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Research Article

Health Screening of the Elderly Using Geriatric Mobile Apps (SIM Lansia) in Malang Primary Health Care

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Abstract.
In the city of Malang, there are currently 109,368 geriatrics. However, Malang Primary Health Care (PHC) coverage of geriatrics screening remains low at the end of 2021 (26%). In accordance with the Malang District Health Office's approval, Google Forms were used for the geriatrics' data gathering. The purpose of this study was to analyse the difference in geriatric data coverage before and after using SIM Lansia Apps'. This study used a quantitative study design. The population in this study were all Malang city cadres with 57 cadres participating. There were two parts to the data gathering process: the first was to collect the geriatrics' data after two months of app use, and the second was to conduct a Technology Acceptance Model (TAM) Test with 12 closed-ended questions to ask respondents about their opinions of using the SIM Lansia Apps'. The data was analyzed using the statistic Z test to compare the pre-app use and post-app use coverage data, and the TAM response was categorized using a Likert scale. After utilizing the app, the coverage of geriatric screening data increased by roughly 43.79% (May-July) using SIM Lansia, and the Z test indicated that this increase was statistically significant (P value = 0.000). Five dimensions of the TAM Test revealed that all respondents agree on Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using Technology, Behavioral Intention to Use, and Actual Use of Technology in using SIM Lansia Apps'. The apps showed effectiveness and efficiency in increasing geriatrics' data gathering coverage in every PHC in Malang City.

Keywords: Geriatric, Cadre, SIM Lansia Apps, Primary Health Care (PHC)

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1. INTRODUCTION

Currently, there are approximately 109,368 elderly people in Malang City. Planning for elderly health programs at the health Office refers to elderly health screening data obtained through elderly cadres in each Primary Health Care (PHC) area. So far, elderly screening data is still being collected by cadres manually, but in early 2021 Google forms are used as a data collection instrument so that data can be directly recapitulated by the health Office. The results of achieving elderly screening data are still quite low at 26% at the end of 2021.

The PHC and the Health Office still have to process the data that has been collected by the cadres manually because the output from the google form is still in the form of raw data in Microsoft excel format. This causes the presentation of information related to elderly screening data takes a longer time so that it hampers the planning of elderly programs. Elderly screening is a program that is routinely carried out by PHC as a basic health service facility in the community (1). This is done so that the health status of the elderly is achieved or in accordance with the Minimum Service Standards (SPM). In accordance with the Minister of Health Regulation No. 43 of 2016 concerning Minimum Service Standards (SPM) in the Health Sector, Article 2 paragraph g, that every Indonesian citizen aged 60 years and over gets health screening according to standards. Elderly health screening standards include: detection of hypertension by measuring blood pressure, detection of diabetes mellitus by measuring blood sugar levels, detection of cholesterol in the blood and detection of mental emotional and behavioral disorders including senility (2).

Currently, there are many applications that are used to simplify the process of collecting, processing and presenting data in the form of information reports more efficiently. In addition, the application is also used to reduce data processing errors due to manual processing (human error). Another study stated that the application can improve the accuracy of recording patient information which affects the accuracy of treatment (3). Furthermore, the application that is used by mobile is preferred by the community because it is easy to use and can be carried anywhere (4).

Information systems in PHC management activities are very helpful and have a very effective role in the process of health services at the PHC. The existence of an information system helps health workers, especially the leadership of the PHC, in making policies quickly, precisely, and accurately based on information obtained from health services at PHC they lead. The results of the study stated that the use of the PHC Management Information System (SIMPUS) was useful because it made it easier to provide data, facilitated reporting to the Health Office because it was systemically connected, saved paper usage and shortened work. Moreover, users are satisfied in terms of content (content), data accuracy, application format and ease of use. The use of a good system can maximize the services provided and increase public trust in the PHC (5).

In 2020, researchers have developed an application for collecting elderly screening data in the form of an Elderly Management Information System (MIS). This application has been implemented in 2 PHC in Malang City, namely Bareng Health Center and Rampal Celaket. The results of the implementation of the elderly SIM at the Bareng Health

Center in 2020 showed an increase in the coverage of elderly screening data. Based on the total number of elderly targets as many as 4,761 people, there was an increase in elderly data entry by 4,042 (84%). Meanwhile, the results of the implementation at the Rampal Celaket Health Center in 2021 showed that of the total elderly target of 2,508 people, 1,879 (75%) elderly data had been inputted. These results are in accordance with research that shows differences in the effectiveness of health services between before and after using the application. The results of the scheduling implementation study using the application show a reduction in waiting time, a reduction in manpower and an increase in user (patient) satisfaction (6)(7).

Users of the Elderly SIM application are cadres and health workers, especially elderly PJs at the PHC and the Health Office. The results of the technology acceptance test (Technology Acceptance Model / TAM) for the elderly SIM application carried out for cadres and elderly program holders at the Bareng Health Center show that this application is easy to use, easy to access (easy to open) and can be used to assist their duties as cadres' elderly to collect elderly health data. The TAM test is also known as the information technology system acceptance model introduced by Fred D. Davis in 1986 (8). This test explains the factors that determine the level of user acceptance of information systems. Davis developed an instrument measuring user acceptance, namely TAM into 5 dimensions. Dimension of TAM test consists of Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using Technology, Behavioral Intention to Use, and Actual Use of Technology in using SIM Lansia Apps'.

Based on the acceptance of elderly cadres to the application and increasing the coverage of elderly screening data at 2 PHC, Health Polytechnic Ministry of Health Malang collaborated with the Malang City Health Office to use the elderly SIM application officially as a means of collecting data for elderly screening in all areas of Malang City. The purpose of this study was to analyze the difference of geriatric data coverage before and after using of SIM Lansia Apps' and also conducted a Technology Acceptance Model (TAM) Test with 12 closed-ended questions to ask respondents about their opinions of using the SIM Elderly Apps'.

2. MATERIALS AND METHODS

This study used a quantitative study design. Population in this study were all Malang city cadres. Purposive technique sampling was used in this study. There were 57 cadres participated in this study, who were the coordinator from each district . Those cadres

were trained to use SIM Lansia Apps until they can input geriatric to the Apps. Variable in this study was coverage of geriatric data.

There were two parts of data gathering process: the first to collect geriatrics' data pre using the Apps and after two months of apps' use. Data pre using the apps was collected through secondary source. The data was analyzed using the statistic Z test to compare the pre- and post-app coverage data.

The second conducted a Technology Acceptance Model (TAM) Test. The researcher used questionnaire from the previous study. Dimension of TAM test consist of Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using Technology, Behavioral Intention to Use, and Actual Use of Technology in using SIM Lansia Apps'. The test using questionaire with 12 closed-ended questions to ask respondents about their opinions of using the SIM Lansia Apps'. TAM test was scored using 4 scale of Likert, which were 4: very agree, 3: agree, 2: disagree, 1: very disagree. The TAM response of each dimension was presented in average value.

3. RESULTS

3.1. Pre and Post Apps Coverage Data

The results of manually collecting elderly screening data were taken from secondary data sources, namely the year-end report for the 2021 Health Service elderly program. Based on secondary data sources, the achievement of elderly screening data in the city of Malang was 28,435 data (26%).

The results of data collection after using the Elderly SIM application showed an increase in total coverage for 2 months (June-July) of data collection, which was 42,620 data (38.9%).

Statistical Z-test was conducted to determine the significance of differences in the coverage of elderly screening data before and after using the application.

Table 1: Result of Z Test of Elders Data Coverage using SIM Lansia App.

Variable	n	95% Confidence Interval of the Difference		t	df	P Value
		Lower	Upper			
Z Test coverage	57	-177.344	-92.902	-6.411	56	.000

Tabel 2 showed that there was significant difference between first and third monitoring based on statistically test (P value = 0,000).

3.2. Technology Acceptante Model (TAM) Test

The results of the TAM test based on 5 dimensions (Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using Technology, Behavioral Intention to Use, and Actual Use of Technology in using SIM Elderly Apps') indicate the opinions of all cadres for each dimension fall into the agree category (Table 2)

3.2.1. Perceived Ease of Use

TABLE 2: Dimension of *Perceived Ease of Use* Technology Acceptance Model (TAM).

VARIABEL	VERY AGREE 4	AGREE 3	DISAGREE 2	VERY DISAGREE 1	MEAN
I think the application taught is easy to learn	27 (47,4%)	30 (52,6%)			3,5
I think the application taught is easy to understand	27 (47,4%)	30 (52,6%)			3,5
I think the application is easy to use	24 (42,1%)	33 (57,9%)			3,4
I think the application is easy to access	25 (43,9%)	32 (56,1%)			3,4
AVERAGE OF MEAN					3,5

In table 2, the results of the technology acceptance test for the elderly SIM show that the average elderly cadre agrees on the Perceived Ease of Use aspect of the elderly SIM application. The cadres agreed (mean mean=3.5) that the elderly SIM application was easy to learn, easy to understand, easy to access and easy to use.

3.2.2. Perceived Usefulness

Regarding the aspect of perceived usefulness, table 3 shows that the average cadre also agrees (mean = 3.5) that this application helps their task as elderly cadres to collect elderly health data, speed up their work in collecting elderly health data. and with this application they can also help PHC officers to collect elderly health data.

Table 3: Dimension of Perceived Usefulness Technology Acceptance Model (TAM).

VARIABEL	VERY AGREE 4	AGREE 3	DISAGREE 2	VERY DISAGREE 1	MEAN
This application helps my task as an elderly cadre	22 (38,6%)	34 (59,6%)	1 (1,8%)		3,4
This application helps me to collect elderly health data	23 (40,4%)	32 (56,1%)	2 (3,5%)		3,4
This application speeds up my work of collecting elderly health data	20 (35,1%)	33 (57,9%)	4 (7%)		3,3
With this application I can help PHC officers to collect elderly health data	21 (36,8%)	36 (63,2%			3,4
AVERAGE OF MEAN					3,3

Table 4: Dimension of Behave Intention to use Technology Acceptance Model (TAM).

VARIABEL	VERY AGREE 4	AGREE 3	DISAGREE 2	VERY DISAGREE 1	MEAN
This app encourages me to keep using it	16 (28,1%)	40 (70,2%)	1 (1,8%)		3,3
As much as possible I will use this application regularly	12 (21,1%)	44 (77,2%)	1 (1,8%)		3,2
I want to use this application to help my task as a cadre	15 (26,3%)	40 (70,2%)	2 (3,5%)		3,2
AVERAGE OF MEAN					3,2

3.2.3. Behave Intention to use

In table 4 regarding the dimensions of user behavior (Behave Intention to use) the cadres agree (mean mean=3.2) that they use this application regularly and want to use this application to assist their duties as cadres.

Table 5: Dimension of Attitude Technology Acceptance Model (TAM).

VARIABEL	VERY AGREE 4	AGREE 3	DISAGREE 2	VERY DISAGREE 1	MEAN
I like using this app	16 (28,1%)	41 (71,9%)			3,3
Overall, I am satisfied using this application	14 (24,6%)	39 (68,4%)	4 (7%)		3,2
AVERAGE OF MEAN					3,2

3.2.4. Attitude

The cadres have an attitude of agreement (mean = 3.2) that they like and are satisfied using this application.

3.2.5. Actual Use

Table 6: Dimension of Actual Use Technology Acceptance Model (TAM).

VARIABEL	VERY AGREE 4	AGREE 3	DISAGREE 2	VERY DISAGREE 1	MEAN
I always use this application to collect elderly health data	12 (21,1%)	40 (70,2%)	5 (8,8%)		3,1
This application is in accordance with the needs of my duties as a cadre.	13 (22,8%)	42 (73,7%)	2 (3,5%)		3,2
AVERAGE OF MEAN					3,2

In the last dimension, table 6 shows the actual condition of the users (Actual Use) the cadres agree (mean mean=3.2) that they will always use this application to collect elderly health data and this application is in accordance with the needs of their duties as cadres.

4. DISCUSSION

4.1. Pre and Post Apps Coverage Data

Statistical test in this study significantly proved that there was increase in data coverage of elders' data between pre and post using Apps. The use of SIM Lansia App was possibly increasing the data coverage compared to manual method in doing screening

for elder. This App was making the cadre easily record the screening data without re-write the items which need to be screening and make it faster and time saving. The findings of this study were in line with those of earlier studies that indicated there were numerous advantages to using HIT in healthcare services, including time savings for both patients and doctors and an impact on treatment accuracy due to the correctness of patient information records (3) .

The transition from manual to digital healthcare, including the collecting and reporting of data, affects the effectiveness and efficiency of the services. This includes the reduction in operating spending, queues, and wait times (9) (6) (10) (11) (12).

4.2. Technology Acceptante Model (TAM) Test

During data gathering, cadre admitted that this app was quite easy to use and very useful so they were willing to use this app.

4.2.1. Perceived Ease of Use

The results of the technology acceptance test for the elderly SIM showed that on average the elderly cadres agreed on the ease of using the elderly SIM application (mean = 3.5). Perceived ease of use in technology is defined as a measure of one's belief in technology that is easy to understand and use (8). The results of this study are in accordance with research which states that someone will use an information system if they believe that the information system is easy to use (13). Another study also stated that one of the successful uses of information systems is that users do not experience problems in operating the Apps because they are easy to run and the process is quite simple (14). In contrast, the failure of information system implementation is caused by users who have not mastered IT so that they have not been able to optimize the use of existing applications. In addition, he has never attended training related to the application used (15).

4.2.2. Perceived Usefulness

Regarding the perceived usefulness dimension, the average cadre also agrees (mean mean=3.5) that this application helps their task as elderly cadres. Perceived usefulness is a measure of the extent to which the use of a technology is believed to bring benefits to the people who use it. Perceived usefulness can be measured through several indicators

such as improving performance, facilitating work, and feeling the overall benefits of technology (8). The results of this study are in line with research which states that the user's trust in an information technology will improve his work performance so that he will use it (13). In addition, with the elderly SIM application, patient data has been recorded in the system, making it easier for elderly PJs at the PHC to report without having to record it manually (5). The use of the elderly SIM application will facilitate reporting to the Health Office, each health center no longer needs to report health service activities carried out in hardcopy, but the Health Office can always monitor the activities of each health center through the Elderly SIM application anytime and anywhere from each health center. This simplifies the flow of coordination and reporting which previously tended to be complicated and time-consuming (16).

4.2.3. Behave Intention to use

On the dimension of user behavior (Behave Intention to use) the cadres agree (mean mean=3.2) that they use this application regularly and want to use this application to assist their duties as cadres. This is in line with research that a person will perform a behavior if he has the desire or interest to do it. Behavioral interest in utilizing information system technology arises because of increased work and ease of use (13). This is supported by other studies which explain that every increase in the usability and ease of using the application, the interest in using it will also increase (17).

4.2.4. Attitude

The cadres have an attitude of agreement (mean mean=3.2) that they like and are satisfied using this application. Attitude toward using in TAM is conceptualized as an attitude toward using the system in the form of acceptance or rejection as a result of someone using technology in their work(8). Attitude is the feeling the user feels to accept or reject an object. User attitudes become impact when someone uses an information system technology in their work (13). The results of this study are in line with research which states that users are very accepting of using the application because users feel it is positive. In addition, the existence of the application is very helpful for cadres in working and saving cadres time in doing work (18).

4.2.5. Actual Use

In the dimension of real user conditions (Actual Use) the cadres agree (mean = 3.2) that they will always use this application to collect health data for the elderly. Actual Use Technology is a real condition of using technology in the form of actions taken by someone (8). Users will use information systems that are supported by experience in using an information system and practical needs to support the decision-making process in providing health services (13). This is in accordance with research which states that users tend to use applications, so that the majority of respondents are willing to study and implement systems actively to improve work performance and state that they have mastered and applied applications in general (19).

5. CONCLUSION

Base on pre and posttest there were increasing in coverage geriatric data. Statistical test showed the increasing in coverage geriatric data significantly (P value = 0.000). In addition, the result of TAM Test showed that all cadres agree for all 5 dimension of TAM Test.

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