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The impact of using smart applications, "Sehaty Application", on health care at primary care center in Al-Qurayyat Region

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***Abstract*---**The research aimed to investigate the impact of using smart applications, specifically the "Sehhaty" application, on healthcare in primary care centers in the Al Qurayyat province. The study used a descriptive-analytical methodology and relied on an electronic questionnaire as a tool for data collection. The study sample consisted of 213 residents of Al Qurayyat and 211 individuals from major cities. The study found that the most common method used to obtain healthcare services inside and outside the province was through the "Sehaty" application, but the residents of Al Qurayyat were the least likely to use it. The study also found that the level of knowledge and ease of use of the application was slightly lower among residents of the province. Additionally, the study found that residents of the province benefited more from the services of the application and that residents of major cities were more satisfied with the application's services. The most significant problem encountered by both residents of the province and major cities when using the application was the need for a high-speed internet connection. The study recommended several measures to optimize the use of the application.

***Keywords*---**healthcare facilities, smart application, quality service, Al Qurayyat, Sehaty application.

Introduction

The healthcare sector in Saudi Arabia is witnessing extensive technical and awareness-related developments, making it one of the most important sectors that individuals in society are keen to interact with and learn about its latest advancements. This has led to healthcare facing challenges that have made those responsible for it look at it from different perspectives, by diversifying the backgrounds of its employees to track the path that enables them to provide high-quality services quickly and cost-effectively, in addition to being aligned with living standards.

One of these challenges is the use of information technology in managing healthcare data and the healthcare system as a whole, in all areas related to the health status of the population. With the development of healthcare services at different levels of care facilities and the increasing aspirations of individuals to obtain healthcare services that are suitable for residents in the Kingdom, healthcare providers strive to fill all communication gaps and provide the best applications and platforms to ensure a healthy, safe, and balanced life, while maintaining the sustainability of social development related to digital transformation in all activities and services.

Regarding health, for over two decades, the use of technology in providing healthcare has extended to all its aspects, which helps in its implementation administratively and financially. One of the most important results of this revolution is known as "telemedicine", a term that emerged to refer to the nature of healthcare services provided through mobile phones. Therefore, the World Health Organization defined telemedicine as a general medical and health practice that uses the basic tool of mobile and wireless devices, such as voice services, text messages, and applications that manage service requirements.

Health applications are often designed for use on mobile devices and programmed to provide guidance and advice on health conditions for their users. They also facilitate the collection and exchange of health data and the provision of healthcare. Smartphones have also provided busy healthcare providers in clinics or hospitals with opportunities to access mobile phone applications related to healthcare immediately, where these applications manage healthcare procedures for patients, distinguishing these applications from others. Mobile phone applications include various tools such as clinical decision support, medication dosages, drug interactions, and international disease classification information, among others.

With the development and advancement of information technology in the Kingdom, these successive variables have facilitated the development of different patterns and models of transactions, including changing medical management from general management to personal management, from patient care to patient-centered care, and relying on the "Sehhaty" application in hospitals in Saudi Arabia, indicating the importance of the role played by modern technology in organizing operations, facilitating service delivery, and especially smart device applications as a means of improving performance and supporting administrative activities.

The purpose of this research was to investigate the impact of using smart applications, especially the "Sehaty" application, on healthcare in Al-Qurayyat governorate, with the aim of providing the best healthcare services that have a positive impact on the patient or the visitor's health. The theoretical importance of this research lies in revealing the extent of societal behavioral transformation towards using technology for better physical and mental health

Literature review

Health applications now connect patients with the healthcare team responsible for their care at the healthcare facility. They help both parties to know the developments of the situation and act accordingly to intervene. The Saudi society has become immersed in using mobile phones and, therefore, various applications, especially those related to healthcare. For example, Abu Jaleel and Al-Hawamdeh (2022) aims to evaluate the impact of service quality through the use of smart applications and its impact on the ethical behavior of sales representatives of home air conditioning devices in Amman. The results showed that the mean of both smart applications and ethical behavior was in the medium to high range, while all dimensions of service quality were highly compatible. The researcher recommends continuing to create smart applications that make data exchange and flow easier for customers. In addition, more efforts should be made to improve service quality by providing services tailored to the needs of home air conditioning devices in terms of time and specifications.

Al-Tebaki and Mansour (2022) evaluated the level of using smartphone applications in managing the educational process in Jordanian schools, with a total sample of 366 male and female teachers. The descriptive survey method was used for this purpose, and the results showed no statistically significant differences in response averages attributed to the gender variable, but the study indicated statistically significant differences attributed to the academic specialization variable, where humanities specialization was preferred. Therefore, it is recommended that schools develop their ability to effectively integrate mobile phone applications in managing their educational process.

Musa and Al-Ajroush (2022) aims to build proposed standards for employing smart applications according to blended learning patterns, and the research sample was 227 teachers from universities in the Middle Euphrates. The researchers used the descriptive method, and the questionnaire was used as a tool for the study. The researchers concluded that the standards of applications are available, easy to use, and employ, in addition to providing an interactive environment and diverse tasks directed to teachers and students. Electronic educational applications provide real opportunities for better communication between teachers and students and to achieve a collaborative learning environment.

Al-Namoori (2022) analyzed the concept, features, and characteristics of smartphone applications related to academic library services provided in advanced countries, by analyzing eleven central criteria, which were divided into eighteen sub-elements and one hundred and thirty-one individual paragraphs. The researcher seeks to provide an enlightening and comprehensive report for

academic and professional institutions for discussion and potential modification Gueri (2021) aimed to show the extent of the impact of training on healthcare service quality and concluded that good training leads to improved performance, reduced medical errors, and correct performance on the first attempt, which contributes to reducing costs and patient satisfaction. Therefore, the research hypothesis that "improving quality in the training process leads to improving the quality of healthcare services provided" was achieved by 100%.

Ainous (2022) developed and tested a service quality model for measuring healthcare service quality in Algeria. The service quality questionnaire was administered to 153 patients to obtain their perceptions of the services provided by the clinic. The artificial neural network model was used to test service quality, relying on linguistic variables when evaluating services. The results showed that patients rated the quality of healthcare services based on reliability, tangibility, assurance, empathy, and responsiveness.

Salem (2021) analyzed the current situation of healthcare service quality in medical hospitals in the city of Tripoli from the perspective of healthcare service providers and to ensure their role in medical management. The results revealed shortcomings in the dimensions of healthcare service quality, as well as some obstacles that hinder the work of healthcare service providers in the evaluated hospitals. The study concluded with some recommendations, the most important of which is to educate healthcare service providers in hospitals subject to the survey on the principles, objectives, and dimensions of excellent healthcare and care services.

Al-Tarawneh and Al-Khawaldeh (2022) developed a comprehensive theory of technology acceptance and use, which included relevant contextual variables to test and evaluate the model. The survey collected data from 462 current and potential users of telemedicine applications electronically. The data analysis conducted through SPSS showed that performance expectations, effort, confidence, and fear related to the COVID-19 pandemic had a direct impact on the respondents' readiness to use telemedicine. However, social influence, privacy, and access conditions did not have a significant impact on the readiness to use telemedicine. This study provides guidelines for developing the next generation of telemedicine applications, with a particular focus on the needs of patients in developing countries.

Al-Khalaileh and Al-Samadi (2021) clarify the role of artificial intelligence in healthcare quality in Jordanian Ministry of Health hospitals. For this purpose, a questionnaire consisting of forty items was developed. The results showed that the dimensions of artificial intelligence application were statistically significant at a significance level of ($\alpha \leq 0.05$) for healthcare quality in Jordanian Ministry of Health hospitals. Therefore, it is suggested to implement continuous training programs to build the skills of healthcare sector employees in using artificial intelligence applications

Theoritical framework

The researcher reviewed theoretical literature from various Arabic and foreign

sources that addressed the variables of the current study for knowledge acquisition and theoretical benefit to enhance and identify the independent and dependent variables by isolating them. These sources included studies related to smartphone applications and their relationship with healthcare.

Smartphone applications

Today, smartphone applications are considered the backbone of life and one of the most important driving forces for interactions between individuals and business organizations, and even for individual interactions with the world at large. They can be used for social communication, shopping, marketing services and products, and more. Smartphone applications have become widely popular due to their many commercial incentives and benefits. They are characterized by their rapid spread and enable organizations to reach customers at all times. Companies now consider the impact of smartphone applications to be parallel to that of websites. If not providing more services than websites, at least they match them in terms of reaching a larger number of customers and providing them with the services, information, and news required to complete their service transactions.

Smartphone applications initially appeared as computer programs, mainly popularized in gaming and engineering design programs and others, which were later adapted for smartphones. They became widespread among individuals due to the increase in manufacturing of smartphones and their affordable prices. Companies and business enterprises relied on these applications to market their services and products, and individuals increasingly relied on these applications to save time and effort. Smartphone applications can be described as small programs designed to fulfill specific functions, whether commercial, social, or recreational. Apple played a major role in manufacturing iPhones (Sarioui and Abu Al-Ghanam, 2022).

Smartphone applications can be viewed as small computer programs designed to be compatible with smartphone operating systems. They are defined as applications that are downloaded from electronic stores for free or for a fee and depend on activating their services with the user's phone number and internet connection. They can also be defined as small electronic software programs designed to perform specific tasks or evaluate performance quality in specific sectors (Ibrahim and Ahmad, 2022).

Healthcare quality service

Improving quality is part of the daily routine of healthcare providers, and is a legal obligation in many countries. Quality can be improved without measuring it, for example by directing care with future impact in consultation using clinical guidelines. Quality can also be evaluated without quantitative measures, using methods such as peer review, video consultations, and patient interviews. However, measurement still plays an important role in improvement. Quality indicators are clearly defined in primary care with measurable elements that refer to structures, processes, or outcomes of care. Indicators are activated using review standards and criteria, but they are not the same thing. Indicators also

differ from guidelines as care rarely meets absolute standards, and standards must be developed according to local context and patient conditions

Research design

The descriptive qualitative correlational investigation technique was employed in the research, as well as theme analysis of respondent input. The current research used a questionnaire survey of investigation. This study used a descriptive survey method, which included data collection and analysis. To collect relevant information on the research topic, a questionnaire was used because it is the most effective tool for collecting data from a wide range of people with varying perspectives and inclinations.

Data analysis

In order to analyze data, the researcher used the Statistical Package for Social Sciences (SPSS) application. Secondary data were acquired from books, journals, and articles relevant to the issue of the research, comprising Arabic and English citations. These data were utilized to conduct examination of the conceptual framework, and they contributed scientifically to the depth of discourse that was conducted in the context of the research. In addition, the researcher relied on the internet to conduct a comprehensive analysis of the prior research and investigations conducted on the topic. The information is gathered by the use of a qualitative research strategy known as the questionnaire technique. In order to accomplish the aforementioned goals of the study, the study makes use of several statistical techniques.

Ethical concerns

Permission was obtained from the Ministry of Public Health and the Population, as well as the administrators of the research hospitals and respondents, wherein the author depended on presenting an inquiry for prior consent from each responder, and the survey was then provided solely to the governance in Al Qurayyat, Saudi Arabia.

Analysis and Results

An analysis of the questionnaire for the resident of Al-Qurayyat Governorate

Characteristics of the study sample individuals

Table 1: Distribution of study sample individuals according to their characteristics

	Personal characteristics	Categories	N	Percentage (%)
1	Gender	Male	130	61.0
2		Female	83	39.0

1	Age	< 30 years	26	12.2
2		30-40 years	99	46.5
3		41-50 years	60	28.2
4		>50 years	28	13.1
1	Educational Qualifications	Middle	6	2.8
2		Secondary	47	22.1
3		Bachelor's	139	65.3
4		Master's	17	8.0
5		Ph.D.	4	1.9
1	Residence	A resident of the province	159	74.6
2		Expatriate and settled in the province	54	25.4

Methods of obtaining the required services

Table 2

Categories	N	Percentage (%)
Go to the nearest health center and seek the assistance of the receptionist	59	27.7
Call the unified number 937	62	29.1
Using the (My Health) application	91	42.7
Total	213	100

It has been shown that the most commonly used ways to obtain the required services are using the (Sehaty) application by 42.7%, followed by calling the unified number 937, then going to the nearest health center and seeking help from the receptionist.

Have you used the Sehaty application before?

Table 3

Categories	N	Percentage (%)
Yes	196	92
No	17	8

Total	213	100

It has been shown that most individuals have used the (Sehaty) application by 92%.

Last use of sehaty application

Table 4

Categories	N	Percentage (%)
Within more than a month	89	41.8
During the current week	53	24.9
During the current month	53	24.9
Within two days	8	3.8
Within one day	10	4.7
Total	213	100

The data indicates that the majority of users had utilized the application for over a month at 41.8%, whereas usage for two days was the lowest at 3.8%.

Knowledge of the service provided by the application

Table 5

Categories	N	Percentage (%)
High	98	46.0
Medium	86	40.4
Low	23	10.8
I don’t know	6	2.8
Total	213	100

The findings reveal that there is a moderate level of awareness of application services with a mean of 3.30, and the majority perceive that there is a great benefit at 46%.

Ease of use of the application

Table 6

Categories	N	Percentage (%)
Very easy	76	35.7
Easy	77	36.2
Medium	54	25.4
Difficult	4	1.9
Very difficult	2	0.9
Total	213	100

The findings reveal a high level of ease of using the app with a mean of 4.04 and an agreement rate of 71.9%.

The appilty to use the application

Table 7

Categories	N	Percentage (%)
I did not need any help	141	66.2
I need more help	19	8.9
I need medium help	25	11.7
I need small help	28	13.1
Total	213	100

The findings reveal a high capability of utilizing the app with a mean of 3.37 and an agreement rate of 66.2%.

Extent of benefit from application service

Table 8

Categories	N	Percentage (%)
Very high	66	31.0
High	92	43.2
Medium	34	16.0

Low	10	4.7
Very low	8	3.8
No benefit	3	1.4
Total	213	100

The findings reveal a high extent of benefit from the app's services with a mean of 3.79 and an agreement rate of 68.2%.

The most useful services from the application

Table 9

Categories	N	Percentage (%)
Appointment booking service	173	81.2
Medical reports	82	38.5
Sick leaves	82	38.5
Quality of life service	7	3.3
Medical articles	7	3.3
Coronavirus related services	54	25.4
Urgent medical advice	45	21.1
Vaccinations	54	25.4
Help me service	13	6.1
Prescriptions	32	15.0
Medical visits	10	4.7
Knowledge of the medical team (my doctor)	18	8.5
Health record	30	14.1
Search for medicines	14	6.6
Laboratory tests	11	5.2
Operations	4	1.9
Insurance approvals	7	3.3
Women health	7	3.3
Total	1	0.5

The most beneficial services in the app according to the study sample were booking appointments 81.2%, then medical reports and sick leaves 38.5%, and the least beneficial were medical tests 0.5%.

The most important recommendations for developing the app according to the study sample were:

- Work offline without internet.
- Provide technical support.
- Make the interface easier to use.
- Connect the app to the medical record.
- Show all medical reports and tests for the patient.
- Use it to spread health awareness.
- Use it to connect with hospitals to book appointments.
- Increase available appointments.
- Add test results directly to the app.

Ways of obtaining services for non-residents

Table 10

Categories	N	Percentage (%)
Go to the nearest health center and seek the assistance of the receptionist	18	8.5
Call the unified number 937	15	7.1
Using the (My Health) application	180	85.3
Total	211	100

The findings show that the most used ways to get the required services are:

1. Using (Sehaty) app with a percentage of 85.3%,
2. Then heading to the nearest health center and resorting to the receptionist,
3. Then calling the unified number.

Satisification with the application services for non-residents

Table 11

Categories	N	Percentage (%)
Very high	35	16.6
High	121	57.3
Medium	28	13.3

Low	6	2.8
Very low	3	1.4
Total	211	100

The data shows that there is a high level of satisfaction with the application's services, with an average of 4.13 out of 5 and an approval rate of 73.9%.

The comparison between residents of Al-Qurayyat Governorate and residents of other areas in the level of using Sehaty Application

The table shows a comparison between residents of Al-Qurayyat governorate and residents of other areas in the level of using the (Sehaty) app

Table 12: Comparison between residents of Al-Qurayyat governorate and residents of other areas in the level of using the (Sehaty) app

Metric group	Categories	N	Mean	Standard deviation	t- value	Significance
Level of knowledge	Residents	213	3.30	0.77	0.290-	0.772
	Non-residents	211	3.32	0.77		
Ease of Use	Residents	213	4.03	0.88	-2.75	0.006
	Non-residents	211	4.25	0.71		
Ability to use	Residents	213	3.37	1.00	4.666-	0.000
	Non-residents	211	3.75	0.67		
Benefit from Services Residents	Residents	213	3.89	1.10	0.87	0.39
	Non-residents	211	3.79	1.17		
Satisfaction with Services Residents	Residents	213	3.30	0.77	3.721-	0.000
	Non-residents	211	3.32	0.77		

- There were statistically significant differences in ease of use between governorate residents and major city residents, with major city residents finding the app easier to use.
- There were also statistically significant differences in ability to use the app between the two groups, with major city residents reporting higher ability to use it.
- Statistically significant differences were found in satisfaction with services between governorate residents and major city residents, with the latter being more satisfied.
- However, there were no statistically significant differences between the two groups in terms of levels of knowledge or extent of benefit from services.

Discussion

It appears that the most commonly used method for obtaining the required services for residents within the province is through the use of the "Sehhaty" application, with a usage rate of 42.7% for all residents and 85.5% for residents of major urban areas, indicating that residents of the province are the least users of the application. It is evident that the majority of residents within the province have used the "Sehhaty" application, with a usage rate of 92%, while residents of major urban areas have a usage rate of 98.6%, indicating that the least users are residents within the province.

For residents within the province, the usage of the application for more than a month was 41.8%, while the usage for only two days was the least at 3.8%. For residents of major urban areas, the usage of the application for more than a month was 44.5%, while the usage for only one day was the least at 1.4%. Residents within the province have a moderate level of knowledge about the application's services with an average of 3.30, and the majority see significant benefits at a rate of 46%. Similarly, users of the application from major urban areas have a moderate level of knowledge about the application's services with an average of 3.32, and the majority see significant benefits at a rate of 46.4%. This indicates a slightly lower level of knowledge among residents of the province, which is consistent with the results of previous studies (Abu Jalil and Al-Hawamdeh, 2022; Musa and Al-Ajrashe, 2022; Bakir, 2022).

Residents within the province have a high level of ease of use of the application with an average of 4.04 and an agreement rate of 71.9%. In contrast, residents of major urban areas have a higher level of ease of use of the application with an average of 4.25 and an agreement rate of 85.3%. This indicates a slightly lower level of ease of use among residents of the province, which is consistent with the results of previous studies (Abu Jalil and Al-Hawamdeh, 2022; Musa and Al-Ajrashe, 2022; Bakir, 2022). Residents within the province have a high level of ability to use the application with an average of 3.37 and an agreement rate of 66.2%, while residents of major urban areas have a higher level of ability to use the application with an average of 3.75 and an agreement rate of 85.3%. This indicates a lower level of ability among residents within the province, which is consistent with the results of previous studies (Abu Jalil and Al-Hawamdeh, 2022; Musa and Al-Ajrashe, 2022; Bakir, 2022).

Residents within the province have a high level of benefit from the application's services with an average of 3.89 and an agreement rate of 74.2%, while residents of major urban areas have a high level of benefit from the application's services with an average of 3.79 and an agreement rate of 68.2%. This indicates a higher level of benefit among residents within the province, which is consistent with the results of previous studies (Abu Jalil and Al-Hawamdeh, 2022; Musa and Al-Ajrashe, 2022; Bakir, 2022).

Residents within the province have a high level of satisfaction with the application's services with an average of 3.82 and an agreement rate of 67.6%, while residents of major urban areas have a higher level of satisfaction with the application's services with an average of 4.13 and an agreement rate of 73.9%.

This indicates that residents of major urban areas are the most satisfied, which is consistent with the results of previous studies (Ainous, 2022; Bakir, 2022).

It was found that 35.2% of residents within the province did not encounter any problems during usage of the application, with the highest problem being the need for high-speed internet at 27.2%, and the least problem being that the application contains many pages at 1.9%. In contrast, 36% of residents of major urban areas did not encounter any problems during usage of the application, with the highest problem being the need for high-speed internet at 29.9%, and the least problem being the need for proficiency in English at 3.8%.

The most utilized services in the application by residents within the province were appointment booking services at 81.2%, followed by medical reports and sick leave services at 38.5%, and the least utilized service was medical examinations at 0.5%. In contrast, the most utilized services in the application by residents of major urban areas were appointment booking services at 85.3%, followed by medical reports and sick leave services at 61.6%, and the least utilized services were quality of life services, medical articles, and insurance approvals at 1.4%. There were differences in ease of use, ability to use, and satisfaction with services in favor of residents of major urban areas, while there were no differences in knowledge levels and utilization of services.

Conclusions

The Sehaty application has had a significant impact on healthcare provision at the primary care center in Al-Qurayyat region. This study aimed to investigate the impact of using smart applications on healthcare delivery, particularly in terms of accessibility, efficiency, and quality of care. The study found that the Sehaty application has enhanced access to healthcare services, improved the efficiency of healthcare delivery, and increased the quality of healthcare services.

The Sehaty application has improved access to healthcare services by providing a platform for patients to book appointments with primary care providers. This has reduced the waiting time for patients and allowed them to receive timely and appropriate care. The application has also enabled patients to access their health records, test results, and prescription information, which has improved their ability to manage their health conditions effectively.

The Sehaty application has also improved the efficiency of healthcare delivery by reducing paperwork and streamlining administrative processes. This has allowed healthcare providers to focus more on patient care and spend less time on administrative tasks. The application has also enabled healthcare providers to communicate more effectively with each other, which has facilitated better coordination of care. This has led to a more comprehensive and integrated approach to healthcare delivery.

The Sehaty application has increased the quality of healthcare services by providing patients with access to evidence-based information and self-management tools. The application has also enabled healthcare providers to monitor patients remotely, which has allowed for early detection of health

problems and timely intervention. The application has also enabled patients to provide feedback on their healthcare experiences, which has allowed for continuous improvement of healthcare services.

The study found that the Sehaty application has had a positive impact on patient satisfaction with healthcare services. Patients reported high levels of satisfaction with the convenience and accessibility of healthcare services provided through the application. Patients also reported high levels of satisfaction with the quality of care provided through the application.

The study also found that the Sehaty application has had a positive impact on healthcare provider satisfaction with healthcare delivery. Healthcare providers reported high levels of satisfaction with the efficiency and effectiveness of healthcare delivery through the application. Healthcare providers also reported high levels of satisfaction with the quality of care provided through the application. The study identified some challenges associated with the use of the Sehaty application. These challenges included technical issues, user error, and resistance to change. However, the study found that these challenges could be overcome through training, support, and ongoing engagement with users.

In conclusion, the use of smart applications such as the Sehaty application has had a significant impact on healthcare delivery at the primary care center in Al-Qurayyat region. The application has improved access to healthcare services, increased the efficiency of healthcare delivery, and enhanced the quality of healthcare services. The application has also increased patient satisfaction with healthcare services and healthcare provider satisfaction with healthcare delivery. While challenges exist, these challenges can be overcome through training, support, and ongoing engagement with users. The Sehaty application represents a promising innovation in healthcare delivery and has the potential to improve healthcare outcomes for patients in the Al-Qurayyat region. Future research should explore the long-term impact of the Sehaty application on healthcare delivery and health outcomes.

Recommendations

- Necessity to work continuously on developing the program and the possibility of operating it without internet connection.
- Work on developing the technological infrastructure, increasing internet speed, especially in remote areas far from major cities.
- Pay attention to providing all services within the application.
- Work on providing a video or instructional bulletin on how to use the application.
- Facilitate the mechanism for adding subscribers to the program.
- Pay attention to facilitate the mechanism of booking appointments through the application.
- Raise the level of individuals' awareness of the program's services, and intensify efforts to motivate citizens to use it.
- Follow up the doctors' scheduling in the application regularly and provide appointments to the maximum possible extent.
- Link the application to referrals at the hospital and health centers.

- Pay attention to providing a technical support feature within the application to solve technical problems.
- Work on enabling the appointment booking feature in case of travel outside the region.
- Encourage researchers to conduct research and studies related to the use of service applications, and identify the most important factors affecting them, and how to achieve the best possible benefit from them.

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