challenges, 2023, JOURNAL OF MEDICAL INTERNET RESEARCH, Alejandro Deniz-Garcia et AL,doi: 10.2196/44030, https://www.jmir.org/2023/1/e44030/PDF.

[9] The use of M Health technology for chronic disease management: the challenges and opportunities for practical application, Fisseha Zewdu Amdie and Kevin Woo , 2020 , Vol 11 Issue 2 , www.woundsinternational.com.

[10] Angarita FA, Strickland M, Acuna SA. Incorporating smartphones into clinical practice. Ann. Med. Surg. 2015, 4:187. doi:10.1016/j.amsu.2015. [PMC free article] [PubMed] [CrossRef] [Google Scholar].

The future of mobile health

M Health represents a shift not just in how healthcare is given, but also a cultural shift in the healthcare system overall, moving away from a traditional ("patriarchal") care model to one of equal interaction between patients and caregivers,[11] founded on continuous information sharing through the M Health app and subsequent joint resolution.[12]However, this digital and cultural transformation encounters numerous barriers hindering its implementation due to the absence of clear legal and regulatory frameworks for effectively implementing and adopting mobile health solutions, and ensuring the sustainability of these solutions.[13]

- ***Mobile health application and the role of regulatory compliance of the concerned institutions.***

The field of mobile health is expanding rapidly as the global market for mobile devices grows, Health applications also offer benefits and risks to users, and it is evident that the regulatory framework in Egypt lacks clarity in two main areas:

(1) M Health strategies and regulations.

(2) Regulatory guidance regarding M Health apps requiring regulation.

The advantage of mobile health technology *is that it empowers users by placing them at the canter of the healthcare network. It encourages individuals to take responsibility by providing access and ownership of their personal health data and treating the application as a priority for monitoring their health.[14]*

** So if Egypt aims to lead in digital health, it needs a new framework that fosters the growth of an M Health market capable of offering innovative solutions to modern healthcare challenges while maximizing user benefits and minimizing harm.*

Therefore, the significance of regulatory compliance and adherence to standards and regulations to facilitate the expansion of M Health becomes evident.

Mobile technology has become a means of connecting patients with healthcare facilities and the teams caring for their health. Consequently, mobile phones and other devices have

[11] Gupta, A. and D. Sao, The constitutionality of current legal barriers to telemedicine in the United States: analysis and future directions of its relationship to national and international health care reform. (0748- 383X (Print)).
[12] Zhou, L.A.-O., et al.,2019 Barriers to and Facilitators of the Use of Mobile Health Apps from a Security Perspective: Mixed-Methods Study. JMIR m Health and u Health. 7(e11223)
[13] Lucivero, F. and K.R. Jongsma, 2018,A mobile revolution for healthcare? Setting the agenda for bioethics. (1473-4257 (Electronic)).
[14] S.R. Steinhubl, E.D. Muse, E.J. Topol , The emerging field of mobile health, DOI: 10.1126/scitranslmed.aaa3487, 15 Apr 2015 , Vol 7, Issue 283 , p. 283rv3.

become tools aiding individuals in monitoring their health status and managing their daily health routines in a simplified manner.

- ***It's easy for mobile healthcare organizations*** *to envision the future,* ***but*** *those that will truly succeed are the ones taking the right operational steps for digital health and mobile health now*

- *Through the power and reach of mobile communications, Mobile Health can offer a more diverse and personalized approach to healthcare. However, for Mobile Health to reach its full potential and sustain its effectiveness there must be a framework for organizing Mobile Health. However, in order to develop programs related to activating the dissemination and use of mobile health for all categories of patients and various chronic diseases, etc.*

In order to develop *programs aimed at promoting the adoption and use of mobile health for all patient categories and various chronic diseases, there needs to be concerted effort and planning.*

Moreover, this program *can be considered as the first step in a series of measures aimed at expanding access to health care and ensuring its availability throughout the Arab Republic of Egypt through mobile phones in a professional manner.*

Summary of some challenges to the sustainability and effectiveness of portable health represented in the following table:

Patients use computers and the Internet but feel uneasy or lack confidence in online communication and prefer to resort to telephone calls.
Clinicians and professionals are mobile and tech-savvy, but there is a shortage of guidance for mobile health programs and training on implementing remote home care interventions. It requires support to alter the behavior of some patients regarding technology use and health monitoring, possibly through community healthcare involvement. *There is also a lack of guidance and communication to patients regarding positive experiences with M Health, more so than to clinicians. This is because physicians are concerned that patients' dependence on portable health monitoring by physicians poses a "paradoxical threat to patients' independence and self-reliance".*[15]
The availability of wireless networks and mobile phones serves as crucial factors in addressing the shortcomings of physical networks. Geographic dispersion is essential yet challenging due to the high service costs and the significant population residing in rural areas, creating a segment unable to access M Health services.[16]

[15] Radhakrishnan, K., et al., Barriers and Facilitators for Sustainability of Tele-Homecare Programs: A Systematic Review. Health Serv Res, 2016. 51(1): p. 48-75.

[16] Luna, D. et al., Health Informatics in Developing Countries: Going beyond Pilot Practices to Sustainable Implementations: A Review of the Current Challenges. Health Inform Res, 2014. 20(1): p. 3-10.

Therefore, based on the preceding table, we observe that the challenges confronting the advancement of mobile health solutions are manifold and can be viewed from the standpoint of each stakeholder. This is not an exhaustive exploration of the factors influencing the sustainability of existing mobile health solutions, but rather a basic overview of the primary determinants as they pertain to stakeholders. This will assist organizations and decision-makers in establishing suitable standards to improve the implementation of the most pertinent mobile health sustainability and effectiveness solutions, which hold significant potential for bolstering the healthcare system.

***Through additional research and study**, it discovered that the cornerstone of sustainability for this mobile program hinges on partnerships among numerous institutions with expertise in health technology, Moreover; it involves efficiently implementing these mobile applications to foster mobile health and furnish the essential functionalities for their utilization.*

***However, the scope** extends to ensuring the active utilization of these mobile programs to capitalize on their benefits and to strive to alter individuals' behaviors to leverage technology, particularly mobile phones, for the betterment of their health and lives.*

In addition, this is consistent with the opinion of the reference study [17]

- *This study focused on describing the executive role of developers in the field of M Health and coming up with guidelines for developing these M Health applications.*

This includes focusing on the executive role from several aspects: the perspective of developers, technological requirements (programming, hardware and design), the financial aspect perspective (characteristics and market prospects for this field) and legal barriers including (regulations related to the field of mobile health applications).

In addition to the focus on the role of customers and engaging relationships and interactions with doctors and patients and all those responsible for implementing M-Health efficiently with the aim of improving healthcare systems the greater good of communities and the interest of developers.

[17] Paré G, Trudel MC, Jaana M, et al. Synthesizing information systems knowledge: a typology of literature reviews ,https://doi.org/10.1016/j.im.2014.08.008, 2015, P 52:183-99.

- ***Statistical analysis***

- *This part includes data analysis by using some statistical methods and tests to verify the validity of the study's hypotheses stemming from the general objectives of the thesis, with the aim of measuring the relation between Organisational Justice and Psychological Capital Applied study. The chapter will end with the study results.*

- *The data will be analysed in several stages as follows:*

- *1. Coding of the questionnaire data.*

- *2. Preliminary analysis of the data.*

- *3. Exploring the characteristics of the study sample.*

- *4. Conducting descriptive analysis of the study variables hypotheses.*

- *5. Conducting statistical analyses to test the study.*

The field study came to explain the theoretical aspect to us through a questionnaire that distributed to a small sample of those visiting the health care sector and its workers from various segments of doctors, nurses, and patients.

- ***K a p's theory was relied upon to divide the questionnaire questions into three basic axes:***

The first axis focuses on *clarifying the aspect of knowledge and familiarity with the extent of the penetration and increasing use of mobile phones and the extent of knowledge about mobile health.*

The second axis focuses on *the behavioural aspect and the extent that changes individuals' behaviours and their tendency to use M Health because of their knowledge of it and its importance.*

The third axis focuses on *the extent of behavioural practice and the increasing use of M Health on the ground because of changing individuals' attitudes because of increasing their awareness and knowledge of the importance of M Health and its benefits.*

After data collected it was revised, coded, and fed to statistical software IBM SPSS version 25. Frequency tables and cross-tabulation that used to illustrate the results. Quantitative data were summarized by the arithmetic mean, standard deviation, and mean score percent. All statistical analysis was done using two-tailed tests and an alpha error of 0.05. A P-value less than or equal to 0.05 was considered to be statistically significant.

A. Descriptive statistical analysis: *included the mean with standard deviation, Median, minimum and maximum for the numeric data while percent to describe the frequency of each category for categorical data.*

B. Inferential statistical analysis:

The research used nonparametric tests ***(Spearman correlation, Mann Whitney and Kruskal Wallis****) that is used as a generalized form these tests were used because the data did not follow a normal distribution.*

- ***Spearman correlation test*** *is a test that measures the statistical relationship, or association, between two continuous variables. It is known as the best method of measuring the association between variables of interest because it is based on the method of covariance. It gives information about the magnitude of the association, or correlation, as well as the direction of the relationship.* ***Spearman correlation test to*** *find out whether there is a relationship between the independent variable dimensions and the dependent variable or not. Note that the correlation coefficient is denoted by the symbol r, and its value is limited between -1 and +1. On the other hand, the sign of the correlation coefficient describes whether the relationship is positive or negative. If the sign is negative (-), this indicates that the relationship between the two variables is negative, that is, an increase in one of them leads to a decrease in the other, and if the sign is positive (+), this indicates that the relationship between the two variables is positive, meaning that an increase in one of them leads to an increase in the other (i.e. the two variables move in the same direction).*
- ***Comparison between each variables and the socio demographic data***

- ***Mann Whitney test:*** *This test is used to compare the differences between two independent samples when the sample distributions are not normally distributed, and the sample sizes are small.*
- ***Kruskal Wallis test:*** *This test is one of the nonparametric tests that is used as a generalized form of the Mann Whitney U test. It is used to test the null hypothesis which states that 'k' number of samples has been drawn from the same population or the identical population with the same or identical median.*

Table (1)

Sociodemographic data	***Frequency***	***Percent***
Gender		
▪ *male*	*15*	*60.0*
▪ *female*	*10*	*40.0*
The first axis "Knowledge"		
How did you find out about these health apps?		
▪ *From health practitioners (doctor or nurse)*	*17*	*68.0*
▪ *from marketing advertisements*	*3*	*12.0*
▪ *from friends and relatives*	*5*	*20.0*

Distribution of the study subjects according to their Sociodemographic data (N=25).

Table1 shows that most of the sample that participate in the study was between the Gender of male with percentage of 60.0% while Female with percentage of 40.0%.

The majority of the sample that participate in the study was between the How did you find out about these health apps? Of the answer from health practitioners (doctor or nurse) with percentage of 68.0% while the answer from marketing advertisements with percentage of 12.0% while the answer from friends and relatives with percentage of 20.0%

Figure (1) percentage of Gender

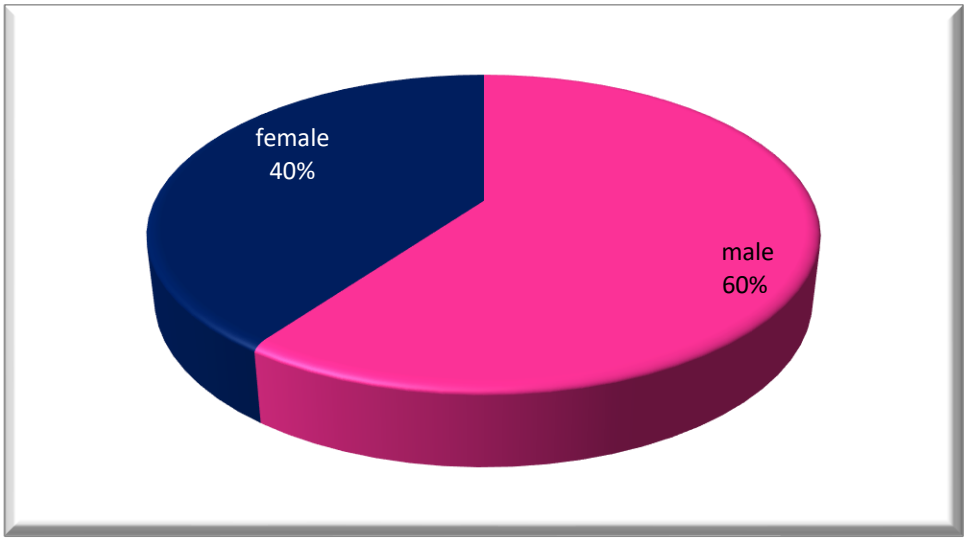
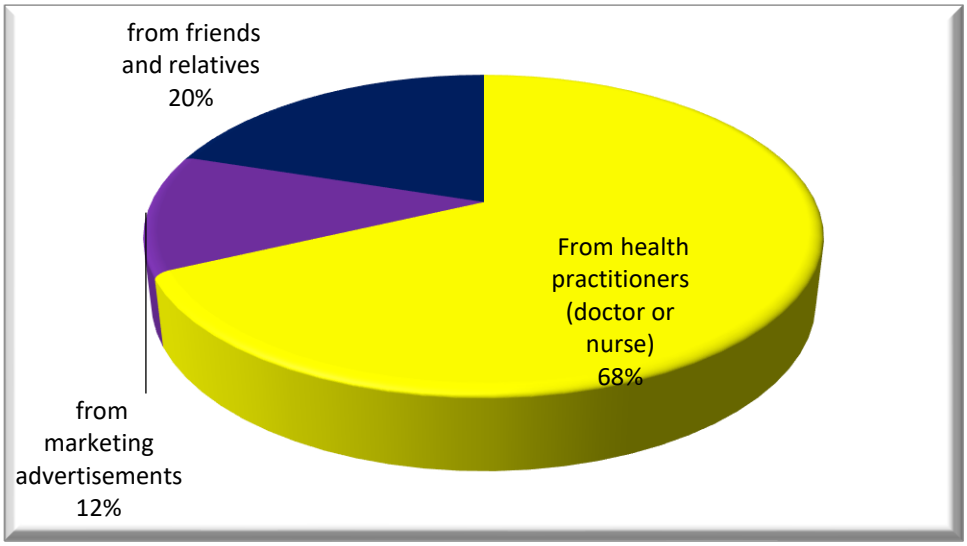


Figure No. (1) *Shows that most of those who helped us fill out the questionnaire Gender of male.*

Figure (2) percentage of question How did you find out about these health apps?



This figure No. (2) Shows from the table 2 For Distribution of the study subjects according to Axis Measuring the effectiveness and widespread use of mobile health the following:

Table (2)

Axis Measuring Knowledge and the effectiveness and widespread use of mobile phones	*Mean ± SD*	*median*	*Mean score percent*
Is there a connection with the patient?	*2.52±0.87*	*3.00*	*76.00%*
Do you use a mobile phone more than two hours a day?	*2.84±0.47*	*3.00*	*92.00%*
Do you use mobile health applications to monitor your/patient's health status? Are you afraid to replace the direct doctor one day?	*2.76±0.52*	*3.00*	*88.00%*
Have you used any health apps in the past 12 months?	*2.76±0.60*	*3.00*	*88.00%*
Do you think that there is a positive effect of these health applications on your health / patient's health?	*2.84±0.37*	*3.00*	*92.00%*
Is there an impact on the level of services provided by the hospital after using mobile devices to collect data from patients?	*2.64±0.70*	*3.00*	*82.00%*

Distribution of the study subjects according to Axis Measuring knowledge and the effectiveness and widespread use of mobile phones. (N=25).

- *Question is there a connection with the patient? 2.52±0.87 Mean score percent 76.00%.*
- *Question Do you use a mobile phone more than two hours a day? 2.84±0.47 Mean score percent 92.00%.*
- *Question Do you use mobile health applications to monitor your/patient's health status? Are you afraid to replace the direct doctor one day? 2.76±0.52 Mean score percent 88.00%.*

- *Question Have you used any health apps in the past 12 months? 2.76±0.60 Mean score percent 88.00%.*
- *Question Do you think that there is a positive effect of these health applications on your health / patient's health? 2.84±0.37 Mean score percent 92.00%.*
- *Question is there an impact on the level of services provided by the hospital after using mobile devices to collect data from patients? 2.64±0.70 Mean score percent 82.00%.*

Figure (3) Mean score percent of Axis Measuring the effectiveness and widespread use of mobile phones

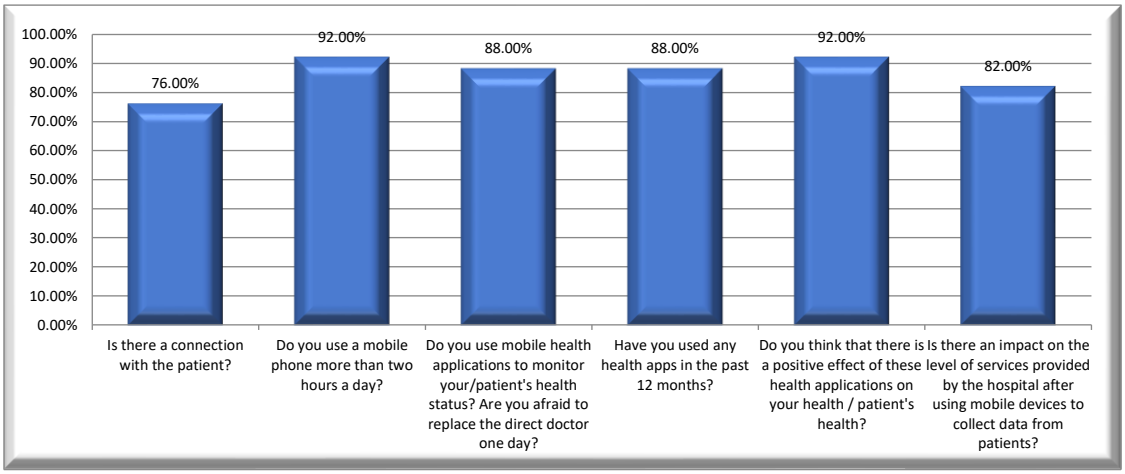


Figure (3) *shows that the percentage of doctors or health care workers who communicate with patients is a small percentage compared to the percentage of mobile phone users on a daily basis for a number of long hours.*

Which explains *to us that despite the extensive use of the Internet and the mobile phone doctors' staff for long hours, and despite their knowledge of mobile health applications and their belief that they can make a breakthrough in the field of health care and that it is the next future**, they still fear*** *that these applications will replace them one day, doctors are not as important as before when a patient turns to a mobile health app to receive healthcare.*

This explains *to us the small percentage of the mobile health hub, which is no longer of use to hospitals due to the lack of sufficient support for mobile health by health care staff and doctors, and therefore there are no clear frameworks for implementation mobile health in a way that benefits patients and the future of healthcare in general.*

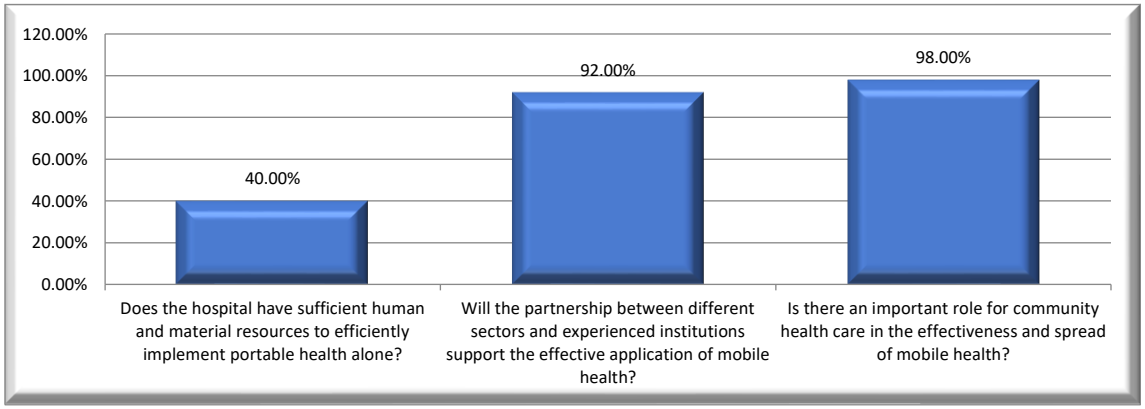
Table (3)

The second and third axes: "Attitudes and practices" *The focus of measuring the role of regulatory compliance for the institutions involved in the application*	*Mean ± SD*	*median*	*Mean score percent*
Does the hospital have sufficient human and material resources to efficiently implement portable health alone?	*1.80±0.91*	*1.00*	*40.00%*
Will the partnership between different sectors and experienced institutions support the effective application of mobile health?	*2.84±0.55*	*3.00*	*92.00%*
Is there an important role for community health care in the effectiveness and spread of mobile health?	*2.96±0.20*	*3.00*	*98.00%*

Distribution of the study subjects according to the focus of measuring the role of regulatory compliance for the institutions involved in the application (N=25)

- *Shows from the table 3 For Distribution of the study subjects according to The focus of measuring the role of regulatory compliance for the institutions involved in the application the following question Does the hospital have sufficient human and material resources to efficiently implement portable health alone? 1.80±0.91Mean score percent 40.00%, question Will the partnership between different sectors and experienced institutions support the effective application of mobile health?2.84±0.55 Mean score percent 92.00%, question Is there an important role for community health care in the effectiveness and spread of mobile health?2.96±0.20 Mean score percent 98.00%.*

Figure (4) Mean score percent of the focus of measuring the role of regulatory compliance for the institutions involved in the application.



In this figure No. (4) *it shows us the low percentage of the vision of some of the medical staff about the point that some hospitals have sufficient human and material resources to implement mobile health efficiently alone without external aid compared to their vision about the importance of partnership between various sectors and institutions with expertise to ensure the effective application of health Ambulatory and high proportion of supporters point to the importance of the role of community health care in the effectiveness and prevalence of ambulatory health?*

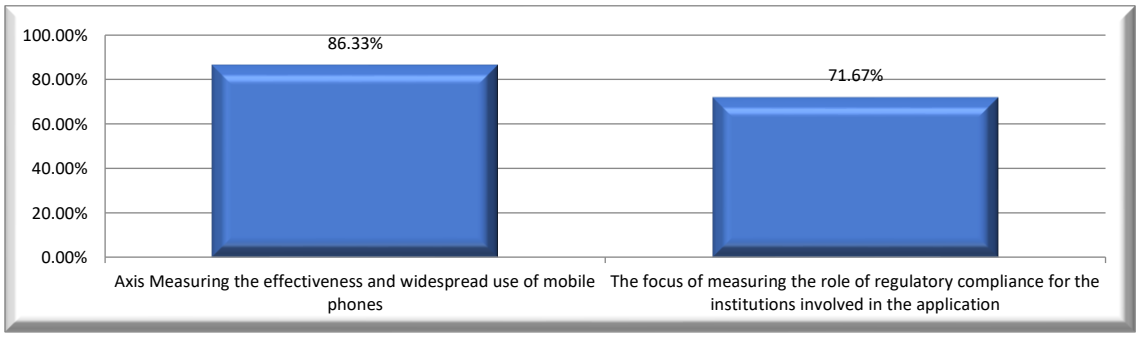
Which explains to us the need for cooperation between hospitals as a recognized health institution for patients and between some concerned authorities to ensure the efficient implementation of portable health and support its continuity, in conjunction with support through the important role of community health care in spreading awareness of the importance of portable health to ensure its continuity.

Table (4): Descriptive Statistics of Variables

Total	***N***	***Mean***	***Std. Deviation***	***Skewness***	***Kurtosis***	***Mean score percent***
		Statistic	***Statistic***	***Statistic***	***Statistic***	
Axis Measuring the Knowledge, effectiveness and widespread use of mobile phones	***6***	***16.36***	***1.52***	***0.29***	***1.40***	***86.33%***
The focus of measuring the role of regulatory compliance for the institutions involved in the application	***3***	***7.30***	***1.04***	***0.05***	***0.02***	***71.67%***

Shows from the table 4 For Descriptive Statistics of Variables the following Axis Measuring the effectiveness and widespread use of mobile phones 16.36±1.52Mean score percent 86.33%, The focus of measuring the role of regulatory compliance for the institutions involved in the application 7.30±1.04 Mean score percent 71.67% .

Figure (5) Mean score percent of Variables.



***In this figure (5)**, it shows us the high percentage of supporters of the effective point of using mobile phones in this era of rapid events, which is characterized by lack of time.*

It also shows us the high percentage of supporters among the medical staff and management of some hospitals about the role of regulatory compliance for the institutions participating in the mobile health application.

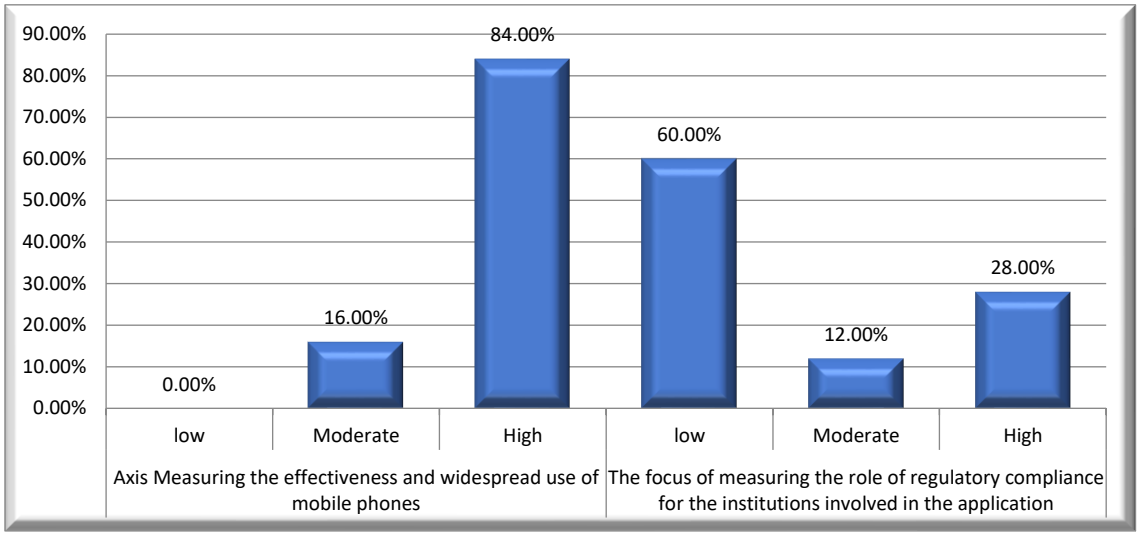
Which explains to us once again the necessity of exploiting the spread of the mobile phone and the effectiveness of its use at the level of all segments and individuals in something important and in a way that supports interest in the aspect of health through not only activating the implementation of mobile health efficiently, but the continuity of mobile health, and it also explains to us the need for cooperation between some concerned authorities to ensure Efficient implementation of portable health and supports its continuity, in conjunction with support through the important role of community health care in spreading awareness of the importance of portable health to ensure its continuity. This is explained in more clear proportions in Figure 5 on the following pages.

Table (5): Frequency and percentage of variables under consideration by levels (N=25)

variables	*levels*	*Frequency*	*Percent*
Axis Measuring Knowledge and the effectiveness and widespread use of mobile phones	*low*	*0*	*0.00%*
	Moderate	*4*	*16.00%*
	High	*21*	*84.00%*
The focus of measuring Attitudes and practices "the role of regulatory compliance for the institutions involved in the application	*low*	*15*	*60.00%*
	Moderate	*3*	*12.00%*
	High	*7*	*28.00%*

Shows from the table 7 For Frequency and percentage of variables under consideration by levels the following Axis Measuring the effectiveness and widespread use of mobile phones low (0)(0.00%), Moderate (4)(16.00%), High(21)(84.00%), The focus of measuring the role of regulatory compliance for the institutions involved in the application low (15)(60.00%), Moderate (3)(12.00%), High(7)(28.00%).

Figure (6) percent of variables under consideration by levels



Testing the validity of research hypotheses:

H_1: There is non-significant correlation between Measuring Knowledge and the effectiveness and widespread use of mobile phones and the measuring Attitudes and practices "the role of regulatory compliance for the institutions involved in the application.

Table (6) Correlation Matrix between Variables

Variables		*Axis Measuring Knowledge and the effectiveness and widespread use of mobile phones*	*The focus of measuring Attitudes and practices " the role of regulatory compliance for the institutions involved in the application*
Axis Measuring Knowledge and the effectiveness and widespread use of mobile phones	*r* *P-value*	*1.000*	
The focus of measuring the role of regulatory compliance for the institutions involved in the application	*r* *P-value*	*-0.345* *0.091*	*1.000*

Spearman correlation test

Table 5 shows that *There isn't any statistically significant correlation between Axis Measuring the effectiveness and widespread use of mobile phones and the focus of measuring the role of regulatory compliance for the institutions involved in the application (p=0.345, s=0.091).*

- ***The explanation*** *for the lack of relationship between the two variables is that although the increasing prevalence and use of mobile phones has influenced the invention and spread of mobile health programs, that considered ideal, as they are available to support the existence of health applications. However, the effectiveness of the application and its continuity must have regulatory controls among many institutions that have a role and contribution to health.*

H_1 accepted: There is non-significant correlation between Measuring Knowledge and the effectiveness and widespread use of mobile phones and the measuring Attitudes and practices "the role of regulatory compliance for the institutions involved in the application.

H_2: There is non-significant difference between samples according to (gender and about find out these health apps) to Measuring Knowledge and the effectiveness and widespread use of mobile phones and the measuring Attitudes and practices "the role of regulatory compliance for the institutions involved in the application.

Table (7)

Sociodemographic data	***Measuring the effectiveness and widespread use of mobile phones***	***The focus of measuring the role of regulatory compliance for the institutions involved in the application***
Gender	***Mean ± SD.***	***Mean ± SD.***
male	***16.53±1.60***	***7.20±0.94***
Female	***16.10±1.45***	***8.20±0.92***
Test of sig.(p)	***Z=0.774(0.439)***	***Z=2.447(0.014)****
How did you find out about these health apps?		
▪ ***From health practitioners (doctor or nurse)***	***16.12±1.54***	***7.65±1.17***
▪ ***from marketing advertisements***	***17.00±1.00***	***7.67±1.15***
▪ ***from friends and relatives***	***16.80±1.79***	***7.40±0.55***
Test of sig.(p)	***H=1.382(0.501)***	***H=0.180(0.914)***

Z: Mann Whitney test ***H: H for Kruskal Wallis test***

(Difference between each variable and the socio demographic data (n = 25)

- *It's clear from the table (8) Relationship between each variable and the socio demographic data, The existence of a relationship between some variables and the socio demographic data where they were as follows The focus of measuring the role of regulatory compliance for the institutions involved in the application According Gender (Z=2.447) (P=0.014).*

Reliability and Validity tests:

Both Reliability and Validity tests are usually conduct with the aim of knowing the validity, soundness and cogency of the survey list for conducting subsequent statistical analyses, and the following is an explanation of each of the reliability and validity coefficients.

• Reliability test:

Reliability refers to the extent to which the statements (statements) of the survey list are stable and do not contradict themselves, that is, the survey list will give approximately the same results with a probability equal to the value of the reliability coefficient if it is re-applied to another sample of the same population and the same size.

To test the reliability of the statements in the survey lists, Cronbach's Alpha used, a parameter that takes values ranging from zero to one. If there is no stability, then the value of this parameter will be equal to zero, while if there is complete stability in the data, then the value of this parameter will be equal to one.

That is, an increase in the value of Cronbach's alpha coefficient and its closeness to one means an increase in the level of data credibility to reflect the results of the sample on the population under study. Note that the lowest value of the reliability coefficient is 0.7, and more than 0.7 gives a strong indicator to judge the reliability of the survey list (Cronbach, 1951), however, according to (Griethuijsen et al., 2015; Taber, 2018) values greater than 0.6 are considered acceptable values as well.

The Cronbach's alpha coefficient is calculated using equation (1):

$$Alpha = \frac{n}{n\ -\ 1}(1 - \frac{\sum_{i=1}^{n} Vi}{Vt})$$

Whereas:

Alpha stands for Cronbach's alpha coefficient.

n stands for the number of statements in the survey list.

V_i stands for one-statement variance.

V_t stands for the variance of all statements in the poll list.

9 *Validity test:*

The validity of the survey list means that the statements in the survey lists represent the well-studied population, that is, the answers obtained from the survey lists give the information for which the statements made (the survey list measures what they are supposed to measure).

The validity coefficient measured by taking the square root of the reliability coefficient as shown in equation (2).

$$Validity = \sqrt{Alpha}$$

the results of applying both the reliability and validity coefficients were exceeds 0.6 of all variables, which indicates that there is stability in the statements for each variable, and the survey list measures what it was designed to measure and therefore it represents the study population in a good way. so the data of that list can be relied upon in the work of subsequent analyses and statistical tests.

- ***It is clear from the statistical analysis that*** *there is great knowledge about the extent of the spread of mobile phones and the use of mobile phones and the importance of mobile health in the future and that it will make a positive difference when used and activated, but there is no awareness or knowledge of the importance of mobile health or how to use it, or even that it is possible to exploit the mobile phone in a way that benefits their health.*

- *This is done by all segments of those workers within this sector according to the study sample.*

- ***The axis of implementing and activating mobile health*** *effectively also indicated that there is a deficiency in the application of M Health by the concerned authorities and that there are no clear strategies to activate this application clearly and officially, requiring individuals working in the health care sector to adhere to it.*

H_2 accepted: There is non-significant difference between samples according to (gender and about find out these health apps) to Measuring Knowledge and the effectiveness and widespread use of mobile phones and the measuring Attitudes and practices "the role of regulatory compliance for the institutions involved in the application.

- ***Therefore, the study's recommendations came with some suggestions regarding the focus of increasing knowledge of the importance of mobile health through some suggested ideas.***

- ***Also, the study's recommendations regarding the effectiveness of the application and implementation mechanisms of M Health came through presenting some ideas as follows:***

Conclusion and Discussion

The study tested the hypotheses and showed results that indicated that:

1- *Despite high awareness and usage of mobile phones among healthcare workers and patients, there exists a fear that mobile health applications may replace direct doctor-patient interactions, highlighting the need for further understanding and acceptance of these technologies.*

2- *The study revealed a statistically significant relationship between the perception of sufficient resources to implement mobile health and the belief in the importance of partnerships between various sectors and institutions with expertise. This confirms the importance of cooperation and resource allocation for successful implementation. There was no significant impact of the difference of opinions and gender diversity in the study sample on the point of perception of the effectiveness of mobile health or regulatory compliance, which indicates that attitudes towards these factors are uniform between the genders within the study sample.*

3- *Knowledge about mobile health and its effectiveness found to be high among participants, but there was a lack of awareness about regulatory compliance and institutional support, indicating a potential gap in understanding the comprehensive implementation of mobile health initiatives.*

4- *The study demonstrated the importance of community healthcare in enhancing the effectiveness and reach of mobile healthcare, emphasizing the need for broader community engagement and support of these initiatives.*

5- *Reliability and validity tests demonstrated that the survey instrument used in the study was robust and accurately represented the perceptions and attitudes of the study population, providing confidence in the results obtained.*

- *Overall, the study findings underscore the potential of mobile health to revolutionize healthcare delivery but emphasize the importance of addressing knowledge gaps and fostering collaboration to maximize its benefits effectively.*

Study recommendations.

- *Through survey analysis and previous studies, we find that effective implementation of digital health relies on multiple sectors, including technology, public health, healthcare policies, and consumer preferences. Therefore, supporting collaboration and coordination among different sectors, including various healthcare system institutions and other entities, is essential to identify and expand innovative and cost-effective digital health solutions, particularly M Health. To achieve this, cooperation between hospitals, whether public or private, and all relevant entities involved in activating digital health tools is necessary to establish a framework for M Health applications.*

- ***Secondly,*** *regulatory compliance refers to discipline and the process of ensuring that participants in the work follow laws that help the work to operate effectively.*

Implementing mobile health applications may be easy, but the goal is to maintain the continuity and effectiveness of these applications. Therefore, there must be a commitment to collaborate with all experienced institutions.

Future research should also focus on exploring the barriers that hinder regulatory compliance and institutional support for implementing mobile healthcare, in addition to assessing the long-term impact of mobile healthcare on healthcare delivery and patient outcomes.

- *Supporting capacity-building and empowering health workers, as well as raising awareness among individuals and populations benefiting from the use of information and communication technologies in the field of health, in order to enhance their participation and stimulate and monitor progress in specific sustainable areas in the field of health care.*[18]

- *Intensive awareness among individuals is needed. When discussing the differences between individuals' cultures who use their mobile phones in general or those who use them to monitor their health, it's easy to talk about, but in reality, it requires a significant effort to implement effectively. For mobile health to spread widely, just as we see the widespread use of social media platforms.*

  - *It is necessary for there to be a high rate of acceptance of these applications among individual users or employees, and this requires intense awareness of all members of society about the importance of M Health.*

This can be achieved through the contribution of academic institutions as stakeholders in activating digital health tools, in developing M Health solutions, and practically implementing them by:

Collaborating with medical colleges and computer science faculties in their various specializations, and harnessing the energy of youth during their university training to collaborate with the Ministry of Health and institutions concerned with mobile health application, providing support services to individuals in the community, and encouraging them to use mobile health applications and change their behaviour.

[18] M Health "Use of appropriate digital technologies for public health, Report by the Director-General SEVENTY-FIRST WORLD HEALTH ASSEMBLY A71/20, March 2018, World Health Organization.

Therefore, one previous study suggested that users should be able to use mobile health applications, whether the user is the patient to input their data or condition, or the doctor when viewing all the aggregated and diverse information based on a simple follow-up request. Achieving this aspect efficiently requires collaboration with experienced communication institutions that provide technical support for it.[19]

- ***These recommendations are*** *in line with the Global Digital Health Strategy Report 2020-2025, on (e-health) and urging Member States to "consider developing a long-term strategic plan for the development and implementation of e-health services to develop the infrastructure of information and communications technologies for health and in order to enhance equity and access." Comprehensive and affordable on its benefits.*[20]

  - ***It is possible to formulate all the previous suggestions in the implementation of a large project*** *that includes the agencies and individuals concerned with its implementation and a coordinator between those agencies who works to activate mobile health applications and develop an implementation framework for them with the relevant authorities.*

  - ***This table explains*** *the framework of the implementation plan, and details the specific procedures, responsible authorities, and timetables for effectively implementing the recommendations of the proposed study, as follows:*

Implementation Plan

Action Item	Responsible Party	Timeline
1. Establish Collaboration and Coordination		
- Identify key stakeholders in digital health implementation	Research Team	Month 1
- Organize stakeholder meetings and workshops to foster collaboration	Project Coordinator	Months 2-3
- Develop a roadmap for collaboration outlining roles and responsibilities	Project Manager	Month 4
- Establish partnerships between hospitals and relevant entities for M Health applications	Health Institutions	Months 5-6
2. Ensure Regulatory Compliance		
- Review existing regulations and laws related to mobile health applications	Legal Team	Months 1-2
- Develop guidelines for regulatory compliance	Regulatory Affairs Team	Months 3-4

[19] D. Luchins. Two approaches to improving mental health: positivist/quantitative versus skill-based/qualitative. Perspectives in Biology and Medicine, Vol. 55, No.3, 409-434, 2012.

[20] Global strategy on digital health 2020-2025, ISBN 978-92-4-002092-4 (electronic version), https://www.who.int/docs/default source/documents/gs4dhdaa2a9f352b0445bafbc79ca799dce4d.pdf.

- Provide training on regulatory requirements	Compliance Officers	Months 5-6
3. Address Barriers and Assess Long-Term Impact		
- Conduct research on barriers to regulatory compliance and institutional support	Research Team	Months 1-3
- Assess long-term impact of mobile healthcare on delivery and patient outcomes	Data Analysts	Months 4-6
4. Capacity Building and Awareness		
Develop training programs for healthcare workers on digital health technologies	Training Coordinator	Months 1-3
Organize awareness campaigns targeting individuals and communities	Marketing Team	Months 4-6
Collaborate with academic institutions to integrate digital health education	Academic Institutions	Months 1-6
5. Promote Acceptance and Adoption		
Launch marketing campaigns to promote mobile health applications	Marketing Team	Months 1-6
Establish feedback mechanisms for user input	Project Coordinator	Months 1-6
Provide incentives for active engagement with mobile health applications	Project Manager	Months 1-6
6. Technical Support and Collaboration		
Partner with communication institutions for technical support	Project Coordinator	Months 1-6
Establish helpdesk or support center for technical issues	IT Department	Months 1-6
Collaborate with technology firms for application development and enhancement	IT Department	Months 1-6

Conclusion(s)

The technological foundation for mobile health already exists due to the advancement and widespread use of mobile devices and the platform needed to deliver mobile health care already exists due to technological development and technological development. The use of mobile phones and their presence in the hands of users is constantly increasing.

But what this study highlights is the emphasis on how to create an enabling environment for the adoption of mobile health solutions. New opportunities for mobile health appear every day, whether in the field of personal health care, clinical medical diagnosis, follow-up of some health conditions, especially related to chronic diseases, and other serious uses.

This supports the great importance of mobile health as a digital health tool in the era of technological development.

Therefore, the important point in this research was to focus on discussing some solutions related to the sustainability of the effectiveness of M Health, and not only to focus on its application, but also to sustain its application effectively, especially since the basis for the application of M Health already exists, as we mentioned before.

These solutions can serve as a guide for institutions and decision makers when it comes to adopting a solution on their part. This is an attempt to adapt unique solutions for the application and effectiveness of M Health in order to promote increased healthcare efficiency for the benefit of patients, families and the healthcare system as a whole.

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