International Journal of IT-based Public Health Management
Vol.8, No.1 (2021), pp.19-26
http://dx.doi.org/10.21742/ijiphm.2021.8.1.03

Affecting Nursing Students' Intention to Use Medical-related Mobile Apps

Youngsoon Choi

Department of Nursing, Kangwon National University, Samcheck-si, Gangwon-do, 25949, Republic of Korea
ysc615@hanmail.net

Abstract

This study was attempted to provide basic data to increase the efficient provision of health information data by identifying the effect on the intention to use medical-related mobile apps of nursing college students. Data collection was conducted from May 1st to May 10th, 2019 with the consent of the subjects, and 199 participants were used for the final analysis. The questionnaire was composed of demographic characteristics, perceptions, attitudes, and intentions to use medical-related apps. Because of this study, the difference in intention to use medical-related mobile apps according to general characteristics showed significant results in grade, achievement, major satisfaction, and experience with medical-related apps. The target's intention to use the mobile app was found to have a positive correlation with expectations for performance, ease of learning, proficiency in using mobile, attitudes toward medical-related apps, social influences, facilitating factors, and self-efficacy. It was found that mobile user proficiency and attitude toward medical-related apps had a negative correlation with anxiety factors. n the regression analysis results, the factors affecting the intention to use medical-related mobile apps were attitudes toward medical-related apps and self-efficacy in order. To increase the intention of nursing college students to use mobile medical-related apps, the above research results are promoted and training on how to use new medical-related app programs so that they can have a positive attitude toward medical-related apps for nursing college students. It is thought that various activities, such as sharing experiences with app users, are necessary. In addition, to improve the self-efficacy of using mobile medical-related apps, continuous education on information systems and information technology and support activities to reinforce app resources will be needed.

Keywords: *Mobile app, Intention to use, Recognition, Attitude, University student*

1. Introduction

With the recent rapid development of information technology, hospital systems are becoming increasingly complex and specialized [1], rather than the ability to simply remember and reproduce information to meet the needs of the information age, it is necessary to rationally select and organize information to create new information, and to solve problems creatively and critically [2]. These demands are necessary to provide safe and quality medical services in a rapidly changing medical environment and are urgently required in medical fields that require a wide range of expertise and high-level thinking skills [1].

Article history:
Received (April 25, 2021), Review Result (June 3, 2021), Accepted (September 5, 2021)

Print ISSN: 2205-8508, eISSN: 2207-3965 IJIPHM

Mobile has a variety of functions different from existing mobile phones, but the most important feature of all is that it is equipped with an Operating System (OS) like a PC, so it is possible to install and delete various applications (application programs: hereinafter apps) as desired by the user [3].

An application, simply called an application or app, basically refers to all software, including operating systems and applications, installed on a computer. In particular, a mobile application refers to any software used in a mobile device environment, such as a smartphone or tablet PC [4][5].

Although mobile apps have become commonplace and usage has increased significantly, 25% of installed apps are never used, and 26% are said to be never used again after the first use [11]. Because of this aspect, it is necessary to research in consideration of the characteristics of the app and the user on which apps are continuously used and which apps are neglected by users. Oh, conducted a study on the factors affecting purchase intention by app type [6]. Choi tried to find the factors that influence the usage time of each app type in the usage motivation of smart media [7], Oh studied the effect of different types of apps on smart addiction [6]. Lee 6et al. conducted a study to see that the influence of factors affecting the continued use of mobile varies according to the type of app [8].

As such, there are some studies on the intention of using mobile apps for the public, but there are no papers on the intention of using mobile medical apps by nursing college students. Therefore, this study aims to identify the factors affecting the intention to use mobile medical-related apps of nursing college students and to present a strategy to increase the intention to use mobile medical-related apps. Therefore, through the effective combination of nursing service and mobile medical-related app use technology, we intend to contribute to providing high-quality nursing services by effectively utilizing information necessary for nursing education.

2. Research method

This study is a descriptive research study to identify factors affecting the perception, attitude, and intention of using mobile medical apps in nursing college students.

It was conducted on a nursing college student located in Gangwon-do. The subjects understood the purpose of this study and voluntarily agreed to participate in the study in writing, and were extracted for convenience. As for the number of samples, the number required for multiple regression analysis was calculated using the G*Power 3.1.5 program. When the significance level was .05, the power was .95, and the effect size was set to an intermediate level of .15, the calculated sample size was 166 people. 210 copies were distributed in anticipation of dropouts, and 199 data were used for the final analysis, excluding 11 copies with insufficient responses.

Data collection was conducted from May 1 to May 10, 2019, after approval of the survey. 210 questionnaires were distributed, and 199 copies were used for the final analysis, excluding 11 questions with unfaithful responses.

The collected data were analyzed using the SPSS 21.0 program, the difference and level of app use intention according to demographic and sociological characteristics were analyzed by descriptive statistics, t-test, and ANOVA, and the Scheffe test was used for post verification. The correlation between app usage intention variables was analyzed by Pearson's correlation, and the effect on app usage intention was analyzed by multiple regression.

2.1. Recognition, attitude, and intention to use mobile medical apps

To confirm the subject's perception, attitude, and intention to use mobile medical apps, the tool of Yun-Bok Shim [9], which was modified and supplemented with the tool of Venkatesh et al. [10], was partially modified to suit this study. The contents of the questionnaire include expectations for performance (3 questions), ease of learning (4 questions), mobile user proficiency (3 questions), attitude toward medical apps (4 questions), social impact (3 questions), and facilitating factors (4 questions), self-efficacy (3 questions), anxiety factors (4 questions), intention to use (5 questions). The higher the score on the 5-point Likert scale, the higher the perception, attitude, and intention to use the app. In the study of Yun-bok Shim [9], Cronbach's α value was .89, and in this study, Cronbach's α value was .92.

3. Research results

3.1. Differences in the intention to use the mobile app according to the characteristics of the subject

Examining the differences in the intention to use the app according to the general characteristics of the subject, grade ($F=3.71$, $p<.05$), achievement ($F=2.93$, $p<.05$), major satisfaction ($F=5.56$, $p<.001$), and the experience of using medical apps ($t=2.91$, $p<.05$) showed a statistically significant difference.

Examining in detail the intention to use the app according to the general characteristics of the subject, the target's intention to use medical-related apps was found to be higher with higher-grade level, higher achievement, higher major satisfaction, and experience with medical-related apps [Table 1].

Table 1. Differences in the intention to use the mobile app according to the general characteristics of the subject (N=199)

Characteristics	Categories	n(%)	Intention to use the app	
			M±SD	t/F(p), Scheffe
gender	Male	37(18.6)	17.62±5.07	-.67(.499)
	Female	162(81.4)	18.14±3.81	
grade	1st grade a	70(35.2)	17.10±4.27	3.71(.026) c>b>a
	2nd-grade b	72(36.2)	18.27±3.88	
	3rd-grade c	57(28.1)	19.00±3.74	
extracurricular activities	yes	84(42.2)	18.26±3.68	.57(.569)
	no	115(57.8)	17.93±4.29	
Part-time job	yes	29(14.6)	17.25±3.90	-1.15(.249)
	no	170(85.4)	18.20±4.07	
achievement	high a	20(10.1)	18.00±3.21	2.93(.035) b>a>d>c
	medium b	110(55.3)	18.76±3.65	
	low c	46(23.1)	16.78±4.23	
	other d	23(11.6)	17.39±5.36	
clinical practice experience	yes	124(62.3)	17.62±4.22	-1.86(.069)
	no	73(36.7)	18.72±3.61	

major Satisfaction	slightly dissatisfaction a	18(9.0)	19.05±15.09	5.56(.001) d>a,c>b
	usually b	77(38.7)	16.90±3.83	
	slightly satisfaction c	65(32.7)	18.06±3.62	
	very satisfaction d	39(19.6)	19.92±3.90	
proficiency in using health-related apps	not at all	11(5.5)	17.54±3.93	1.97(.100)
	no	39(19.6)	17.05±3.86	
	usually	112(56.3)	18.01±3.96	
	all	32(16.1)	19.18±3.99	
	very all	5(2.5)	21.00±6.16	
Mobile interest	yes a	146(73.4)	18.26±4.15	.667(.514)
	no b	21(10.6)	17.66±4.11	
	unknown c	32(16.1)	17.43±3.46	
experience with medical-related apps	yes	135(67.8)	18.49±3.81	2.17(.031)
	no	64(32.2)	17.17±4.38	

3.2. Subject's level of use of the mobile app

The subject's intention to use the app was 18.07±4.04 points (72.3 points, converted to 100 points) based on a perfect score of 25 points. Looking at the level of choice and attitude toward using the app, the expectations for performance were 10.88±. 28 points (72.5 points, converted to 100 points) based on a 15-point scale and the ease of learning was based on a 20-point scale. It was 13.33±.38 points (66.75 points, converted to 100 points), and mobile proficiency was 11.62±.29 points (77.5 points, converted to 100 points) based on 15 points. Attitudes were 14.72±.43 points ((73.6 points, converted to 100 points) on a 20-point scale, and social influence was 8.81±.36 points (58.7 points, converted to 100 points) on a 15-point basis. The facilitating factor was 12.64±. 30 points (63.2 points, converted to 100 points) based on a perfect score of 20 points, and the self-efficacy was 10.09±.26 points (67.2 points, converted to 100 points) based on a perfect score of 15 points. The anxiety factor was the lowest at 9.14 ±.50 points (45.7 points, converted to 100 points) based on a perfect score of 20 points [Table2].

Table 2. Differences Subject's level of use of the mobile app (N=199)

Variable	Range	M±SD	100 points conversion
intention to use the app	5~25	18.07±4.04	72.3
expectations for performance	3~15	10.88±.28	72.5
ease of learning	4~20	13.33±.38	66.7
mobile proficiency	3~15	11.62±.29	77.5
attitudes toward medical apps	4~20	14.72±.43	73.6
social influence	3~15	8.81±.36	58.7
facilitation factor	4~20	12.64±.30	63.2
self-efficacy	3~15	10.09±.26	67.2
anxiety factors	4~20	9.14±.50	45.7

3.3. Correlation between variables of subject's intention to use mobile app, perception, and attitude

The subject's intention to use the app was found to have a positive correlation with expectations for performance, ease of learning, proficiency in mobile use, attitudes toward medical-related apps, social influences, facilitating factors, and self-efficacy. Expectations for outcomes were found to have a positive correlation with ease of learning, speed of mobile use, attitudes toward medical-related apps, social influences, facilitating factors, and self-efficacy. Ease of learning was found to have a positive correlation with mobile proficiency, attitudes toward medical apps, social influences, tactile factors, and sense of self-efficacy. There was a correlation, the attitude toward medical apps had a positive correlation with social influences, facilitating factors, and self-efficacy and social influences were positively correlated with facilitating factors, self-efficacy, and anxiety factors. There was a positive correlation between self-efficacy and anxiety factors [Table 3].

Table 3. Correlation between variables of subject's intention to use the mobile app, perception, and attitude (N=199)

Variable	intention to use the app	expectations for performance	ease of learning	mobile proficiency	attitudes toward medical apps	social influence	facilitation factor	self-efficacy	anxiety factors
intention to use the app	1								
expectations for performance	.380**	1							
ease of learning	.452**	.427**	1						
mobile proficiency	.389**	.458**	.486**	1					
attitudes toward medical apps	.663**	.458**	.476**	.526**	1				
social influence	.478**	.278**	.386**	.157*	.520**	1			
facilitation factor	.394**	.365**	.285**	.283**	.399**	.538**	1		
self-efficacy	.548**	.312**	.527**	.392	.585**	.483**	.388**	1	
anxiety factors	.007	.005	.017	-.095	-.067	.199**	.142*	.071	1

**p <.05, **p <.001*

3.4. Factors affecting the subject's intention to use the mobile app

Before the regression analysis, the values of tolerance and Variance Inflation Factor (VIF) were examined to determine whether multicollinearity occurs between the variables. All were greater than 0.1, and the dispersion expansion values were 1.09~2.27, and all did not exceed 10, indicating that there was no problem of multicollinearity. As a result of conducting multiple regression analysis with expectations for performance, ease of learning, proficiency in mobile

use, attitudes toward medical-related apps, social influences, facilitating factors, self-efficacy, and anxiety factors, the factors affecting app use intentions. Attitudes toward medical apps (β=.591, p<.001), self-efficacy (β=-.368, p<.05) showed statistically significant results. In particular, it was analyzed that the anxiety factors negatively influence the intention to use the app, and the factors used in the analysis showed 51.5% of the explanatory power of the intention to use the app [Table 4].

Table 4. Input data factors affecting the subject's intention to use the mobile app (N=199)

Variable	B	SE	β	t	*p*
constant	1.153	1.629		.707	.480
expectations for performance	.053	.124	.029	.430	.668
ease of learning	.115	.094	.086	1.224	.223
mobile proficiency	.004	.147	.002	.024	.981
attitudes toward medical apps	.591	.112	.043	5.298	.000
social influence	.148	.124	.094	1.191	.235
facilitation factor	.117	.111	.073	1.062	.290
self-efficacy	.368	.143	.191	2.565	.011
anxiety factors	-.001	.063	-.001	-.019	.985
	Adj R^2= .515	R^2= .539	F=22.34	*P* <.001	

4. Discussion and conclusion

This study identifies the factors that influence the intention to use mobile medical apps according to the general characteristics of nursing college students located in Gangwon-do, and identifies the influencing factors on mobile medical-related app perception, attitude, and intention to use. In addition, it is intended to contribute to providing basic data to effectively utilize medical-related app information necessary for nursing college students' nursing education by identifying detailed factors that influence the intention of using mobile medical-related apps of nursing college students. If the user has experience with the application to be used, it has the advantage of efficiently using the resources of the smart device by reducing the time to execute it. In addition, it is possible to use an application that suits the user's taste, thereby increasing the intention to use the app.

Nursing college students' intention to use the app was 72.3 points. Among the levels of app use choice and attitude, the expectation for performance was 72.5 points, the ease of learning was 66.75 points, the proficiency in mobile use was 77.5 points, and the attitude toward medical-related apps was 73.6 points. The social influence was 58.7 points, the facilitating factor was 63.2 points, the self-efficacy was 67.2 points, and the anxiety factor was the lowest with 45.7 points. The level of app use perception, attitude, and intention of nursing college students was highest in order of proficiency in using mobile, attitude toward medical apps, and expectations for performance, and lower in the order of anxiety factors, social influences, and promotion factors.

The subject's intention to use the app was found to have a positive correlation with expectations for outcomes, ease of learning, proficiency in using mobile, attitudes toward medical-related apps, social influences, facilitating factors, and self-efficacy. Expectations for outcomes were found to have a positive correlation with ease of learning, speed of mobile use, attitudes toward medical-related apps, social influences, facilitating factors, and self-efficacy. Ease of learning was found to have a positive correlation with mobile proficiency, attitudes toward medical apps, social influences, tactile factors, and self-efficacy. Ease of learning was

found to have a positive correlation with mobile proficiency, attitudes toward medical apps, social influences, tactile factors, and self-efficacy. The proficiency in mobile use was found to have a positive correlation with attitudes, social influences, and facilitating factors toward medical-related apps, and attitude toward medical-related apps had a positive correlation with social influences, facilitating factors, and self-efficacy. The social influence was found to have a positive correlation with the facilitating factors, self-efficacy, and anxiety factors, and the facilitating factors were found to have a positive correlation with the self-efficacy and anxiety factors [Table 3].

Based on the results of this study, I would like to make the following suggestions.

First, there is a need for continuous research and attention on the factors that influence the intention of using mobile medical-related apps according to the general characteristics of nursing students.

Second, a follow-up study is needed on the intention, choice, and attitude of nursing students to use mobile medical apps.

Third, research and interest in the development and application of intervention programs to improve the intention to use mobile medical-related apps of nursing college students will be needed.

References

[1] H. S. Hwang, "The effects of embedding approach for the improvement of critical thinking ability," Journal of Korean Educational Research, vol.39, no.3, pp.187-214, **(2001)**

[2] H. Y. Kim., H. S. Oh, and E. K. Yun, "Analysis of asthma nursing process based on the systems thinking of nursing students," Korean System Dynamics Society, vol.149, no.2, pp.55-69, **(2013)**

[3] S. Y. Sim, Y. J. Seo, J. M. Kim, and S. H. Kim, "Factors related to the intent to use the medical application (M-APP) of smartphone of hospital nurses," Health Policy and Management, vol.22, no.2, pp.249-262, **(2012)**, DOI:10.4332/KJHPA.2012.22.2.249

[4] G. H. Kim, "Development of a mobile application for self-directed learning in elementary physical education challenge activities," Master's thesis, Gwangju National University, Korea, **(2021)**

[5] S. W. Jeong, Y. C. Kwon, and T. D. Kwon, "Elementary school action challenge teaching and learning materials application app (APP) development," The Korean Journal of the Elementary Physical Education, vol.25, no.2, pp.1-17, **(2019)**

[6] S. Oh, "An explorative study on the difference between smartphone application selection factors and purchase factors," The Journal of Society for e-Business Studies, vol.18, no.4, pp.12-14, **(2013)**

[7] M. Choi, "A study on the effect of motivations for using smart media on using the application," Korean Journal of Communication & Information, vol.61, pp.52-73, **(2013)**

[8] H. S. Lee, N. Y. Kwak, and C. C. Lee, "Exploring determinants affecting mobile application use and recommendation," Journal of The Korea Contents Association, vol.15, no.8, pp.481-494, **(2015)**

[9] Y. B. Sim, Y. J. Seo J. M. Kim, S. H. Kim, and D. H. Sung, "Factors related to the intent to use the medical application (M-APP) of smartphone of hospital nurses," Korean Journal of Health Policy and Administration, vol.22, no.2, pp.249-262, **(2012)**

[10] V. Venkatesh, M. G. Moris, D. B. Davis, and F. D. Davis, "User acceptance of information technology: Toward a unified view," MIS quarterly, vol.27, no.3, pp.425-478, **(2003)**

[11] Korea Statistical Office, "Number of apps available in leading app stores as of June 2016," Available at https:/www.statista.com/statistics/27623/number-of-aps-available-in-leading-ap-stores/ **(2016)**

This page is empty by intension.