The Level of Satisfaction and Its Determinants with the New Application-Based Appointment System (Mawid) among Al Iskan Primary Healthcare Center Beneficiaries in Makkah, Saudi Arabia 2020

Rahaf S. Hayatalhazmi*, Yusuf Alharbi
Joint Program of Family Medicine, Ministry of Health, Makkah, Saudi Arabia
*Corresponding author: rh331@hotmail.com

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Abstract In tandem with international traits, the Ministry of Health in Saudi Arabia is promoting the use of a new application-based appointment system known as “Mawid” that fully accommodates the current and future needs of both the individual and the society. The study aims to evaluate patient’s satisfaction towards “Mawid” system in Al-iskan Primary Health Care Center in Makkah City, 2020. Methods: In this study, a self-administered questionnaire was randomly given to selected patients who initially booked their appointment using “Mawid” application. The study was conducted at Al-iskan PHCC, Makkah City in Saudi Arabia. Results: The study included 214 patients. The majority of patients who booked at general clinic and at Family Medicine clinic believed that “Mawid” application improved the service provided compared to the previous way of appointment booking, p=0.047. Overall, almost half of the patients (48.1%) were satisfied with the services of “Mawid” application. Conclusion: This study is among the first to measure a patient’s satisfaction toward an application-based appointment system in Saudi Arabia. The results of the current study indicate that almost half of Mawid app users are overall satisfied with the services offered by the application system, however, it is necessary for the Ministry of Health in Saudi Arabia to make use of online marketing platforms to improve awareness of this innovative medical appointment application system.

Keywords: application-based appointment system, waiting time, patients’ satisfaction, primary health care

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1. Introduction

Advances in telecommunication over the years have paved the way for the development of integrated healthcare scheduling services. Patients used to book medical appointments through telephones depending on verbal communication between a patient and an administrator; which results in an inflexible scheduling process [1,2,3,4]. Furthermore, the use of telephone services to make appointments renders telephone services ineffective, and has not been able to offer patients better scheduling services as was previously envisaged [3,4,5]. Moreover, traditional methods of booking medical appointments are associated with various challenges including long waiting times; low-quality healthcare services, and fragmented scheduling process [3]. As Internet usage has significantly emerged in the last couple of years, healthcare institutions are now offering online-based medical appointment systems. Indeed, research suggests that the use of web-based tools to make medical appointments has the potential to ensure patient’s satisfaction and efficiency of health delivery services [3,6,7]. In tandem with international traits, the Ministry of Health in the Kingdom of Saudi Arabia (KSA) is promoting the use of a new app-based appointment system known as “Mawid” that fully accommodates the current and future needs of both the individual and the society. Mawid is a smartphone application that enables patients to book, reschedule, and cancel an appointment for a specified primary healthcare center in real-time in the comfort of their homes. The primary functions of the application are to enable patients to get acquainted with the nearest primary healthcare centers to their location, review and book appointments at the various clinics available including family medicine and well-baby clinics. In addition, the application allows patients to manage medical appointments and to receive notifications when an earlier date is available. Although there are many studies conducted to identify the benefits of online-based appointment systems, to date, only a few studies about patient’s satisfaction with online-based appointment systems, along with that,
application-based appointment systems. Accordingly, no similar studies were conducted in KSA including Makkah City which has different demographic features, education level, and cultural habits than other cities. Thus, our study aims to evaluate patient’s satisfaction with “Mawid” system in Al-iskan Primary Health Care Center in Makkah City, 2020.

2. Methods

This cross-sectional study evaluated patient’s satisfaction with “Mawid” app-based appointment system in Al-iskan Primary Health Care Center in Makkah City, KSA. A total of 214 patients officially registered at Al-iskan PHCC during the period of the study were eligible for the study. All patients aged 18 and older and parents or guardians of patients below 18 attending well-baby clinic or vaccination clinic, male and female of Saudi nationalities and other nationalities who booked their appointments using (Mawid) application were included in the study. All age groups, male and female of all nationalities were included in the study. Patients attending PHCC with unscheduled encounters that include walk-ins and emergency cases were excluded. A systematic random sampling technique was applied to choose the study participants, in which a questionnaire was given to every 3rd patient that comes in to the reception desk at the PHCC with pre-booked appointment using “Mawid” application. Data were collected using a self-administered questionnaire created by the researcher and validated by two family medicine consultants. It was also validated before and after translation, as it was initially generated in the English language, translated into the Arabic language then again translated back into the English language to ensure similarity and patients understanding of the questions. The questionnaire included socio-demographic information and personal characteristics of patients, assessment of patient’s view and knowledge about “Mawid” application, and evaluation of patient’s satisfaction. Printed copies of questionnaires were handed to patients who had an appointment booked using “Mawid” application. After completion, questionnaires were collected back from patients to the reception desk, and later they were all assembled by the researcher for data entry and analysis. The textual data were coded and analyzed within and across cases. Then each meaningful unit was grouped into different categories. The process was applied repetitively to all of the collected data until the overall coding was completed.

3. Statistical Analysis

A score of patients’ satisfaction with “Mawid” application was assigned in a way that the higher the score, the more satisfaction with the service. Total score and median value were computed. Patients who scored below the median value were considered “unsatisfied” with the service whereas those scored at or above the median value were considered “satisfied” with the service. Data analysis was done using the Statistical Package for Social Sciences (SPSS), version 25. Categorical variables were described using frequency and percentage. Chi-square test was applied for analyzing the data by testing the association and/or difference between categorical variables and statistical significance was determined at p<0.05.

4. Results

The study included 214 patients. The age of 25% of them ranged between 46 and 55 years whereas that of 23.1% ranged between 26 and 35 years. Females represent 52.3% of them. Almost half of them (47.2%) were married and the majority of them (82.4%) were Saudi nationals. More than one-third of the participants (37.1%) had a Bachelor’s degree whereas 23.9% were high school graduated. Governmental and private sector employees represent 26.6% and 25.6% of the participants, respectively. The income of almost half of the participants (51%) exceeded 5000 SR/month (Table 1).

Table 1. Demographic characteristics of the participants

| Variable             | N (%)          |
|----------------------|----------------|
| Age in years         |                |
| <18                  | 8 (3.7)        |
| 18-25                | 24 (11.1)      |
| 26-35                | 50 (23.1)      |
| 36-45                | 39 (18.1)      |
| 46-55                | 54(25.0)       |
| 56-65                | 25(11.6)       |
| >65                  | 16(7.4)        |
| Gender               |                |
| Male                 | 103(47.7)      |
| Female               | 113(52.3)      |
| Marital status       |                |
| Single               | 52 (24.4)      |
| Married              | 102 (47.2)     |
| Divorced / Separated | 40 (18.5)      |
| Widowed              | 22 (10.2)      |
| Nationality          |                |
| Saudi                | 168 (82.4)     |
| Non-Saudi            | 36 (17.6)      |
| Education            |                |
| Uneducated/ Less than 6th grade | 5 (2.4) |
| Primary school       | 14 (6.6)       |
| Intermediate school  | 20 (9.4)       |
| High school          | 51 (23.9)      |
| Didn’t complete a bachelor’s degree | 37(17.4) |
| Bachelor degree      | 79(37.1)       |
| Postgraduate degree  | 7(3.3)         |
| Occupation           |                |
| Student              | 24 (11.6)      |
| Governmental employee| 55 (26.6)      |
| Private sector employee | 23 (25.6) |
| Retired              | 24 (11.6)      |
| Unemployed           | 51 (24.6)      |
| Income (SR/month)    |                |
| <1,000               | 28 (13.6)      |
| 1,000-3,000          | 39 (18.9)      |
| 3,001-5,000          | 34 (16.5)      |
| 5,001-10,000         | 51(24.8)       |
| >10,000 SAR          | 54(26.2)       |

4.1. “Mawid” Application

Primary healthcare employees were the main source of awareness about Mawid application among the participants (46.6%), followed by family friends (32.9%). During the past 6 months, 38.7% of the participants used
“Mawid” application more than twice whereas 34.9% of them used the application twice. Family Medicine clinic was the most frequently reported today’s booking service among the patients (45.8%), followed by well-baby/vaccination and general clinics (20.1%) for each.

4.2. Satisfaction with the App-based Appointment System “Mawid”

The majority of patients either strongly agreed or agreed that the application was easy to use (85.5%), services provided on the application clear and understandable (80.4%), and information on the app provided was useful (61.7%). Also, the majority of them (80.4%) were either very satisfied or satisfied with the overall experience with “Mawid” application. About two-thirds of them (63%) described “Mawid” application to meet their needs as either extremely well or very well. Overall, almost half of the patients (48.1%) were satisfied with the services of “Mawid” application as illustrated in Figure 1.

- Socio-demographic factors:

As illustrated from Table 2, none of the studied patients’ socio-demographic characteristics (age, gender, marital status, education, occupation, and income) was significantly associated with their satisfaction with the app-based appointment system.

![Figure 1. Overall satisfaction with “Mawid” application among the participants Determinants of patient’s satisfaction with the app-based appointment system “Mawid”](image)

### Table 2. Demographic factors associated with satisfaction with “Mawid” application among the participants

| Demographic Factor                  | Unsatisfied N=111 (% | Satisfied N=103 (% | p-value* |
|-------------------------------------|----------------------|---------------------|----------|
| **Age in years**                    |                      |                     |          |
| <18 (n=8)                           | 5 (62.5)             | 3 (37.5)            |          |
| 18-25 (n=24)                        | 13 (54.2)            | 11 (45.8)           |          |
| 26-35 (n=48)                        | 25 (51.0)            | 24 (49.0)           |          |
| 36-45 (n=39)                        | 23 (59.0)            | 16 (41.0)           |          |
| 46-55 (n=53)                        | 24 (45.3)            | 29 (54.7)           |          |
| 56-65 (n=25)                        | 13 (52.0)            | 12 (48.0)           |          |
| >65 (n=16)                          | 8 (50.0)             | 8 (50.0)            | 0.904    |
| **Gender**                          |                      |                     |          |
| Male (n=103)                        | 49 (47.6)            | 54 (52.4)           |          |
| Female (n=111)                      | 62 (55.9)            | 49 (44.1)           | 0.226    |
| **Marital status**                  |                      |                     |          |
| Single (n=52)                       | 29 (55.8)            | 23 (44.2)           |          |
| Married (n=101)                     | 48 (47.5)            | 53 (52.6)           |          |
| Divorced / Separated (n=39)         | 23 (59.0)            | 16 (41.0)           |          |
| Widowed (n=22)                      | 11 (50.0)            | 11 (50.0)           | 0.593    |
| **Nationality**                     |                      |                     |          |
| Saudi (n=168)                       | 85 (50.6)            | 83 (49.4)           |          |
| Non-Saudi (n=36)                    | 18 (50.0)            | 18 (50.0)           | 0.948    |
| **Education**                       |                      |                     |          |
| Uneducated/ Less than 6th grade (n=5) | 2 (40.0)            | 3 (60.0)            |          |
| Primary school (n=14)               | 8 (57.1)             | 6 (42.9)            |          |
| Intermediate school (n=20)          | 7 (35.0)             | 13 (65.0)           |          |
| High school (n=51)                  | 29 (56.9)            | 22 (43.1)           |          |
| Didn’t complete bachelor’s degree (n=37) | 16 (43.2)         | 21 (56.8)           |          |
| Bachelor degree (n=79)              | 44 (55.7)            | 35 (44.3)           |          |
| Post graduate degree (n=7)          | 4 (57.1)             | 3 (42.9)            | 0.561    |
| **Occupation**                      |                      |                     |          |
| Student (n=24)                      | 13 (54.2)            | 11 (45.8)           |          |
| Governmental employee (n=55)        | 26 (47.3)            | 29 (52.7)           |          |
| Private Sector (n=53)               | 26 (49.1)            | 27 (50.9)           |          |
| Retired (n=24)                      | 13 (54.2)            | 11 (45.8)           |          |
| Unemployed (n=51)                   | 28 (54.9)            | 23 (45.1)           | 0.927    |
| **Income (SR/month)**               |                      |                     |          |
| <1,000 (n=28)                       | 13 (46.4)            | 15 (53.6)           |          |
| 1,000-3,000 (n=39)                  | 21 (53.8)            | 18 (46.2)           |          |
| 3,001-5,000 (n=34)                  | 13 (38.2)            | 21 (61.8)           |          |
| 5,001-10,000 (n=51)                 | 27 (52.9)            | 24 (47.1)           |          |
| >10,000 (n=54)                      | 32 (59.3)            | 22 (40.7)           | 0.391    |

*Chi-square test.
-Mawid-related factors:

Patients who took their information about “Mawid” from primary healthcare employees (55.1%) or family/friends (50.7%) were more likely to be satisfied with it compared to those who took their information from social media (26.9%). However, the difference did not reach the statistically significant level, \( p=0.071 \). Almost two-thirds (64.6%) of patients who used “Mawid” application more than twice during the last 6 months compared to only 39.3% and 37.8% of those who used the application once or twice during the same period, respectively were more likely to be satisfied with it, \( p=0.001 \). Today’s booking service was not significantly associated with patient’s satisfaction with “Mawid” application (Table 3).

| Source of information (n=210) | Unsatisfied N=111 | Satisfied N=103 | p-value* |
|-----------------------------|-------------------|-----------------|----------|
| Family/friends (n=69)       | 34 (49.3)         | 35 (50.7)       |          |
| Social media (n=26)         | 19 (73.1)         | 7 (26.9)        |          |
| At work (n=17)              | 10 (58.8)         | 7 (41.2)        |          |
| Primary healthcare employees (n=98) | 44 (44.9)     | 54 (55.1)       | 0.071    |

| Frequency of using “Mawid” application during the last 6 months (n=212) | Unsatisfied N=111 | Satisfied N=103 | p-value* |
|------------------------------------------------------------------------|-------------------|-----------------|----------|
| Once (n=56)                                                            | 34 (60.7)         | 22 (39.3)       |          |
| Twice (n=74)                                                           | 46 (62.2)         | 28 (37.8)       |          |
| >twice (n=82)                                                          | 29 (35.4)         | 53 (64.6)       | 0.001    |

| Today’s booking service | Unsatisfied N=111 | Satisfied N=103 | p-value* |
|-------------------------|-------------------|-----------------|----------|
| Family Medicine clinic (n=98) | 51 (52.0)      | 47 (48.0)       |          |
| Well baby/vaccination clinic (n=43) | 21 (48.8)    | 22 (51.2)       |          |
| General dentistry clinic (n=30) | 15 (50.0)      | 15 (50.0)       |          |
| General clinic (n=43)     | 24 (55.8)        | 19 (44.2)       | 0.926    |

Table 3. Mawid-related factors associated with satisfaction with “Mawid” application among the participants

| Mawid” application improved the service provided | No N=54 | Yes N=160 | p-value* |
|------------------------------------------------|--------|----------|----------|
| No                                          |        |          |          |
| Age in years                                |        |          |          |
| <18 (n=8)                                   | 6 (75.0) | 2 (25.0) |          |
| 18-25 (n=24)                                | 16 (66.7) | 8 (33.3) |          |
| 26-35 (n=48)                                | 38 (77.6) | 11 (22.4) |          |
| 36-45 (n=39)                                | 28 (71.8) | 11 (28.2) |          |
| 46-55 (n=53)                                | 41 (77.4) | 12 (22.6) |          |
| 56-65 (n=25)                                | 19 (76.0) | 6 (24.0)  |          |
| >65 (n=16)                                  | 12 (75.0) | 4 (25.0)  | 0.964    |
| Gender                                      |        |          |          |
| Male (n=103)                                | 78 (75.7) | 25 (24.3) | 0.755    |
| Female (n=111)                              | 82 (73.9) | 29 (26.1) |          |
| Marital status                              |        |          |          |
| Single (n=52)                               | 36 (69.2) | 16 (30.8) |          |
| Married (n=101)                             | 81 (80.2) | 20 (19.8) |          |
| Divorced / Separated (n=39)                 | 26 (66.7) | 13 (33.3) |          |
| Widowed (n=22)                              | 17 (77.3) | 5 (22.7)  | 0.278    |
| Nationality                                 |        |          |          |
| Saudi (n=168)                               | 126 (75.0) | 42 (25.0) |          |
| Non-Saudi (n=36)                            | 28 (77.8) | 8 (22.2)  | 0.725    |
| Education                                   |        |          |          |
| Uneducated/ Less than 6th grade (n=5)       | 4 (80.0)  | 1 (20.0)  |          |
| Primary school (n=14)                       | 11 (78.6) | 3 (21.4)  |          |
| Intermediate school (n=20)                  | 19 (95.0) | 1 (5.0)   |          |
| High school (n=51)                          | 41 (80.4) | 10 (19.6) |          |
| Didn’t complete bachelor’s degree (n=37)    | 25 (67.6) | 12 (32.4) |          |
| Bachelor degree (n=79)                      | 55 (69.6) | 24 (30.4) |          |
| Post graduate degree (n=7)                  | 5 (71.4)  | 2 (28.6)  | 0.269    |
| Occupation                                  |        |          |          |
| Student (n=24)                              | 16 (66.7) | 8 (33.3)  |          |
| Governmental employee (n=55)                | 39 (70.9) | 16 (29.1) |          |
| Private Sector (n=53)                       | 40 (75.5) | 13 (24.5) |          |
| Retired (n=24)                              | 17 (70.8) | 7 (29.2)  |          |
| Unemployed (n=51)                           | 44 (86.3) | 7 (13.7)  | 0.277    |
| Income (SR/month)                           |        |          |          |
| <1,000 (n=28)                               | 23 (82.1) | 5 (17.9)  |          |
| 1,000-3,000 (n=39)                          | 31 (79.5) | 8 (20.5)  |          |
| 3,001-5,000 (n=34)                          | 24 (70.6) | 10 (29.4) |          |
| 5,001-10,000 (n=51)                         | 41 (80.4) | 10 (19.6) |          |
| >10,000 (n=54)                              | 34 (63.0) | 20 (37.0) | 0.177    |

*Chi-square test.
Table 5. Mawid-related factors associated with perception of “Mawid” application among the participants

| Source of information (n=210) | Mawid® application improved the service provided |  | p-value* |
|------------------------------|-----------------------------------------------|---|---------|
| Family/friends (n=69)        | N=160 N (%)                                   | No N=54 N (%)                  |         |
|                              | 52 (75.4)                                     | 17 (24.6)                      |         |
| Social media (n=26)          | 18 (69.2)                                     | 8 (30.8)                       |         |
| At work (n=17)               | 11 (64.7)                                     | 6 (35.3)                       |         |
| Primary healthcare employees (n=98) | 76 (77.6)                                   | 22 (22.4)                      | 0.626   |

Frequency of using “Mawid” application during the last 6 months (n=212)

| Frequency of using “Mawid” | Mawid® application improved the service provided |  | p-value* |
|----------------------------|-----------------------------------------------|---|---------|
| Once (n=56)                | N=160 N (%)                                   | No N=54 N (%)                  |         |
|                            | 39 (69.6)                                     | 17 (30.4)                      |         |
| Twice (n=74)               | 54 (73.0)                                     | 20 (27.0)                      |         |
| >twice (n=82)              | 67 (81.7)                                     | 15 (18.3)                      | 0.223   |

Today’s booking service

| Service type                  | Mawid® application improved the service provided |  | p-value* |
|------------------------------|-----------------------------------------------|---|---------|
| Family Medicine clinic (n=98) | N=160 N (%)                                   | No N=54 N (%)                  |         |
|                              | 67 (68.4)                                     | 31 (31.6)                      |         |
| Well baby/vaccination clinic (n=43) | 32 (74.4)                                   | 11 (25.6)                      |         |
| General dentistry clinic (n=30) | 22 (73.3)                                   | 8 (26.7)                       |         |
| General clinic (n=43)        | 39 (90.7)                                     | 4 (9.3)                        | 0.047   |

*Chi-square test.

4.3. Patients’ Perception of “Mawid” Application

Most of the participants (70.6%) described “Mawid” application as being useful whereas only 16.8% described it as being impractical and 7% described it as being complicated. Most of the participants (74.8%) were of the opinion that “Mawid” application improved the service provided compared to the previous way of appointment booking (Figure 2).

Figure 2. Participants’ thinking that “Mawid” application improved the service provided compared to the previous way of appointment booking

Factors associated with patients’ perception of “Mawid” application

5. Discussion

Waiting and consultation times are indicators of the quality of provided service at healthcare facilities [8]. Many suggestions have been settled by authors around the world to reduce the waiting time at outpatient clinics [9,10,11,12]. Waiting time can be classified into time for registration, and time for consultation [13]. Usually, long waiting times for registration are common in health care facilities in Saudi Arabia and are much longer than the consultation waiting time [14]. Because of this, the current study was conducted to assess the level of satisfaction of PHCC beneficiaries with the smartphone app-based appointment system “Mawid” and identify the determinants of such satisfaction among them in Makkah City, Saudi Arabia.

The use of online-based health care services is advancing across the globe. Some of the developed countries in Europe for instance have widely adopted application-based appointment systems [15]. Overall, the present study indicates that half of PHCC beneficiaries were generally satisfied with using of “Mawid” application and specifically, the majority of them agreed that the “Mawid” application was easy to use, services provided on the application clear and understandable, and information on the app provided was useful. Also, the majority of them were satisfied with the overall experience with Mawid and a considerable proportion of them described “Mawid” to meet their needs as extremely or very well. Most of the participants in the present survey thought that Mawid” application improved the service provided compared to the previous way of appointment booking and described “Mawid” application as being useful.

Numerous studies carried out elsewhere confirmed the present study’s findings. In a similar study carried out in China (2011), outpatients’ satisfaction in registration after applying a web-based appointment system (WAS) [12]. In United Kingdom (2010), it has been documented that the web-based appointment system for sex health clinics was very accepted by patients as all of them can get an appointment within two days compared to 48% of patients using regular appointment system and most of them (70%) were satisfied with the service and majority of them (96%) and (94%) would reuse and recommend it to a friend, respectively [16]. Murray Hill Medical Group (2004) reported improvement of patients’ satisfaction and reduction in appointment failure among patients who used the Web-based appointment service [17]. Lowes R (2006) reported that the appointment service system improved patient satisfaction as well as reduced the number of wrong appointments [18]. In Canada, after the application of the Proprietary appointment system, patients’ complaints about the reception staff were minimized and their satisfaction was improved [19]. MyGroupHealth (MyGH) reported that the MyGH appointment system
improved significantly patient satisfaction and reduced health care costs with shorter wait times [20,21].

On the other hand, Zhang et al (2014) reported that the majority of the consumers in Australia were reluctant in adopting the new e-appointment scheduling (EAS) system. They identified the following barriers; lack of access to the internet, lack of the service’s awareness, low computer skills and lack of compatibility of the online appointment service with numerous patients’ habits compared to face-to-face or phone-call based appointment making [4].

Using and satisfaction with “Mawid” application requires access to the Internet and having smartphones as well as a good educational level, Zhang et al [7] reported that the acceptance of the mobile application system is influenced to great extent by the economic status and education level of persons. In the current study, none of the sociodemographic characteristics of patients influenced the satisfaction with the application.

The present study revealed that patients who used “Mawid” application, more frequently, were more likely to be satisfied with it. The frequent use of the app is likely to have been influenced by the desire to minimize waiting times and the 24-hour availability of the online application [22,23]. Furthermore, the 24-hour availability of the application system makes it possible for patients to make a booking at a time of their convenience [22,23,24]. Also, those who booked at general clinic believed more than those who booked at family medicine clinics that “Mawid” application improved the service provided compared to the previous way of appointment booking. Further investigations are recommended to clarify these findings.

In the current survey, the primary healthcare employees were the main source of awareness about “Mawid” application among the participants, followed by family friends and this finding could explain partially the overall satisfaction of patients with the application. In a study by Rogers [25], it was noted that communication plays a pivotal role in publicizing e-health services. Thus, the usage of the Mawid app is likely to further increase if more communication channels are used to promote the service and its perceived benefits.

The study has some important potential limitations included the conduction of the study among patients who attended only the internal PHCCs, which might impact the possibility to generalize the results over other patients. The questionnaire used in the current study was self-administered which is subjected to the bias of over or underestimation of the satisfaction. However, there is no objective way to certainly assess the patients’ satisfaction with “Mawid” application. Finally, the cross-sectional design of the study allows only investigating the association and not causality between the outcome and independent variables. Despite those limitations, the study has public health significance in the investigation of this issue, which could improve the quality of services offered to patients in Makkah city.

6. Conclusion

This study is among the first to measure patient’s satisfaction toward an application-based appointment system in Makkah City, 2020. The results of the current study indicate that almost half of Mawid app users are overall satisfied with the services offered by the application system and specifically most of them were satisfied with the easiness, clearness, quality of provided information of the application, and its ability to meet their needs. Patient satisfaction is likely to be influenced by the frequency of using the application. Additionally, most of the patients described “Mawid” application as being useful and thought that it improved the service provided compared to the previous way of appointment booking.

7. Recommendations

Based on the study findings, it is necessary to make use of online marketing platforms to improve awareness of this healthcare innovation. Generally, further improvements are needed for broad use of the booking system and to increase the efficiency of the application. Further studies are recommended including more patients from different healthcare settings to comprehensively assess the satisfaction with the application and looking in-depth into the possible barriers to its wide use.

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