



RESEARCH ARTICLE

REVISED Factors associated with the intention of telehealth service utilization among Bangladeshi people: a cross-sectional study [version 2; peer review: 2 approved]

Humayun Kabir ^{1*}, Md. Kamrul Hasan ^{1,2*}, Nahida Akter ³,
U Swai Ching Marma ^{1,4}, Tohidul Alam⁴, Ariful Haque Tutul⁵, Lila Biswas⁶,
Rawshan Ara⁷, Dipak Kumar Mitra¹

¹Department of Public Health, North South University, Dhaka, 1229, Bangladesh

²Department of Biochemistry and Molecular Biology, Tejgoan College, Dhaka, 1215, Bangladesh

³Penn State Ross and Carol Nese College of Nursing, Penn State University, University Park, Pennsylvania, PA 16802, USA

⁴International Organization for Migration, Cox's Bazar, Bangladesh

⁵Dhaka Medical College and Hospital, Dhaka, 1000, Bangladesh

⁶CRP Nursing College, Savar, 1343, Bangladesh

⁷Prime College of Nursing, Dhaka, 1229, Bangladesh

* Equal contributors

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Abstract**Background**

Telehealth is comprised of telecommunications and electronic information systems to support and maintain long-distance healthcare services. Although it has not been thoroughly explored, the intention of using the service among the general public is critical to its success. We investigated the factors associated with the intention to utilize telehealth services among the general population of Bangladesh.

Methods

This cross-sectional study was conducted between May 22, 2021 and June 15, 2021 in Bangladesh, where the total number of participants was 1038. The Pearson chi-square test and Kruskal-Wallis H tests were used to examine the unadjusted relationship between the explanatory variables and the intention to use telehealth services. A multinomial logistic regression model was fitted to determine the adjusted

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1. **Victoria Ramos** , Instituto de Salud Carlos III, Madrid, Spain

2. **Michelle Lozada-Urbano** , Universidad Privada Norbert Wiener, Lima, Peru

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association. Shapiro-Wilk tests were used to check the normality of continuous data. Data were processed and analyzed by software STATA-16.

Results

The probability of utilizing the service increased significantly with increasing knowledge, perceived benefit, and predisposition levels among respondents. However, when perceived concern increased, the likelihood of utilizing the service dropped significantly. Age, marital status, educational status, profession, residence, and perceived health status were significantly associated with the participants' intention to utilize the telehealth service.

Conclusions

The influencing aspects of telehealth service utilization should be recognized by the respective authorities. Possible activities to enhance usability among people are also recommended.

Keywords

Telehealth, telemedicine, knowledge, benefit, concern, predisposition, Bangladesh



This article is included in the [Health Services gateway](#).

Corresponding authors: Humayun Kabir (humayun.kabir03@northsouth.edu), Md. Kamrul Hasan (kamrul.hasan11@northsouth.edu)

Author roles: **Kabir H:** Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Resources, Software, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; **Hasan MK:** Conceptualization, Data Curation, Investigation, Resources, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; **Akter N:** Investigation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; **Marma USC:** Data Curation, Investigation, Resources, Visualization, Writing – Review & Editing; **Alam T:** Data Curation, Investigation, Resources, Visualization, Writing – Review & Editing; **Tutul AH:** Data Curation, Investigation, Resources, Visualization, Writing – Review & Editing; **Biswas L:** Data Curation, Investigation, Resources, Visualization; **Ara R:** Data Curation, Investigation, Resources, Visualization; **Mitra DK:** Investigation, Methodology, Supervision, Validation, Visualization, Writing – Review & Editing

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REVISED Amendments from Version 1

We reported the reliability and validity of the tool in the method section that was used in our study. We revised the potential limitations of our study. We also revised the conclusions and recommendations of the study.

Any further responses from the reviewers can be found at the end of the article

Introduction

Over the last few decades, Bangladesh's healthcare system has made significant advancements; in particular, made tremendous progress in public health while focused on meeting the Millennium Development Goal.¹ It has also had considerable success in lowering maternal and newborn mortality and morbidity rates, as well as diarrheal illnesses, malaria, and tuberculosis.² However, challenges still exist, such as Bangladesh is staying a long way from obtaining universal health care for all from vulnerable groups, e.g., low socio-economic status and people from remote locations.³ The shortages of skilled healthcare personnel, climate-induced environmental changes,⁴ and transportation constraints are the most pressing issues in accessing the healthcare system.⁵ Telehealth, in which people have benefited from recent technological advancements, has the potential to overcome many of these healthcare system-related constraints.³ Telehealth utilization was shown to be acceptable and effective in meeting the demands of individuals with chronic diseases and was associated with improved healthcare utilization and positive clinical outcomes.⁶

Telehealth uses telecommunications and electronic information to support and continue long-distance clinical health service, healthcare management, and patient-focused health education.⁷ This term also refers to a wide range of remote healthcare service delivery strategies. Telehealth is recommended as one of the most essential and promising technology-based services for addressing many challenges the Bangladeshi healthcare system usually faces.⁸ Nevertheless, the effectiveness of the telehealth service is contingent on healthcare professionals' and the general public's acceptance and willingness to utilize it.⁹ As individuals can be benefited from how telehealth services are offered,¹⁰ it is crucial to understand their intentions and the significance of other elements in their decision to utilize telehealth to build services that people will embrace.¹⁰

However, the intention of the general population to utilize telehealth services was not widely documented; the literature generally focuses on physicians' and clients' impressions of telehealth services. There were a few reports on peoples' attitudes, but they did not focus on the elements that can influence their decision to adopt telehealth. Jennett et al. (2003) conducted a study in Canada to assess the preparation of rural people to utilize telehealth,¹¹ and Schwarz et al. (2014) conducted a study in New South Wales, Australia, to investigate the preparedness of Australia's distant population.¹² However, both studies drew their samples from key informants or persons who had already used telehealth services rather than the general population. Likewise, several studies conducted in different places in the world emphasized the physician's views toward telehealth, but general people's perceptions or intentions toward telehealth service utilization were merely investigated.^{13–15}

In Bangladesh, the majority of telehealth research has focused on the role and importance of telehealth service,^{16,17} how it may be used in disease or outbreak management,¹⁸ and methods to promote the telehealth sector.¹⁹ Furthermore, few pieces of research focused on healthcare providers' perceptions of telemedicine and potential hurdles in Bangladesh.^{20,21} Those studies only included specific samples yet focused on the general people's intentions. Despite the fact that a study described the people's economic view⁸ and the perception of people with chronic diseases, they have yet to examine the influence of demographic or health-related factors on intention to utilize the telehealth service.^{8,22} Therefore, this research investigated the factors associated with the intention to utilize telehealth services among the general population of Bangladesh.

Methods**Study design, participants, and setting**

This cross-sectional study was conducted during the coronavirus disease 2019 (COVID-19) pandemic between May 22, 2021, and June 15, 2021. In this study, 1038 Bangladeshi population participated. The inclusion criteria for the study participants were at least 18 years old and willing to participate by ensuring consent. Those who failed to provide the completed responses to the questionnaire were excluded from this study.

Study variables

The outcome variable of the study was the intention of utilizing telehealth services. The respondents' were asked to respond to an item; "*Do you have any plan to utilize telehealth service in the future?*" The responses were considered into three categories such as "they will not utilize," "they may utilize" and "they will utilize". The exploratory variables

included participants' knowledge, perceived benefit, perceived concern, and predisposition to telehealth, demographic variables (age, sex, marital status, educational status, profession, residence, and division), and perceived health status.

Knowledge, perceived benefit, perceived concern, and predisposition

The knowledge, perceived benefit, perceived concern, and predisposing were measured by adopting a questionnaire by Gagnon et al. (2004), who conducted a study in Quebec, Canada.⁹ The questionnaire was developed based on the telehealth applications such as teliagnosis, telemonitoring, telerriage, teleintervention, remote access, continuing education for health care professionals, cost savings, quality, safety, and confidentiality. The item of telehealth knowledge was a response to a three-point scale. All the responses to the items related to perceived benefit, perceived concern, and predisposition were obtained via a five-point scale. For face and content validity, the questionnaire was reviewed by two experts in this area. The reliability of the questionnaire was found 0.86 in our study, representing an excellent internal consistency. The details of the questionnaire are provided in the extended data.⁵¹

Perceived health status

To evaluate perceived health status, we implemented a single-item measure suggested by the World Health Organization (WHO) ("In general, how would you rate your current health status?").^{23,24} The scale featured five options for replies; "very good", "good", "fair", "bad", or "very bad". For statistical purposes, "very good" and "good" were considered "good", while "fair" was regarded as "as usual".²⁴ Similarly, "poor" was regarded to be "bad" and "very bad". A similar scale was used to measure the Bangladeshi healthcare workers' perceived health status.²⁵

Questionnaire development and data collection

For this study, a structured questionnaire was developed. Two experts reviewed the questionnaire, and required changes were performed based on their recommendations. The completed questionnaire was transferred to "Google Form" in terms of creating an online version. By utilizing an online questionnaire, data were acquired, and a convenient sampling procedure was followed. The questionnaire was distributed via social media platform (Facebook and WhatsApp) with the request that respondents participate voluntarily. By using these strategies, after receiving 1130 responses, 1038 completed responses were accepted for data analysis.

Sample size

Our estimated sample size was 784 at 80% power, 95 % CI of 0.05 to 1.96, and 3.5% margin of error, with the assumption that 50% of study participants were knowledgeable about telehealth.²⁶ The authors aimed to reduce the margin of error by collecting a larger sample size than was required, and an additional 254 responses (32% of the estimated sample size) were included. As a result, a total of 1038 samples were included in the final analysis.

Statistical analysis

Data were automatically entered into an online Excel spreadsheet considering the nature of data collection. Only completed responses were collected and processed into the data analysis software STATA-16. The Pearson chi-square test was used to examine the unadjusted relationship of demographic and perceived health status with the intention to utilize telehealth services. Furthermore, Shapiro-Wilk tests were used to check the normality of knowledge, perceived benefit, perceived concern, and predisposition score and found that the scores were non-normally distributed. Kruskal-Wallis H test is usually used to assess more than two independent subgroups with non-normally distributed data. As a result, the Kruskal-Wallis H test was used to determine the unadjusted association between the scores and the intention to utilize telehealth services. Finally, a multinomial logistic regression model was fitted to determine the adjusted association between the explanatory variables and the intention to utilize telehealth services. The *p*-value of 0.05 was considered statistically significant at the 95% confidence interval.

Ethical considerations

On the top of the page of the questionnaires, the study aims and objectives were specifically outlined. The authors secured the privacy of the acquired data and the respondents' flexibility to exit from the study at any moment. This study's subjects were all Bangladeshi, and none were under the age of 18 years. Besides, the respondents were asked for electronic signatures; after that, they were asked to respond and submit the answers to the items. Moreover, the Ethical Review Committee of Tejoan College, Dhaka-1215, Bangladesh, reviewed and approved the study on April 25, 2021 (reference number 2021/OR-TGC/0202). The research was carried out in line with the Helsinki Declaration.²⁷

Results

Sample

A flow diagram of the sample recruitment procedure in detail is presented in [Figure 1](#). In total, 1038 responses were analysed.

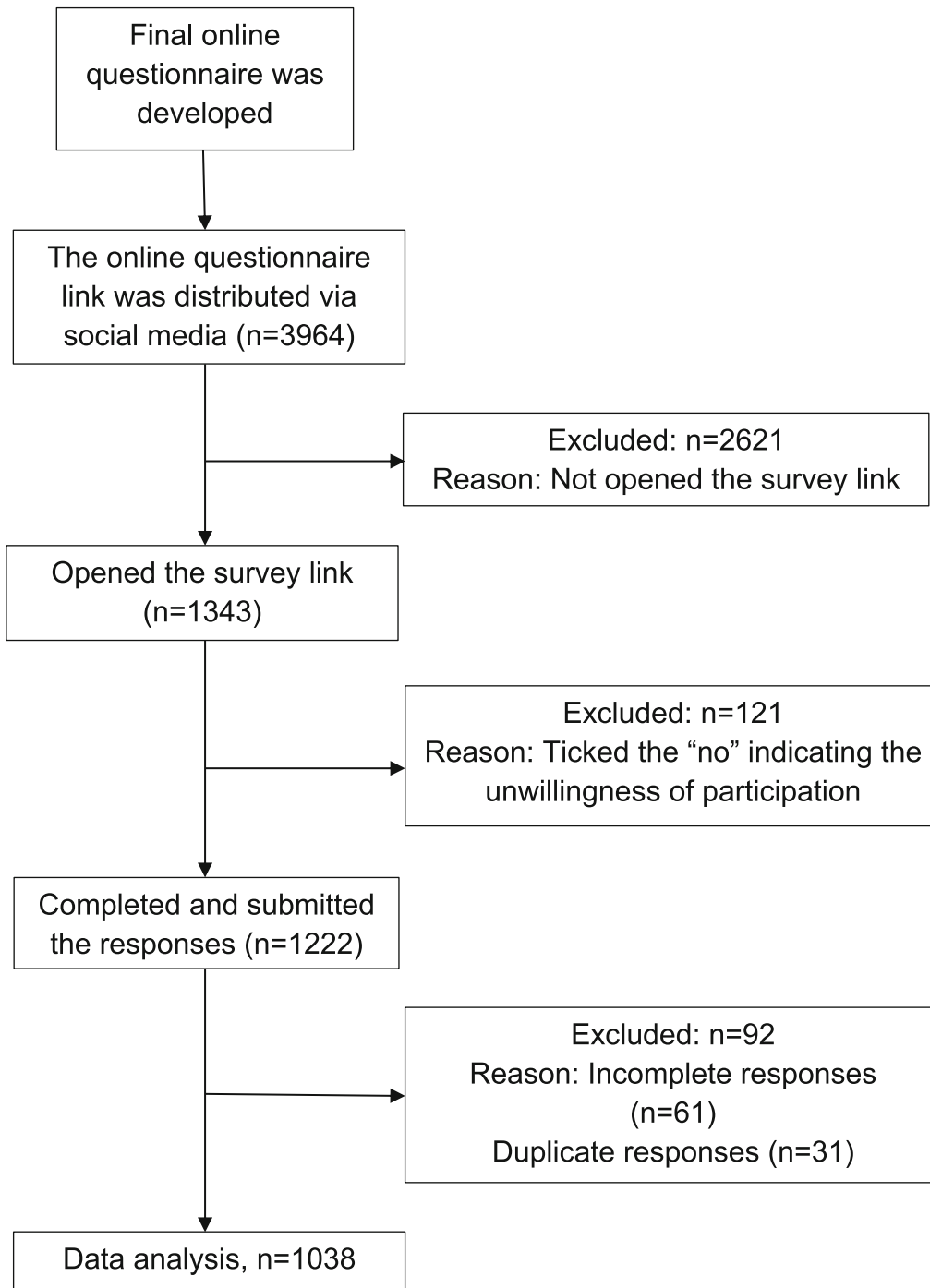


Figure 1. Flow diagram of sample recruitment procedure.

Distributions of demographic and perceived health status by intention to utilize telehealth service

In **Table 1**, the distributions of demographic and perceived health status by intention to utilize telehealth services are presented.⁵⁰ In the age group of 30-39 years, 40.83% intended to utilize (will utilize) the telehealth service. The number of unmarried participants intended to utilize the telehealth service was 37.72%, whereas the intention of utilizing the service among graduates was 44.00%. The urban residents' intention to utilize the service was 38.57%. Of those who perceived poor health status, their intention to utilize the service was 38.35%.

Table 1. Distributions of demographic and perceived health status by intention to utilize telehealth service.

Variables	Intention to utilize telehealth service			χ^2	p-value
	Participants will not utilize n (%)	Participants may utilize n (%)	Participants will utilize n (%)		
Demographic variables					
Age					
<20 years	9 (42.68)	38 (46.34)	35 (42.68)	26.07	<0.001
20-29 years	61 (9.40)	339 (52.23)	249 (38.37)		
30-39 years	20 (16.67)	51 (42.50)	49 (40.83)		
≥40 years	38 (20.32)	100 (53.87)	49 (26.20)		
Sex					
Male	70 (12.41)	286 (50.71)	208 (36.88)	0.01	0.993
Female	58 (12.24)	242 (51.05)	174 (36.71)		
Marital status					
Married	64 (16.04)	194 (48.62)	141 (35.34)	8.25	0.016
Unmarried	64 (16.02)	334 (52.27)	241 (37.72)		
Educational status					
Graduate	29 (7.25)	195 (48.75)	176 (44.00)	55.00	<0.001
HSC	50 (10.99)	256 (56.26)	149 (32.75)		
Up to SSC	49 (26.78)	77 (42.08)	57 (31.15)		
Profession					
Student	47 (9.07)	273 (52.70)	198 (38.22)	10.15	0.006
Employed	81 (15.58)	255 (49.04)	184 (35.38)		
Residence					
Rural	27 (18.49)	81 (55.48)	38 (26.03)	11.30	0.004
Urban	101 (11.32)	447 (50.11)	344 (38.57)		
Division					
Dhaka	103 (12.34)	420 (50.30)	312 (37.37)	0.64	0.726
Other than Dhaka	25 (12.32)	108 (53.20)	70 (34.48)		
Perceived health status					
Poor	82 (10.73)	389 (50.92)	293 (38.35)	9.12	0.058
As usual	30 (15.63)	101 (52.60)	61 (31.77)		
Good	16 (19.51)	38 (46.34)	28 (34.15)		

SSC = Secondary school certificate, HSC = Higher secondary school certificate.
The bold p-value indicates the statistically significant variables.

Distributions of knowledge, perceived benefit, perceived concern, and predisposition by intention to utilize telehealth service

In [Table 2](#), the distributions of knowledge, perceived benefit, perceived concern, and predisposition by intention to utilize telehealth services are presented. The knowledge, perceived benefit, and predisposition scores were significantly highest ($p < 0.001$) among those who will utilize the telehealth service. Albeit, the perceived concern score was found to be significantly highest ($p < 0.001$) among those who will not utilize the telehealth service.

Table 2. Distributions of knowledge, perceived benefit, perceived concern, and predisposition by intention to utilize telehealth service.

Variables	Intention to utilize telehealth service						p-value
	Participants will not utilize		Participants may utilize		Participants will utilize		
	Mean (SD)	IQR	Mean (SD)	IQR	Mean (SD)	IQR	
Knowledge	11 (3.09)	5-15	12.84 (2.53)	5-15	14.10 (1.84)	14-15	<0.001
Perceived benefit	13.72 (3.56)	12-16	15.92 (2.95)	7-20	17.81 (2.34)	11-20	<0.001
Perceived concern	3.45 (1.27)	3-5	2.84 (1.15)	2-4	2.5 (1.27)	1-3	<0.001
Predisposition	6.23 (2.21)	5-8	7.81 (1.73)	6-9	8.91 (1.41)	8-10	<0.001

The bold p-value indicates the statistically significant variables.

Factors associated with the intention to utilize telehealth service

Table 3 presented a multinomial logistic regression that was used to determine the factors (sociodemographic factors and perceived health status) associated with the intention of utilizing telehealth services. The reference category of the outcome variable was “they will not utilize,” and each of the other two (“they may utilize” and “they will utilize”) was compared to this reference group. The probability of utilizing the service increased significantly with increasing knowledge level among respondents who ‘may utilize’ (RRR= 1.24, 95% CI: 1.16-1.32) and ‘will utilize’ (RRR= 1.64, 95% CI: 1.50-1.80). Similarly, as the perceived benefit score climbed significantly, so did the likelihood of utilizing

Table 3. Multinomial logistic regression analysis to find the factors associated with the intention to utilize telehealth service.

Variables	Intention to utilize telehealth service					
	Participants may utilize			Participants will utilize		
	RRR	95% CI	p-value	RRR	95% CI	p-value
Knowledge	1.24	1.16-1.32	<0.001	1.64	1.50-1.80	<0.001
Perceived benefit	1.22	1.15-1.30	<0.001	1.62	1.50-1.75	<0.001
Perceived concern	0.67	0.57-0.79	<0.001	0.53	0.45-0.63	<0.001
Predisposition	1.47	1.33-1.63	<0.001	2.30	2.02-2.61	<0.001
Age						
<20 years	1.60	0.71-3.63	0.257	3.02	1.29-7.03	0.011
20-29 years	2.11	1.13-3.35	0.002	3.17	1.91-5.26	<0.001
30-39 years	0.97	0.51-1.82	0.923	1.90	0.97-3.72	0.061
≥40 years	Reference			Reference		
Sex						
Male	Reference			Reference		
Female	1.02	0.69-1.51	0.915	1.01	0.68-1.51	0.963
Marital status						
Married	Reference			Reference		
Unmarried	1.72	1.17-2.54	0.006	1.71	1.14-2.56	0.009
Educational status						
Graduate	4.28	2.52-7.27	<0.001	5.22	3.02-9.02	<0.001
HSC	3.26	2.04-5.51	<0.001	2.56	1.56-4.22	<0.001
Up to SSC	Reference			Reference		
Profession						
Student	1.85	1.24-2.75	0.003	1.86	1.23-2.80	0.003
Employed	Reference			Reference		

Table 3. *Continued*

Variables	Intention to utilize telehealth service					
	Participants may utilize			Participants will utilize		
	RRR	95% CI	p-value	RRR	95% CI	p-value
Residence						
Rural	Reference			Reference		
Urban	1.48	0.91-2.40	0.117	2.42	1.41-4.16	0.001
Division						
Dhaka	Reference			Reference		
Other than Dhaka	1.06	0.65-1.72	0.816	0.92	0.56-1.54	0.762
Perceived health status						
Poor	2.00	1.06-3.75	0.032	2.04	1.05-3.96	0.034
As usual	1.42	0.70-2.89	0.337	1.16	0.55-2.47	0.696
Good	Reference			Reference		

RRR = Relative risk ratio, SSC = Secondary school certificate, HSC = Higher secondary school certificate. The bold p-value indicates the statistically significant variables.

the service among those who ‘may utilize’ (RRR= 1.22, 95% CI: 1.15-1.30) and those who ‘will utilize’ (RRR= 1.62, 95% CI: 1.50-1.75). However, when perceived concern increased, the likelihood of utilizing the service dropped significantly among respondents who ‘may utilize’ (RRR= 0.67, 95% CI: 0.57-0.79) and ‘will utilize’ (RRR= 0.53, 95% CI: 0.45-0.63). Albeit, the chance of utilizing service increased with the increased level of predisposition among respondents who ‘may utilize’ (RRR= 1.47, 95% CI: 1.33-1.63) and ‘will utilize’ (RRR=2.30, 95% CI: 2.02-2.61). In comparison to the oldest age group (≥40 years), the chance of utilizing the service was 3.02 (RRR=3.02, 95% CI: 1.29-7.03) times significantly higher among the youngest (<20 years). Furthermore, the likelihood of ‘may utilize’ and ‘will utilize’ the service were 2.11 (RRR=2.11, 95% CI: 1.13-3.35) times and 3.17 (RRR=3.17, 95% CI: 1.91-5.26) times among the participants with age of 20-29 years. Compared to the married, the unmarried participants were significantly 72% (RRR=1.72, 95% CI: 1.17-2.54) and 71% (RRR=1.71, 95% CI: 1.14-2.56) more likely to ‘may utilize’ and ‘will utilize’ the service, respectively. The graduate participants were 4.28 (RRR=4.28, 95% CI: 2.52-7.27) times and 5.22 (RRR=5.22, 95% CI: 3.02-9.02) times more likely to ‘may utilize’ and ‘will utilize’ the service, compared to the education level up to SSC (Secondary School Certificate). Similarly, HSC (Higher Secondary Certificate) completed respondents’ intention to utilize service in the category of ‘may utilize’ and ‘will utilize’ was 3.26 (RRR=3.26, 95% CI: 2.04-5.51) times and 2.56 (RRR=2.56, 95% CI: 1.56-4.22) times higher than the up to SSC level educated. Among the students’ the possibility of ‘may utilize’ and ‘will utilize’ the service was 85% (RRR=1.85, 95% CI: 1.24-2.75) and 86% (RRR=1.86, 95% CI: 1.23-2.80) higher compared to the employed respondents. The urban residence was 2.42 (RRR=2.42, 95% CI: 1.41-4.16) times more likely to ‘will utilize’ service than the rural.

Discussion

Several pieces of research around the world have already shown how people’s and health care providers’ views and intentions influence their usage of telehealth services.^{13-15,20,21} Meanwhile, few pieces of research in Canada looked at the impact of social, cultural, economic, and environmental factors on people’s decisions to utilize telehealth-care services.^{28,29} In Bangladesh, the intention of telehealth service utilization of the general population was yet to be investigated. Therefore, in this study, we examined the associated factors such as sociodemographic factors, perceived health status, knowledge, perceived benefit, perceived concern, and predisposition with the intention to utilize telehealth services.

Our study found a significant association between telehealth of knowledge and the intention to utilize the service. We found that as the knowledge score improved, the level of intention to utilize the telehealth service increased. Albarrak et al. (2021) reported that Saudi Arabian participants had an average level of understanding were more intended to utilize the telehealth service.³⁰ Albarrak et al. (2021) believed that training on telehealth could improve understanding, and this was expected to influence people’s intention to utilize the telehealth service.³⁰ Malhotra et al. (2020) in India and Woo & Dowding (2019) in the United States also drew a similar conclusion as our study findings.^{31,32}

In our study, participants were more intent to utilize the telehealth services if they perceived a high level of benefit. Similarly, Alaboudi et al. (2016) and El-Mahalli et al. (2012) in Saudi Arabia found the same result that the participants

who perceived the benefit of the service were more intended to utilize the service.^{33,34} When participants had a high level of perceived concern, their intention to utilize this service was found low. Numerous studies around the world found that privacy issues were connected to the intention of technology-based health service utilization.^{35,36} Furthermore, Bangladeshis who had a favorable predisposition were more interested in the telehealth service. In order to determine whether socio-demographics and technology-enabling factors may influence how telehealth is utilized, a study was carried out in the United States in 2021.³⁷ The researchers revealed that individuals with favorable predispositions toward ICT devices and internet access exhibited more enthusiasm for using telehealth.³⁷ Liñan *et al.* reported that Cancer patients are more predisposed to using virtual care during the COVID-19 pandemic, demonstrated optimal care for overweight and obese patients, with anthropometric and nutritional changes.³⁸

We found that several demographic factors were significantly associated with the intention to utilize telehealth services. Age influenced people's intention to adopt telehealth services. The intention to utilize the service in the near future was 3.02 times higher among the youngest (<20 years) than it was among the oldest (≥ 40 years). Numerous studies also supported the findings of our research. Lee *et al.* (2019) and Raghunathan *et al.* (2018) found that younger participants had a stronger intention to utilize telemedicine or internet adaptive equipment, which could be due to their competence and past familiarity with the advanced technology.^{39,40} However, Jenkins *et al.* (2016) reported that older stroke patients were more eager to employ telehealth observation with ongoing technical assistance than younger patients were.⁴¹

Our research focused on education status and found that those with better education were more likely to be utilizing telehealth services. More specifically, we found that graduate participants were 4.28 and 5.22 times more likely to "may utilize" and "will utilize" the service, respectively, than those with an education level up to SSC. Schulz *et al.* (2013) found that persons with higher levels of education were more likely to pay for and use technology-based health monitoring systems.⁴² Another study found that cancer patients with higher education were more likely to use mobile devices to utilize their health care services.⁴⁰ Education may frequently be mentioned as a component that influences people's thoughts and actions, but few researchers have looked at this factor in the interaction between the fundamental indicators and people's willingness to adopt technology-based health monitoring systems.⁴³

Our study revealed that unmarried participants were much more intent to utilize telehealth than married people were; 72% and 71% 'may utilize' and 'will utilize' the service, respectively. According to Choi *et al.* (2021) telehealth users were more likely to be married or in a relationship than non-users.³⁷ Additionally, they demonstrated in their research that during the COVID-19 outbreak, a more significant percentage of users than non-users either joined in with others or somebody came in with them.³⁷

The intention was also found higher among students than among other employed individuals. The possible reason could be as they were more likely to expose to distance learning and technology based service usability.⁴⁴⁻⁴⁷ A similar study measuring nursing students' readiness to use telenursing was carried out in Poland.⁴⁸ Amazingly, 69.49% of the students reported that they would be very likely to include telenursing in their course curriculum.⁴⁸ Additionally, students from a selected number of colleges demonstrated a noticeably greater desire to integrate telenursing courses into the nursing curriculum and a willingness to utilize telenursing services in their future professional practice.⁴⁸

Furthermore, we found that urban people were more intent on utilizing this service compared to rural individuals. However, according to Lin *et al.* (2004) the people of rural areas had a higher likelihood of adopting telehealth services.⁴⁹ Moreover, in Canada, Gagnon *et al.* (2004) did not find any influence of residential status on participants' intention of telehealth service utilization.⁹

An association between perceived health status and the intention to utilize the telehealth service was found in our study. Our findings revealed that those with a low health status were more intended to utilize telehealth services than those with normal or good health status. Similarly, Ghaddar *et al.*, (2020) conducted a study in the United States and found that participants with chronic diseases were more interested in utilizing the telehealth service than those with good perceived health status.³

Conclusions and recommendations

We found that respondents' likelihood to utilize the service improved significantly who had more knowledge, perceived benefit, and predisposition. However, as perceived concern increased, the likelihood of utilizing the service decreased significantly. We also found that several factors, such as age, marital status, educational status, profession, residence, and perceived health status were significantly associated with the participants' intention to utilize the telehealth service. The healthcare system seems successful when there is equal participation in services. However, many constraints may hinder people from getting access to the universal health system. Therefore, several initiatives can be considered to reach

the health service to the people's door, including the technology-based digital health system. Without addressing the digital constrain of accessing the existing healthcare system, the disparities at the community level may be unprivileged. Numerous factors were connected with people's intention to utilize the telehealth service in this study. The appropriate authorities can consider the factors and conduct studies more broadly to investigate the containment of telehealth implementation. Specifically, initiatives should be taken by the appropriate authorities to increase knowledge, perceived benefits, and predisposition so that telehealth utilization may expand in Bangladesh. Similarly, initiatives should be taken to reduce the telehealth related concerns among the population. Moreover, we advocated for policy actions to make the telehealth system more accessible to the community and to enhance the understanding and awareness of the benefits of utilizing telehealth to improve usability among the underprivileged.

Strengths and limitations

Telehealth is an emerging healthcare platform that allows patients to access healthcare services effortlessly. Public intent to utilize the platform is also deemed significant when encountering an expansion of this service widely. However, no study has yet investigated the intention of telehealth among Bangladeshi adults, which is one of the strengths of this study. The large sample size in this study provides substantial support for the accuracy of the results. However, selection bias was inescapable due to the convenient nature of the data collection method. Because of the cross-sectional study design, causality between variables could not be established. Another limitation is that categorizing education according to the subject areas such as health, nursing, engineering, social science, etc., we would better understand the influence of education on telehealth. Separate studies could be performed exclusively for students, as they are already familiar with these new technologies or telehealth. Similarly, independent investigations on understudied populations, such as older adults with movement restrictions and caregivers, might be carried out in complex settings such as long-term care, institutional care, etc. Rigorous research is recommended in Bangladesh by utilizing a random sampling approach.

Data availability

Underlying data

Zenodo: Intention to utilize telehealth service in Bangladesh, <https://doi.org/10.5281/zenodo.6862986>.⁵⁰

This project contains the following underlying data:

- Intention_utilize_telehealth_bd.xls (raw data). Data set of the study.

Extended data

Zenodo: Telehealth research questionnaire in detail, <https://doi.org/10.5281/zenodo.6953539>.⁵¹

This project contains the following extended data:

- Telehealth_research_questionnaire.docx (in English). Copy of the research questionnaire.

Data are available under the terms of the [Creative Commons Attribution 4.0 International license](https://creativecommons.org/licenses/by/4.0/) (CC-BY 4.0).

Acknowledgments

We would like to acknowledge all project research assistants who contributed to the data collection.

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Victoria Ramos 

Telemedicine and Digital Health Research Unit, Instituto de Salud Carlos III, Madrid, Spain

I agree with new version. From my point of view, it is ready.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 14 March 2024

<https://doi.org/10.5256/f1000research.162850.r250656>

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Michelle Lozada-Urbano 

South American Center for Education and Research in Public Health, Universidad Privada Norbert Wiener, Lima, Peru

The authors have met the suggestions for improvement

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Nutrition, Public Health and Health economic

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 22 January 2024

<https://doi.org/10.5256/f1000research.136599.r222057>

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**Michelle Lozada-Urbano**

¹ South American Center for Education and Research in Public Health, Universidad Privada Norbert Wiener, Lima, Peru

² South American Center for Education and Research in Public Health, Universidad Privada Norbert Wiener, Lima, Peru

This study is important, as it can help understand how to improve access to care for patients who are not close to health services. It is necessary to modernize the health system. The use of telehealth has shown to be efficient in patient care, knowing the intention of use and the associated factors, which is the objective of this study, is key to understanding where the best application could be, together to other studies such as satisfaction and evaluation.

When mentions the use of a questionnaire by Gagnon et al. It is better to place if you have internal and external validation.

In table 1, the columns express the number (percentage), you can enter n(%).

I would like to know that they only have 3 categories of educational level. In the case of graduates, it would have been important to know if they are from the health area or from other careers. This can help to better understand the behavior of these variables, as mentioned in the discussion. about nursing students.

They mention cancer patients as being more predisposed to using virtual care; other studies during the COVID-19 pandemic have demonstrated optimal care for overweight and obese patients, with anthropometric and nutritional changes. Students today are familiar with these new technologies or telehealth. This comment may help improve the limitations.

I think the conclusions and recommendations could be improved. There is an understudied population that is older adults who have movement restrictions and have caregivers in their care.

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Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

I cannot comment. A qualified statistician is required.

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Nutrition, Public Health and Health economic

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 17 Feb 2024

Humayun Kabir

Comment-1: This study is important, as it can help understand how to improve access to care for patients who are not close to health services. It is necessary to modernize the health system. The use of telehealth has shown to be efficient in patient care, knowing the intention of use and the associated factors, which is the objective of this study, is key to understanding where the best application could be, together to other studies such as satisfaction and evaluation.

Response-1: Thank you.

Comment-2: When mentions the use of a questionnaire by Gagnon et al. It is better to place if you have internal and external validation.

Response-2: Thank you for the query on the validity of the tool. We addressed your comment and added, "For face and content validity, the questionnaire was reviewed by two experts in this area. The reliability of the questionnaire was found 0.86 in our study, representing an excellent internal consistency" in the method section of the revised version.

Comment-3: In table 1, the columns express the number (percentage), you can enter n (%).

Response-3: Thank you. We addressed your suggestion.

Comment-4: I would like to know that they only have 3 categories of educational level. In the case of graduates, it would have been important to know if they are from the health area or from other careers. This can help to better understand the behavior of these variables, as mentioned in the discussion. about nursing students.

Response-4: Thank you. According to the literature, Bangladeshi education levels are commonly classified as SSC (Secondary School Certificate), HSC (Higher Secondary Certificate), and graduate (Bachelor or honours, master's degree). As a result, we conducted our research using identical educational level groups. However, if we could categorize education according to subject areas such as health, nursing, engineering, social science, etc., we would understand the influence of education on telehealth. We considered this issue in our study's limitations section.

Comment-5: They mention cancer patients as being more predisposed to using virtual care; other studies during the COVID-19 pandemic have demonstrated optimal care for overweight and obese patients, with anthropometric and nutritional changes.

Response-5: Thank you. We included this evidence in the revised manuscript.

Comment-6: Students today are familiar with these new technologies or telehealth. This comment may help improve the limitations.

Response-6: We addressed your concern and mentioned this issue in the limitations section.

Comment-7: There is an understudied population that is older adults who have movement restrictions and have caregivers in their care.

Response-7: Thank you. We addressed your concern and mentioned this issue in the limitations section.

Comment-8: I think the conclusions and recommendations could be improved.

Response-8: Thank you. We revised and improved the conclusions and recommendations sections.

Competing Interests: No competing interests were disclosed.

Reviewer Report 21 October 2022

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Victoria Ramos 

¹ Telemedicine and Digital Health Research Unit, Instituto de Salud Carlos III, Madrid, Spain

² Telemedicine and Digital Health Research Unit, Instituto de Salud Carlos III, Madrid, Spain

Good and innovative work in Bangladesh where the intention of telehealth among Bangladeshi adults had not been studied before and is important to improve usability among the underprivileged.

Some contrariety in the expression. For instance, this work revealed that unmarried participants

were much more intent on utilizing telehealth than married people were, but it does not take into account another work that presents that telehealth users were more likely to be married or in a relationship than non-users. Could there be a relationship between the intent to use telehealth services and the need for socialization or loneliness?

Unexpected result about urban people being more intent on utilizing this service compared to rural individuals when it is taken into account that it is probable that, in urban environments, there is more access to healthcare service than in rural environments.

A review of the discussion of the results is recommended. Their findings revealed that those with a low health status had more intention to utilize telehealth services than those with normal or good health status, without any reason. On the contrary, the authors believe that severe cases prefer face-to-face care over telecare.

There are a number of issues with the methods and analysis that are not clear enough. Below are some comments:

I have indicated that there is some contradiction between the intention of the married and the unmarried. In the second paragraph on page 9, there seems to be a contradiction and it would be interesting if they give some explanation about it.

It would also improve the work to have some indications on how to improve the intention to use among those less favorable to telecare. The young and digitally born are already immersed in these tools and have no problem using them. Is there any explanation for that perceived concern? When concern increases, the likelihood of utilizing the service dropped significantly.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Telemedicine and Digital health

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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