

Evaluating Usability of Telehealth Sehhaty Application Used in Saudi Arabia During Covid-19

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Abstract. Telehealth services were made available in the Kingdom of Saudi Arabia through a number of different mobile applications, one of which is the Sehhaty application. Studies are needed to evaluate how consumers are perceiving these services, during the COVID-19 pandemic. This study aims to measure consumers' satisfaction with telehealth services provided by the Sehhaty application and to compare the results to other countries using similar telehealth services. The telehealth usability questionnaire (TUQ) tool was used to construct an online survey to gather consumers' usability assessment and measure satisfaction. The study provides strong evidence that Sehhaty application has a high acceptance rate among users with 76.36% overall satisfaction. Although, 44.34% of participants liked using Sehhaty application, a total of 68.87% participants prefers in-person visits. As a result, more studies need to be conducted to identify factors affecting satisfaction levels for Sehhaty telehealth solutions by the public.

Keywords. COVID-19, telehealth, usability, reliability, satisfaction, ease of use, interface quality, interaction quality, future use

1. Introduction

The Saudi Ministry of Health developed the Sehhaty application that was initially launched in August 2019 to achieve a number of national goals that focus on healthy lifestyles. In February of 2021, the application was updated to include COVID-19 vaccination appointment registration and test booking [1]. Sehhaty is a mobile-based integrated medical services application that provides health services to individuals in the Kingdom of Saudi Arabia. It allows the user to access health information and numerous health services provided by various authorities in the health sector in the Kingdom.

One of the major elements affecting the degree of telehealth applications adoption is application usability and how patients rate their experience using telehealth applications. Accordingly, more studies that address telehealth applications' users satisfaction are needed [2].

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2. Literature review

There are many applications used for remote healthcare delivery and services in rural areas of developing and developed countries. An example is, Afya [3], an application used in Tanzania by doctors to provide support for chronic diseased patients in places of the country where healthcare is not physically accessible. In the United States [4], a foundation of the mobile alliance for maternal action was developed to support maternal patients seeking the help they need at any time using mobile phones connected 24/7 to healthcare specialists. Hyung-Youl Park et al., conducted a study in a university affiliated hospital from February to March 2020. The study found that 85% of the medical staff indicated that telehealth applications are needed for their work, but 80% were worried about unsuccessful communication [5]. Bryan A. Johnson BS et al., explored patients' satisfaction and usability evaluations of breast cancer clinic telehealth application in Minneapolis, USA. The average scores for usability and satisfaction were 5.6 and 5.5, respectively (out of 7), with a strong positive correlation between usability and satisfaction. Scores didn't change according to different patient's demographic groups [6].

3. Method

To achieve comprehensive and coherent results, we adopted quantitative and qualitative tools for measuring usability. For the quantitative part, the Telehealth usability questionnaire was used for its focus on computer-human interaction and its frequent utilization to measure telehealth systems' usability (7). The TUQ survey consists of sections measuring usefulness, ease of use, learnability, interface quality, interaction quality, reliability, satisfaction, and future use. Each section has 3 to 4 questions measuring participants agreement using 5-likert scale [7]. The Qualitative part involved Four Open-ended questions used to assess the strengths and weaknesses of Sehhaty application [7]. These questions are frequently used in telehealth usability assessment studies. [8]An online survey was created and distributed to Sehhaty application users in Riyadh central region during COVID-19 from July to November 2021. Convenient and snowball sampling techniques were used.

4. Results

A total of 106 records were collected, representing 78% of total respondents who received the survey. Out of the 106 respondents, 51 (48%) were females, 55 (52%) were males, and 88% of participants who used the Sehhaty application were between the age of 18 and 50 years. About 68% of participants held a degree higher than secondary education, and the remaining 32% had a secondary or below education. Multivariate analysis depicts a significant impact of age on usefulness ($p=0.002$), interaction quality ($p=0.026$), and interface quality ($p=0.013$). Also, level of education had a significant impact on usefulness ($p=0.002$). The analysis of strengths and weaknesses is based on the open-ended questions. The written responses indicating the Sehhaty application strengths were read and mapped into general categories based on 44 complete responses out of 106. These categories are: Convenience (16%), Easy of access (18%), Prevent and control the virus spread (32%), Efficiency (25%), Reduce pandemic stress (7%), Lower

cost (2%). Weaknesses of the Sehhaty application categories included: Availability (31%), Access to services (18%), Limited clinics (41%), Expressiveness (7%), Delayed appointments (3%), based on 61 complete responses.

A total of 67.92% participants found the Sehhaty application not useful, while the application scored high ranks in other features. Based on the 5-likert scale, the degree of agreement where participants selected either 'Agree' or 'Strongly Agree', in the categories 'Ease of use and Learnability', Interface quality, Interaction quality, Reliability, the results were 47.17%, 71.70%, 63.21% and 32.08% respectively. A total of 27.36% Sehhaty users did not prefer to use the application for future appointments. For overall satisfaction, 39.62% participants were satisfied with Sehhaty application services; in contrast with 12.26% not satisfied, excluding neutrals. These findings align with results of the Farhan Ahmad et. al. study which measured patients' evaluations of their telehealth consultations compared to in-person visits during the COVID-19 pandemic. Results indicated that 70% (out of 130 patients), strongly preferred the in-person visits, in spite of enjoying their virtual visit [8].

Regarding the usefulness component, 72 (67.92%) participants disagreed on the usefulness of Sehhaty application. When examining participants response regarding the items within this component, 91 (85.85%) participants found that Sehhaty application does not cater for their healthcare needs; while 73 (68.87%) participants found that the application does not save their time in regards to traveling from and to the clinics. Hence, they prefer in-patient visits over using the application. Also, 54 (50.94%) participants did not find any improvement through the application in regards to healthcare access. Sehhaty application scored well in regards to 'Ease of use and Learnability' with 44.34% were agreeing, and 52.83% were neutral.

5. Discussion

In general, participants found the application 'pleasant and easy to understand' where 6.6% of participants strongly agreed to this component, 65% of participants agreed, and 28.3% of participants were neutral. For the item 'Sehhaty application provides everything a patient wants to do in regards to their healthcare', 33% of participants agreed, 23.6% disagreed, while the rest were neutral. In comparing our findings to a similar study conducted by Eleanor Layfield et al., at the University of Pennsylvania, to assess patients' acceptability of their received telehealth services for the head and neck outpatient clinic (Otolaryngology) during COVID-19. Both telehealth platforms scored relatively similar in regards to reliability and effectiveness with Sehhaty application scoring 3.3 in reliability and 3.7 in effectiveness. The University of Pennsylvania study scored 3.4 in reliability and 4.4 in effectiveness. Both platforms scored low in regards to the question "I think the visits provided over the telehealth system are the same as in-person visits", where Sehhaty application scored 2.14 and the University of Pennsylvania study scored 2.8. Sehhaty application scored higher overall than the telehealth platform evaluated in the study [9].

6. Limitation and future suggestions

This study has provided useful results but there are areas that can be examined in future work. Healthcare professionals can be included in future studies to assess their

satisfaction level with telehealth services provided by Sehhaty application. Although the study provided a good general assessment of telehealth services, specialized telehealth services can also be included in the instrument (i.e., mental health clinicals requirements are different than rehabilitation clinics that needs physical contact).

7. Conclusions

Sehhaty telehealth application can help provide a mitigation framework for the availability of healthcare services during COVID-19 pandemic. Although Sehhaty application scored relatively high in effectiveness (3.70), reliability (3.30), and ease of use (3.5), which projects a promising potential, more studies need to be carried out to explore its actual acceptance and benefits in more specific and critical clinical domains such as mental health and chronic diseases. Also, studies need to include healthcare providers prospective and evaluation of Sehhaty application tele-diagnostics services.

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