User Satisfaction and Its Impact on the Intention to Utilize Telemedicine Services in the Dusit Model Prototype Area

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ABSTRACT

OBJECTIVE: Gaining insight into user satisfaction and its impact on the intention to use telemedicine is essential for the continued success of such services.

METHODS: A cross-sectional study was carried out through an online survey targeting users of the Vajira@Home telemedicine platform. Data were collected via online survey questions, which was collected and analyzed through descriptive statistics, chi-squared tests, and multivariate binary logistic regression to explore the correlation between satisfaction and the intention to use telemedicine.

RESULTS: A total of 389 respondents completed the questionnaire. Most respondents (81.2%) reported being satisfied with telemedicine services, and 72.5% indicated a strong intention to continue using them. Satisfaction emerged as the most influential factor in predicting the intention to use telemedicine (adjusted odds ratios (OR) = 13.28; 95% CI, 6.47–27.26; p < 0.001). Participants with a monthly income between 15,000 and 30,000 Thai Baht also showed a significantly higher intention to use the service (adjusted OR = 3.40; p = 0.048). Other demographic variables were not significant after adjustment.

CONCLUSION: Satisfaction is the primary factor influencing the intention to use telemedicine under the Dusit Model. These results highlight the need to prioritize patient-centered care and improve user experiences to support the long-term integration of telemedicine into urban healthcare systems.

KEYWORDS: Dusit model, patient satisfaction, telemedicine, urban health services, utilization intention

INTRODUCTION

In recent years, healthcare has undergone significant changes due to advancements in digital technology[1-3]. Telemedicine has become a key tool for improving access to healthcare services[4,5], especially in urban settings where traffic congestion and long wait times often delay medical consultations[4,6]. Telemedicine is one of the notable innovations resulting from these technological developments[2,3,5]. In Thailand, the government has actively promoted the integration of telemedicine into the public health system[7].

A prominent example of this effort is the Dusit Model in Bangkok, which aims to modernize healthcare delivery through the use of technology[8,9].

In response to these challenges, the Bangkok Metropolitan Administration and Faculty of Medicine Vajira Hospital, Navamindradhiraj University, developed the Dusit Model[9], a prototype healthcare system that incorporates telemedicine to enhance access to care and make better use of healthcare resources. This model included four districts as follow Dusit, Bang Sue, Bang Plat, Phra Nakorn from fifty districts in Bangkok Metropolitan Administration.

This approach is especially applicable in urban environments like Bangkok, where traffic congestion and time limitations often discourage individuals from seeking prompt medical attention[10,11]. The Dusit Model is a collaborative effort in the city's central district, designed to deliver comprehensive, integrated, and accessible healthcare services. It uses a hybrid model that combines in-person care with remote consultations via telemedicine platforms, particularly through tools such as Vajira@Home[9]. The long-term viability of such programs depends largely on user satisfaction and their intention to adopt and continue using these services, even as technological infrastructure and available features continue to evolve[12].

Although telemedicine shows considerable promise, its effectiveness largely relies on user satisfaction[13]. A thorough understanding of the relationship between user satisfaction and the intention to utilize telemedicine services is essential for informed policy development and service improvement[2-4,13,14]. Satisfaction may be influenced by various factors, such as perceived effectiveness, responsiveness, service quality, trust in healthcare providers, and ease of use. Each of these elements can significantly affect an individual's decision to incorporate telemedicine into their routine healthcare practices[14-16].

Within the framework of the Dusit Model, it is important to evaluate whether patient satisfaction is linked to their intention to adopt and continue using telemedicine services. Identifying the main factors contributing to satisfaction and their influence on behavioral intentions will offer important guidance for healthcare policymakers, service providers, and technology developers[6,17,18]. Recognizing these factors will support the improvement of telemedicine services to better meet patient needs and promote sustainable healthcare delivery in the long term[2,6,19-21]. In this study, intention to utilize telemedicine services refers to the users' intention to continue using telemedicine in the future after their initial experience, rather than initial adoption among non-users.

This study aimed to investigate the association between user satisfaction and the intention to utilize telemedicine services within the Dusit Model prototype area. The findings are expected to provide meaningful input for healthcare administrators, policymakers, and system developers in supporting patient-centered care and encouraging continued adoption of telemedicine.

METHODS

This study used primary data collected from individuals with experience using telemedicine within the Dusit Model area. The research was conducted following approval from the Institutional Review Board of the Faculty of Medicine Vajira Hospital, Navamindradhiraj University (COA 076/2568). An online questionnaire was used to collect information on user attitudes, which could not be effectively assessed through other means, thus requiring human participant involvement.

To ensure the validity of the measurements, all questionnaire items related to the study variables were developed based on established literature[19,22-25]. The items were adapted to

assess user attitudes and perceptions specifically related to the telemedicine services provided through the Vajira@Home application (version updated; 1 Dec 2024). To ensure the reliability of the questionnaire, originally developed in Thai (Cronbach's alpha > 0.7)[26,27], a panel of three experts conducted multiple evaluations and revisions.

The participants for the questionnaire were selected using simple random sampling. In this method, each individual in the target population had an equal and independent chance of being chosen. A complete list of eligible participants was compiled, and individuals were randomly selected using a random number generator to ensure unbiased representation. This approach was chosen to minimize selection bias and to enhance the generalizability of this study's results. Participant privacy and anonymity throughout the data collection process was performed.

The data collection tool consisted of two parts. A self-administered survey, created using Google Forms, was used to gather data between December 2024 and January 2025. The survey was distributed to patients through the Vajira@Home platform and the central telephone line of the Faculty of Medicine, Vajira Hospital. To ensure ethical compliance, the study followed standard protocols and maintained participant privacy and anonymity throughout the data collection process.

The questionnaire was structured into two main sections. The first section collected general participant information, including sociodemographic details such as gender, generation, education level, monthly income, and prior use of other telemedicine platforms. This section included a combination of closed-ended questions for selection and open-ended questions for written responses. The second section focused on assessing user satisfaction and intention to use telemedicine services within the Dusit Model area, using a 5-point Likert scale ranging from "least" to "most."

The variables were assessed using a 5-point Likert scale, except for certain individual data such as selections and blank fields, to ensure accurate participant evaluations. Satisfaction and intention levels were evaluated using five and four corresponding questions, respectively, both employing a 5-point Likert scale. The dependent variable was the intention to utilize telemedicine services[22-25] within the Dusit Model prototype area. This section consisted of four close-ended questions, with responses evaluated on a 5-point Likert scale (1-5), representing a range from "lowest" to "highest". Prior research[5,28-29] established that an 80% cutoff point effectively represents a high intention level for telemedicine adoption among participants. This threshold helped guide the definition of a "high" intention score in this study. To facilitate meaningful comparison across different levels of intention and to allow for the calculation of crude odds ratios, the total intention scores were categorized into three distinct groups. Low intention (< 12 points): Reflects participants scoring below 60% of the maximum possible score (20 points), indicating limited intention. Moderate intention (12-15 points): Represents participants with moderate levels of intention, approximately 60-75% of the maximum score. High intention (16-20 points): Corresponds to participants achieving 80% or more of the maximum score, aligning with prior research benchmarks for high intention. For the multivariate binary logistic regression analysis, scores were categorized as non-intention (< 16) and intention (16-20). In this study, responses for the dependent variable were coded as 0, no intention, and 1, intention.

The independent variables, which relate to satisfaction levels with telemedicine services within the Dusit Model area, consist of five close-ended questions. Responses were evaluated using a 5-point Likert scale (1-5), ranging from "lowest" to "highest." The total scores for this variable were then categorized

into dissatisfied (< 20) and satisfied (20-25), with responses for satisfaction coded as 0, dissatisfaction, and 1, satisfaction.

The covariates included demographic characteristics, which were informed by previous disability studies[5,22]. These covariates consisted of gender [female, male, lesbian, gay, bisexual, transgender, queer, intersex (LGBTQ+)], generation (age) [zoomers (Generation Z) (20-28), millennials (Generation Y) (29-43), Thirteeners (Generation X) (44-59), Baby Boomers (≥ 60)], educational level [below bachelor's degree, bachelor's degree or equivalent, above bachelor's degree], occupation [government employee, private sector employee, self-employed, and other], monthly income Thai Baht (THB) [below 15,000, 15,000-30,000, 30,001-50,000, above 50,000], and experience with other telemedicine platforms [no experience, with experience].

Descriptive statistics were used to summarize the sample characteristics. Chi-squared analysis was conducted to examine the relationships between each variable, while Fisher-Freeman-Halton test was applied to analyze the generation variable. Variables found to be significant in the chi-squared analysis, Fisher-Freeman-Halton test and Fisher's Exact test were included in the multivariate binary logistic regression analysis to assess their association with the dependent variable of telemedicine acceptance. Data analysis was performed using IBM SPSS Statistics for Windows (version 29.0.2.0 Armonk, NY: IBM Corp), with support from Mahidol University.

RESULTS

Out of 426 invitations sent to patients, 389 completed the questionnaire, with no reminders issued to participants. The survey response rate was 91.3%. A total of 389 participants took part in the study. Regarding gender, 46.3% identified as male, 48.1% as female, and 5.6% as having alternative gender identities, including LGBTQ+. In terms of age, the largest group of participants (62.5%) were from Generation Y

(ages 29-43), followed by 19.3% from Generation X (ages 44-59), 14.9% from Generation Z (ages 20-28), and 3.3% from Baby Boomers (age 60 and above). The majority of respondents (64.8%) had a bachelor's degree or equivalent, 18.7% had education below a bachelor's degree, and 16.5% had education beyond a bachelor's degree. Regarding occupation, 37.3% were employed in the private sector, 28.5% were government employees, and 34.2% were self-employed or in other professions. As for monthly income, 41.4% earned between 15,000 and 30,000 THB, 31.9% earned between 30,001 and 50,000 THB, 17.7% earned over 50,000 THB, and 9.0% earned less than 15,000 THB. Regarding prior experience with other telemedicine platforms, 60.9% of participants had no prior experience, while 39.1% had used such platforms before. Finally, 81.2% of respondents rated the service as satisfactory, while 18.8% expressed dissatisfaction.

The crude ORs related to the intention to utilize telemedicine services were analyzed, considering multiple demographic, socioeconomic factors, and satisfaction levels. The results revealed significant associations between the likelihood of intending to use telemedicine services and various demographic factors, as shown in Table 1.

Factors significantly associated with the intention to utilize telemedicine included generation (p < 0.001), educational level (p < 0.001), occupation (p = 0.003), monthly income (p < 0.001), experience with other telemedicine platforms (p = 0.022), and satisfaction level (p < 0.001). Participants from Generation Y had the highest proportion of high intention to utilize telemedicine (76.5%), while only 7.7% of Baby boomer had high intention to utilize telemedicine service. Higher educational attainment was associated with a greater intention to use telemedicine. Private sector and government employees had higher intention rates compared to the self-employed. Those with prior telemedicine experience and higher satisfaction levels were more likely to intend to use the service.

Table 1 Crude odds ratios (ORs) of the intention to utilize telemedicine service

Variables	Intention to Utilize Telemedicine Service						P-value
	Low		Moderate		High		
	n	%	n	%	n	%	
Gender							0.750
Male	26	14.5	31	17.2	123	68.3	
Female	24	12.8	41	21.9	122	65.3	
LGBTQ+	4	18.2	5	22.7	13	59.1	
Generation (Years)#							< 0.001*
Generation Z (20-28)	6	10.4	14	24.1	38	65.5	
Generation Y (29-43)	14	5.8	43	17.7	186	76.5	
Generation X (44-59)	24	32.0	18	24.0	33	44.0	
Baby Boomers (≥ 60)	10	76.9	2	15.4	1	7.7	
Educational Levels							< 0.001*
Below Bachelor's Degree	20	27.4	21	28.8	32	43.8	
Bachelor's Degree or Equivalent	25	9.9	46	18.3	181	71.8	
Above Bachelor's Degree	9	14.1	10	15.6	45	70.3	
Occupation							0.003*
Government Employees	15	13.5	16	14.4	80	72.1	
Private Sector Employees	10	6.9	33	22.8	102	70.3	
Self-Employed and Others	29	21.8	28	21.1	76	57.1	
Monthly Income							< 0.001*
Below THB 15,000	15	42.9	13	37.1	7	20.0	
15,000-30,000 THB	11	6.8	33	20.5	117	72.7	
30,001-50,000 THB	13	10.5	21	16.9	90	72.6	
Above 50,000 THB	15	21.7	10	14.5	44	63.8	
Experience with Other Telemedicine Platforms							0.022*
No Experience	36	15.2	56	23.6	145	61.2	
With Experience	18	11.8	21	13.8	113	74.4	
Satisfaction Levels							< 0.001*
Dissatisfied	31	42.5	30	41.1	12	16.4	
Satisfied	23	7.3	47	14.9	246	77.8	

Abbreviations: LGBTQ+, lesbian, gay, bisexual, transgender, queer; n, number; THB, Thai Baht
*P-value < 0.05
#Fisher-Freeman-Halton test

Multivariate binary logistic regression analysis (Table 2) identified satisfaction level as the strongest predictor of the intention to utilize telemedicine (adjusted OR = 13.28; 95% CI, 6.47-27.26; p < 0.001). Monthly income between 15,000 and 30,000 THB also showed a significant association (adjusted OR = 3.40; 95% CI, 1.01-11.42; p = 0.048). Other factors, including generation, education, occupation, and prior telemedicine experience, did not show statistically significant associations after adjustment.

Table 2 Multivariate binary logistic analysis for the intention to utilize telemedicine (n = 389)

Variables	Unadjusted		Adjusted		P-value
	OR	95%CI	OR	95%CI	
Generation (Years)[±]					
Generation Z (20-28)	1		1		
Generation Y (29-43)	1.72	0.93-3.18	1.37	0.60-3.11	0.456
Generation X (44-59)	0.41	0.20-0.84	0.49	0.16-1.13	0.087
Baby Boomers (≥ 60)	0.44	0.01-0.36	0.10	0.95-1.11	0.061
Educational Levels					
Below Bachelor's Degree	1		1		
Bachelor's Degree or Equivalent	3.27	1.91-5.59	1.65	0.68-3.98	0.270
Above Bachelor's Degree	3.04	1.50-6.16	1.27	0.41-3.98	0.676
Occupations					
Government Employees	1		1		
Private Sector Employees	0.92	0.53-1.59	0.86	0.44-1.68	0.651
Self-Employed and Others	0.52	0.30-0.89	1.11	0.53-2.34	0.779
Monthly Income					
Below 15,000 THB	1		1		
15,000-30,000 THB	10.64	4.33-26.11	3.40	1.01-11.42	0.048*
30,001-50,000 THB	10.59	4.23-26.50	3.19	0.84-12.10	0.088
Above 50,000 THB	7.04	2.69-18.44	2.59	0.63-10.71	0.189
Experience with Other Telemedicine Platforms					
No Experience	1		1		
With Experience	0.54	0.35-0.85	0.67	0.37-1.21	0.186
Satisfaction Level					
Dissatisfied	1		1		
Satisfied	17.86	9.11-35.03	13.28	6.47-27.26	< 0.001*

Abbreviations: CI: confidence interval; n, number; OR: Odds ratio, THB, Thai Baht
*P-value < 0.05
[±]Fisher's Exact test

DISCUSSION

This study examined the factors influencing the intention to utilize telemedicine services in the Dusit Model prototype area, with a particular emphasis on user satisfaction. The results confirm that user satisfaction is a key factor in determining the intention to use telemedicine services, aligning with prior research that highlights the importance of service quality, ease of use, perceived benefits, and user support—factors that contribute to satisfaction with telemedicine services[22-25,29].

Among all the predictors, satisfaction was the strongest factor influencing the intention to use telemedicine, with satisfied users being more than 13 times more likely to report a high intention to use the service (adjusted OR = 13.28; p < 0.001). This emphasizes the significance of service quality, user-centered design, responsiveness, and the overall patient experience in shaping behavioral intentions. These findings are consistent with previous studies that underscores the role of user experience in driving the intention to utilize and accept health information technologies[12-14,20,21].

Interestingly, while several demographic and socioeconomic factors, such as generation, education, and occupation, were significantly associated with intention in the univariate analysis, these associations weakened in the multivariate analysis. This suggests that although demographic factors may initially seem influential,

satisfaction serves as a more direct and stronger predictor of behavioral intention. However, monthly income between 15,000 and 30,000 THB remained significantly associated in the adjusted model (adjusted OR = 3.40; p = 0.048), indicating that middle-income users may find telemedicine more beneficial or convenient.

Importantly, generational differences were observed. Generation Y users demonstrated the highest intention to utilize telemedicine, reflecting their greater digital literacy and adaptability to online health services. In contrast, Baby Boomers were the least likely to report a positive intention, possibly due to age-related barriers such as lower digital skills, technological anxiety, or different healthcare expectations. These results underscore the need for targeted education and support to improve engagement among older adults, as suggested by previous studies using the Extended Technology Acceptance Model[20,21,30-32] and the Unified Theory of Acceptance and Use of Technology model[20,33].

Additionally, while prior experience with telemedicine was not statistically significant in the adjusted model, its positive trend suggests that familiarity may still help reduce barriers to future use[15,18,23,24,33]. This implies that pilot programs and guided onboarding could be effective strategies to encourage adoption, particularly for first-time users.

Furthermore, the cost-effectiveness of telemedicine is a critical consideration for future research and policy development. Telemedicine offers substantial potential to reduce healthcare system burdens, decrease patient transportation costs, and minimize lost work time due to hospital visits. From a policy standpoint, the implications of this study are clear. To ensure the sustainability and broad adoption of telemedicine services, healthcare systems must focus on user satisfaction by continually enhancing interface usability, reliability, and the human aspects of care, such as empathy and trust[32,34-35]. Special attention should be given to underrepresented or digitally marginalized groups, including individuals with lower educational levels or those who are self-employed, by providing customized outreach and support.

This study has several limitations that should be considered when interpreting the results. First, the cross-sectional design limits the ability to establish a causal relationship between satisfaction and the intention to use telemedicine services. Second, data were collected through self-reported questionnaires, which may be influenced by recall bias or social desirability bias. Third, the study was conducted in a single urban prototype area (Dusit Model), which may limit the generalizability of the findings to other regions or rural populations. Finally, although the survey included a broad range of demographic factors, it did not address deeper psychosocial or cultural influences that may affect the intention to utilize telemedicine services.

Despite these limitations, this study contributes to the growing evidence that the intention to utilize telemedicine services is not solely determined by technological availability but is heavily influenced by the user's experience and satisfaction. These findings should inform developers and decision-makers in designing more inclusive, efficient, and patient-centered telehealth systems.

Future research should use longitudinal designs to evaluate the long-term use and health outcomes of telemedicine, while qualitative studies can provide deeper insights into user experiences and barriers, especially among older adults and first-time users. Including clinical outcomes will help assess the effectiveness of telemedicine compared to traditional care. Further research into platform usability, digital accessibility, and region-specific factors can inform improvements in service design and policy. Studies focused on interventions, such as digital literacy programs or onboarding support, are also recommended to increase adoption among underserved groups. Lastly, exploring psychosocial and cultural influences will offer a more comprehensive understanding of user behavior, supporting the development of inclusive and sustainable telehealth systems.

CONCLUSION

This study underscores the strong relationship between user satisfaction and the intention to utilize telemedicine services within the Dusit Model prototype area. Satisfaction was found to be the most significant predictor, highlighting the importance of patient-centered service delivery. To ensure continued adoption, healthcare systems must focus on improving the user experience, especially among digitally underserved groups. These findings provide valuable insights for enhancing telemedicine implementation in urban healthcare settings.

CONFLICT OF INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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DATA AVAILABILITY STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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