The behavioral intention telepharmacy questionnaire based on theory of personal health differences and planned behavior

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Article Info

ABSTRACT

Modern pharmaceutical services are offered via telepharmacy, an internet platform. Identification of items and factors that influence people's behavioral intentions towards telepharmacy services is needed to develop this service. The study aims to develop a questionnaire based on a research model that combines two well-known theories: the theory of personal health differences (TPHD) and the theory of planned behavior (TPB) technique. The purposive sampling strategy was combined with a cross-sectional observational method. 116 participants who were at least 18 years old were given the questionnaire. Convenience sampling from various population subgroups was used to select them. Data analysis was then conducted using the exploratory factor analysis (EFA). Factors were extracted using varimax rotation and principal component analysis. The results showed that the questionnaire consists of 16 items divided into 5 constructs (attitude and self-efficacy, behavioral intention, subjective norm, personal health status, and personal health value), this study proves that the behavioral intention telepharmacy questionnaire based on personal health differences and planned behavior theory is a reliable and valid measure. It can also draw attention to the many aspects of adoption behavior, helping service providers toward the successful digitalization of pharmaceutical services by fostering telepharmacy literacy. The application of telepharmacy is both a hope and a challenge for pharmacists and society, especially in terms of the intention to provide safe and quality pharmaceutical care.

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1. INTRODUCTION

Pharmacists may be able to bill for critical patient-care services, such as Chronic Care Management (CCM), with the help of a more individualized telehealth approach. This could have significant effects on patient care that go well beyond the realm of medication therapy management. More than one-third of the 200 opportunities (an average of 2.89 per patient) that the telepharmacy found for improving the quality, safety, or cost of medication therapy were adopted by the patients' providers. The program's results offer preliminary proof in favor of using virtual services provided by pharmacists to reach a wider audience, particularly patients who might not otherwise receive CCM services [1].

The use of telemedicine has a number of advantages for patients, healthcare professionals, and society at large, including decreased hospitalization or readmission rates, lower healthcare expenses overall, and shorter lengths of stay. Additionally, it has been hypothesized that its application might offer patients

psychological advantages, such as higher rates of satisfaction and medication adherence [2]. Solutions for remote health information and communication using internet-based technology are referred to as eHealth, telehealth, and telemedicine solutions and can all be used interchangeably [3]. During the COVID-19 epidemic, telemedicine has been successfully implemented in a number of healthcare settings, including mental health services, physical therapy, and many others [4]-[6].

Whether to adopt a particular technology is one of the most important medical and administrative choices made in hospitals and healthcare systems generally [7]. However, the process of adaptation is intricate and is influenced by numerous interrelated elements [7], [8]. The literature has divided the factors that are crucial for the adoption of telemedicine. The research has determined that the following four levels of factors environmental, organizational, individual, and inventive are critical for the adoption of telemedicine. The organizational level has been the focus of research up to this point [3]. The individual level has received less attention, despite the fact that adoption decisions in healthcare facilities are made by (groups of) people and subject to subjective influence. Generally speaking, general practitioners have a big influence on how innovation is adopted in healthcare organizations because of their roles as initiators, facilitators, and decision-makers [9]-[11].

To investigate the aforementioned concerns, the current study, in short, aims to construct a framework by merging protection motive theory (PMT), theory of planned behavior (TPB), and personal health variations (PHV). One of the widely recognized theories, Technology Adoption Behavior (TAB), explains technology adoption behavior by taking societal influence and individual role into account [12], [13]. The research has two possible contributions. First of all, it adds to the body of research on the uptake of e-government services and telemedicine from the perspective of healthcare customers. Second, the study advances the creation of a theoretical framework that explains why healthcare customers intend to embrace e-government telemedicine service (EGTMS). The more research done, the more valuable it will be to satisfy the growing demand from academic and professional communities for the investigation and analysis of virtual health care models [14]. The following are some of the opportunities for telehealth business development in Indonesia: a large number of telehealth users (32 million) and hospital telemedicine users (71%), a high rate of non-communicable disease cases (71%), an increase in JKN participants (222.4 million), a low number of health workers (0.4 doctors per 1,000 population), and a large number of telehealth users (32 million). The Telemedicine Indonesia (TEMENIN) of Ministry of Health's is a large online service provider with 11 platforms [15].

Several efforts to develop questionnaires through several theoretical approaches have been carried out by previous studies. Sulistyaningrum et al. [16] combines three theories: the DeLone and McLean information success model, the protection motive theory, and the Unified Theory of Acceptance and Use of Technology (UTAUT). The Task-Technology Fit Theory (TTFT) and the UTAUT are combined by Liu et al. [17] and the study by Tjiptoatmadja and Alfian [18] evaluates the public's knowledge, perceptions, and readiness to use telepharmaceutical services in Indonesia. The perception and attitude of Malaysian community pharmacists toward telepharmacy implementation are evaluated by Ng and Thing [19]. In a public pharmacy school in Malaysia, Elnaem et al. [20] study evaluated senior pharmacy students' understanding of, attitudes toward, and readiness for telepharmacy services. This study attempted to use a theoretical methodology, subject settings, and several locations. The wording of the research problem is whether the behavioral intention of the telepharmacy service questionnaire, which integrates the two theories, the TPB technique and the Theory of Personal Health Differences (TPHD), shows good validity and reliability. This study seeks to create a behavioral intention questionnaire for telepharmacy services using a research model that combines the TPB technique with TPHD success model. The findings of this study are believed to serve as a measuring tool for determining behavioral intention to use telepharmacy services generally in Indonesia.

2. METHOD
2.1. Study design
The questionnaire was created and validated using a mixed study design. Phase 1 involved doing a qualitative investigation and literature review to determine the constructs and items. A quantitative analysis was conducted as part of phase two to validate the questionnaire. The Faculty of Medicine at Universitas Islam Sultan Agung's Ethics Commission gave approval with reference number 357/IX/2022/Komisi Bioetik. In Central Java, Indonesia, study participants were requested to complete an online informed consent form using a Google Form. The collected data was used to assess the level of application, clarity, overlapping responses, balance, jargon use, accuracy of responses, use of technical terminology, link to problems, and application. All items satisfied the face validity requirements, according to the assessment's results. In July 2022, data was gathered for this phase utilizing a web-based survey and a Google form. The questionnaire was completed by 116 individuals who were at least 18 years old. To ensure the maximum diversity feasible, the participants were chosen via convenience sampling from a range of population categories.

2.2. Questionnaire development

A methodological methodology with four fundamental steps—a study of the literature, focus group discussions, expert evaluation, and pilot testing—was used to design the questionnaire [21]. In addition, a thorough assessment of the literature was conducted as the first step in creating content for electronic search engines. Based on earlier studies by Seethamraju *et al.* [22] and Gao *et al.* [23], a total of 6 factors and 16 items were found. To evaluate the questionnaire's validity, substance, and critical evaluation, linguistics experts, academics studying drugs, and information technology professionals looked over it. None of the search results found items were deleted at this point in the process. The formula produced values ranging from +1 to -1 and had a 100% response rate for the expert judgment comprising five academics. Additionally, the positive value indicated that the item was rated as significant or necessary by half of the panelists. The content validity ratio (CVR) is more "relevant" and has higher validity the farther it is from zero. The questionnaire was reviewed by six professionals in the domains of linguistics, pharmacy academics, and information technology for face validity, substance, and critical appraisal; none of the items were eliminated at this point. In July 2022, 10 respondents' face validity data were gathered through a web-based survey utilizing a Google form. The use of jargon, the accuracy of the responses, the use of technical terminology, application, and relationship to problems were all assessed using the data collected. All of the items satisfied the criterion for face validity, according to the assessment results.

2.3. Data analysis

The data transcription model used in this study's focus group discussion (FGD) stage is a verbatim transcript that includes the informant's name, occupation, gender, the time of the interview, and the interview's content. Additionally, NVivo 12 Plus software was used to produce the data encoding and to carry out the transcribing process. The coding was created using nodes in the NVivo software, where it was modified to fit the theme or unified theory technique: TPHD and TPB. The internal consistency was evaluated using Cronbach's Alpha; a value of 0.7 or higher was deemed favorable [24]. The domain structure was investigated using an exploratory factor analysis (EFA) with varimax rotation [25]. A sample's adequacy levels were assessed using the Kaiser-Myer-Olkin (KMO) test and Bartlett's test of sphericity, where values higher than 0.5 indicate that the data were suitable for factor analysis. P values of less than 0.05 were considered significant, and the data were examined using IBM SPSS Statistics 24 software and flourish studio.

3.   RESULTS AND DISCUSSION

The results of this study, in Table 1, is the distribution of respondents' characteristics in phase two of the trial based on age, gender, education, occupation and income. Total of 116 respondents received the questionnaires created for this investigation. In addition, 75% of the participants' phase 2 pilot test were female, with 89.7% of them in working age and 78.4% have completed their senior high school. While 73% of the total income is below IDR 1,000,000. The majority occupation of the respondents' is 83.6% students, and among them 60% frequently utilized HaloDoc to look up health-related information. The results of the Harman single factor methodology, which calculated the variance of the overall method as 38.77%, are shown in Table 2. Additionally, this fell below the recognized upper limit of 50% [26]. This suggests that there is no bias issue with the general approach in the study's dataset.

The fit indices of confirmatory factor analysis (CFA) were insufficient to replicate the dimensions of the unified theory; TPHD and TPB. Therefore, EFA was used to identify the underlying dimensions. Single component explanations for each activity and for behavioral intentions were found to account for a significant portion of the variance after principal component analyses (PCA) on the behavioral questions. When an a priori three-component structure reflecting the TPHD and TPB dimensions was the target of the PCA the determinants of the four behaviors did not show sufficient congruence. After performing extra Varimax rotations and eliminating duplicate items, three component solutions were found that explained between 50% and 69% of the variance in the determinants of each behavior. These answers line up with the TPHD and TPB dimensions [27].

According to the analysis's findings, the KMO value was 0.799, indicating that the data was sufficient for the factor analysis [28]. The structure and construct validity of an instrument were built using the EFA of the primary components with varimax rotation. Retained and chosen for interpretation were factors with eigenvalues greater than 1 or cumulative contribution rates greater than 70% [29]. Additionally, they can account for 71.01% of the variation in the behavioral intention telepharmacy model overall. However, due to a number of factors, these goods have a low loading factor value of 0.5, known as cross-loading. Additionally, the elements were not placed in the intended order, therefore the structure that was retrieved in the first round was not suitable. Following the procedure, ATTSE5 and PHV4 were removed from the analysis. Once a satisfactory structure was obtained, the EFA was repeated.

Table 1. Respondents' characteristics

Characteristics	Frequency (n=116)	Percentage (%)
Age		
18-24 years	104	89.7
25-44 years	10	8.6
45-64 years	2	1.7
Gender		
Male	29	25.0
Female	87	75.0
Education		
Senior high school	91	78.4
Diploma	2	1.7
Bachelor	21	18.1
Master	1	0.9
Doctor	1	0.9
Occupation		
Private employee	12	10.3
Student	97	83.6
Government officer	3	2.6
Jobless	4	3.4
Income (IDR)		
<IDR 1,000,000	85	73
IDR 1,000,000-IDR 2,500,000	15	13
IDR 2,500,000-IDR 3,500,000	3	3
>IDR 3,500,000-IDR 5,000,000	8	7
>IDR 5,000,000-IDR 10,000,000	2	2
>IDR 10,000,000	3	3
Types of application		
AloDokter	18	16
Grab Health	2	2
HaloDoc	70	60
K24 online	10	9
KlikDokter	3	3
Shopee	9	8
Tokopedia	4	3

Table 2. The result of common method bias analysis

Total	% Variance	% Cumulative
6.97	38.77	38.77

Factor extraction was done in the second round using principal component analysis and varimax rotation. This procedure resulted in a five-factor solution with the following components: 22.39% attitude and self-efficacy, 12.26% behavioral intention, 11.93% subjective norm, 10.19% personal health status, and 14.24% personal health value shown in Figure 1. How all the constructed variables may account for 71.01% of the entire variation. For the aim of validating our one-factor solution obtained from EFA, the result showed the same factor structure as the initial scale. These related errors are methodologically caused by similarly worded items, content overlaps, demand features, acquiescence, and reading difficulty [30].
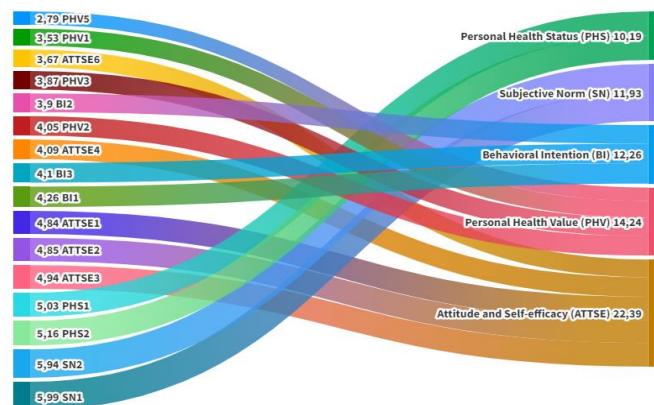

Figure 1. Total variance explained

Total 16 items with eigenvalues larger than 1 were found in the validity study using the principal component analysis method. The principal component analysis's findings did not match those of the initial study. This was due to the fact that it lacked the capabilities to compare the results of this recent investigation. The key element assessment revealed that every article in the screen-plot analysis has an initial component and a clear pattern, therefore the questionnaire only has one single factor [31]. Table 3 shows the results of principal component analysis to do a validity test across all variables. Each collection of variables was in a separate component, and the loading factor value for all items was greater than 0.50. Additionally, every statement or question of items was present in its group, proving the validity of the items.

Table 3. The result of convergent validity test

Name of the construct	Item code	Item statement	Loading factor
Attitude and self-efficacy (ATTSE)	ATTSE1	Using telepharmacy is a good idea	0.832
	ATTSE2	Using telepharmacy will help me manage my health more actively	0.834
	ATTSE3	I like the idea of using telepharmacy	0.850
	ATTSE4	Learning to use telepharmacy is easy for me	0.703
	ATTSE6	I can use telepharmacy without much effort	0.632
Subjective norm (SN)	SN1	People who are important to me will think that I should use telepharmacy	0.822
	SN2	People who influence my behavior think that I need to use telepharmacy	0.816
Personal health status (PHS)	PHS1	Personal health status in general, would you say your health is...?	0.847
	PHS2	Compared to others your age, would you say your health is...?	0.869
Personal health value (PHV)	PHV1	I am willing to make daily sacrifices for good health	0.724
	PHV2	There is nothing more important than good health	0.830
	PHV3	If you do not have health, then you do not have anything	0.792
	PHV5	I am willing to make daily sacrifices for good health	0.572
Behavioral intention (BI)	BI1	I will frequently use telepharmacy	0.739
	BI2	I will recommend telepharmacy to others	0.677
	BI3	I will continue using telepharmacy in the future	0.712

Table 4, the reliability of all the variables ranged from 0.735, which is the lowest number, to 0.905, which is the greatest. The values reliability of 0.905; 0.790; 0,786; 0.735; and 0.877 were obtained for factors 1 to 5, respectively. The reliability of the scale can be determined by computing the coefficient alpha. As a result, Cronbach alpha is frequently used to evaluate the reliability of study items. The association between pieces in the collection that are proportionally associated with one another is also shown by this trustworthy coefficient. According to the assessment's findings, a dependability score of less than 0.7 was considered weak [32], [33], [34]. Liu *et al.* research results were able to show a good profile of item validity, discriminant construct and reliability [17]. The research of Sulistyaningrum *et al.* [16] was able to demonstrate good profiles of discriminant constructs, reliability, and item validity; nonetheless, numerous question items were still determined to be invalid, necessitating their removal from the model. In this study, a 16-item scale was used to investigate the behavioral intention of telepharmacy services. To further validate the study instrument, CFA on the same scale with a larger sample size is required. To assess the generalizability, this measure needs to be refined and tested in various settings. The findings demonstrate the proposed model's robustness and demonstrate its good explanatory power in predicting users' intentions to employ e-procurement technology [35]. Our questionnaire, which was based on the TPB, rejected the suggested three-factorial model (attitude, subjective norm, and perceived behavior control). It was decided to use a two-factorial model with a combined factor of perceived behavior control and subjective norm [36].

Table 4. The result of reliability test

Factor	Name of the construct	Cronbach Alpha value	Cut-off value
1.	Attitude and self-efficacy	0.905	0.7
2.	Subjective norm	0.790	
3.	Personal health status	0.786	
4.	Personal health value	0.735	
5.	Behavioral intention	0.877	

Several limitations that can weaken the findings. First, according to the theory of behavior formation, specific attitudes are a better predictor of behavioral intentions than general attitudes. Therefore, a more comprehensive examination of attitudinal aspects will increase the predictive power of respondents' behavioral intentions. Second, although there is no theoretical rationale or empirical evidence to blame for measuring behavioral intentions using questionnaire surveys. However, additional approaches to assessing behavioral intentions toward surveys should be undertaken. For example, by using an interview methodology, we will be confident in the more practical and economical use of surveys to assess behavioral intentions. Third, a cross-

sectional study was used to arrive at the research's conclusions and implications. As a result, the study is less able to capture the temporal variations in the research constructs. Lastly, as was previously mentioned, a number of factors (such as the need for cognition) are likely to influence respondent behavioral intentions. To obtain a deeper theoretical understanding of respondent behavior, future research should look at the relationships between extra variables in addition to survey value and enjoyment.

4.   CONCLUSION

Overall, this study proves that the behavioral intention telepharmacy questionnaire based on TPHD and TPB is a reliable and valid measure and that behavioral intention telepharmacy have important implications for both consumer and service provider: pharmacies, pharmacist, and government officials. The questionnaire consists of 16 items divided into 5 constructs, attitude and self-efficacy, behavioral intention, subjective norm, personal health status, and personal health value, that can be used to gauge how telepharmacy uptake has changed in response to the COVID-19 pandemic outbreak. It can also draw attention to the many aspects of adoption behavior, helping service provider toward the successful digitalization of pharmaceutical services by fostering telepharmacy literacy. The application of telepharmacy is both a hope and a challenge for pharmacists and society, especially in terms of the intention to provide safe and quality pharmaceutical care.

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