THE EFFECT OF HEALTH EDUCATION USING E-BOOKLETS ON MEDICATION ADHERENCE IN TYPE II DM PATIENTS

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KEYWORDS
Health education; medication adherence; type II diabetes mellitus

ABSTRACT
This study aims to evaluate the effect of health education using E-Booklet on adherence to taking medication in type II diabetes mellitus (DM) patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital. This study describes the level of compliance with taking medication before and after the E-Booklet education intervention. The results showed that before education, the majority of patients (83.6%) had low compliance, while after education, the level of low compliance decreased to 61.8%. Statistical analysis showed a significant effect of E-Booklet education on drug compliance with a p value = 0.003 at a significance level of 0.05. This study contributes theoretically to the science of surgical medical nursing and practically for Mitra Kasih Hospital in improving health education about adherence to taking medication in DM patients.

INTRODUCTION
A series of metabolic diseases known as diabetes mellitus (DM) is defined as hyperglycemia caused by a deficiency in the secretion, action, or both of insulin. DM can be broken down into several categories, including mature DM 1, type 2 DM, and existing type DM. One of the most common types, accounting for more than 90% to 95% of cases, is type 2 DM (Herwanti et al., 2021).

According to PERKENI (2021) Type 2 Diabetes Mellitus is a metabolic disease problem caused by a lack of insulin secretion, insulin action, or both when combined with hyperglycemia. Increased blood sugar levels due to impaired insulin activity (insulin resistance) or decreased insulin secretion by pancreatic beta cells characterize type 2 diabetes mellitus, a metabolic condition. Patients with type 2 diabetes mellitus often complain of symptoms such as tingling, polydipsia (increased thirst), polyuria (increased thirst), polyphagia (increased hunger), and weight loss (Nuruddani et al., 2019).

Diabetes mellitus (DM) has a considerable negative influence on patients' quality of life and is a major cause of morbidity and mortality. The World Health Organization (WHO) reported in 2018 that DM is the sixth leading cause of death in the world. 19.1 million of the anticipated 4.2 million deaths from diabetes among people aged 20 to 79 years in 2019 are expected to occur in people under the age of 60 years (Herwanti et al., 2021). Conclusion below:
Diabetes mellitus (DM) has a considerable negative influence on patients' quality of life and is a major cause of morbidity and mortality. The World Health Organization reported in 2018 that DM is the sixth leading cause of death globally. An estimated 4.2 million adults aged 20 to 79 years, or 11.3% of all deaths in 2019, will die from diabetes; 1.9 million of these will be those under 60 years old.

According to data from the World Health Organization (WHO), 422 million people worldwide have diabetes mellitus, or there has been an increase in the adult population of about 8.5%, and there are an estimated 2.2 million deaths from the disease before the age of 70, particularly in developing and underdeveloped nations. In fact, it is predicted to grow by another 600 million people by the year 2035. According to the American Diabetes Association (ADA), approximately half of adult Americans have diabetes mellitus, or one person is diagnosed with it every 21 seconds. (ADA, 2019).

According to data from the World Health Organization (WHO), there are 422 million people worldwide who suffer from diabetes mellitus, an increase of about 8.5% of the adult population, and an estimated 2.2 million people will die from the disease before the age of 70, mostly in developing countries. low and moderate. In fact, it is expected to increase by another 600 million people by 2035. According to the American Diabetes Association (ADA), approximately half of all adults in America have diabetes mellitus, and someone is diagnosed with it every 21 seconds (ADA, 2019).

With a type 2 diabetes mellitus prevalence of 11.3% and a diabetes prevalence of 19.9% or 111.2 million people aged 65 to 79 years, Indonesia ranks third in Southeast Asia. The incidence is expected to increase as the population ages (Nuruddani et al., 2019).

In West Java Province, the prevalence of diabetes was 4.2%, and the prevalence of prediabetes was 7.8% (Indonesian Ministry of Health, 2019). In Bandung City, the latest prevalence of diabetes mellitus in 2020 was 43,906 patients, of which 50,646 (or 115.4%) had received medical care in accordance with the requirements of diabetes mellitus (M. Nursalam, 2015).

According to information from the Cimahi City Health Office in 2018, there were 10,821 cases of diabetes in the Cimahi City Health Center. In Cimahi City there were 1224 new cases of DM in men and 2377 new cases in women. Based on information collected from Mitra Kasih Hospital, the number of patients in the polyclinic who suffered from type II diabetes during the last three months of 2022 was obtained. In August there were 462, followed by 532 in September, and 462 in September. 543 in October. The main risk factors for DM are lifestyle changes, lack of exercise, unhealthy diet, overweight or obesity, hypertension, high cholesterol, and alcohol use (Herwanti et al., 2021).

Due to the high prevalence of diabetes in Indonesia, the government decided to use BPJS to start a program called the Chronic Disease Control Program (PROLANIS) to combat the disease. This is because DM can cause a number of problems in various organs, including the heart and kidneys. The program is a collaborative effort involving the patient community, medical personnel, medical institutions, and BPJS. Controlling patients' clinical parameters, avoiding problems, and improving patients' quality of life are the goals of the program. The Ministry of Health (2018) reports that the program includes a number of daily activities, such as medical consultations and education to better understand patients' illnesses.
Although taking medication regularly is necessary to maintain blood sugar management for the rest of one's life, it is often overlooked by patients if it does not cause symptoms. Patients with type 2 diabetes have a relatively low medication adherence rate, which ranges from 36 to 94% depending on demographics. Diabetes care should be carried out by the patient themselves, but healthcare providers can encourage patients to comply. Professionals in the medical field have limited direct influence over how individuals manage their disease. However, research findings provide more evidence that changing the course of treatment or offering advice to patients can improve patient outcomes. It is crucial to understand what influences adherence to therapy to create successful interventions and teach medical staff how to help patients. Many factors have been associated by epidemiological studies with medication adherence. According to reviews, patient variables, social and medical support, and treatment features are all associated with adherence. Age (older patients are more adherent), economic level (patients with better economic status are more adherent), and health outlook (patients who believe drugs are detrimental are less adherent) are all factors that affect patients. Among others, social and medical support includes the patient's healthcare relationship and family support, and patients who receive more support are more adherent. The complexity of the treatment regimen, attitude towards medications, and side effects experienced were all considered drug-related variables. Higher adherence rates are associated with favorable attitudes towards medications, simpler treatment plans, and the absence of many side effects. Less research has been done on patient perspectives and experiences with medication adherence (Morris & Schulz, 1993).

Patient non-adherence to therapy is one of the variables that contribute to the failure of DM patients to manage blood glucose. Patient adherence to prescribed medication instructions in terms of timing, dosage, and frequency is referred to as medication compliance. DM management still faces significant problems with non-adherence to prescribed treatment (Sugiyono, 2017).

Compliance is a behavioral reaction to stimuli. According to Lawrence Green in Notoadmojo 2010, there are three elements, namely predisposing, enabling, and reinforcing factors that have an impact on a person's behavior. Age, gender, knowledge, and motivation are risk factors. Health facilities and information availability are examples of enabling factors. elements that reinforce what families and health professionals say (I. I. Nursalam, n.d.).

The relationship between blood sugar levels of type II diabetes mellitus patients and the level of compliance with taking medication. The findings of this study are in line with the research of Natalia and Dwipayant (2013) who found a correlation between blood sugar levels of patients with type II diabetes and adherence to taking medication, with a p-value of 0.003. Controlling body weight with exercise and a nutritious diet can help patients with type II diabetes mellitus avoid an increase in blood sugar levels. This type of control involves small weight loss (5-7% of total body weight) along with 30 minutes of physical activity or exercise five days a week while eating a healthy diet (I. I. Nursalam, n.d.).

Health education is one way to improve patient knowledge. Efforts to persuade or educate the population so that they will take steps to maintain and improve their level of health, avoid disease, maintain their current level of health, maximize the function and role of patients during illness, and help individuals and families overcome health problems (Notoatmodjo, 2005).
According to Suciana & Arifianto (2019), patients with type 2 DM should focus on five main therapeutic pillars: education, medical nutrition diet, physical activity, pharmaceutical drugs, and blood sugar monitoring. Type 2 DM therapy relies heavily on education because patients' behavior regarding their own diabetes care can be changed through education. Changing the behavior of a person with diabetes is difficult and requires ongoing incentives. The required motivation can be obtained in various ways, one of which is by educating individuals about the five pillars of diabetes care at all times. Media is needed because direct instruction is often given and people with disabilities often forget what they have been taught. The researcher will create an e-booklet as part of this study.

E-booklets are a development of booklet techniques that use technology, especially smartphone technology. To encourage the effectiveness, efficiency, and quality of services, the digitalization period that emerged in the mobile era is applied to several sectors, including health services. The booklet approach is a means that can be used to inform and remind individuals with diabetes mellitus to take care of themselves (Association, 2014). Booklets are a vehicle for presenting written and visual health messages. The content of the material to be delivered must be adjusted so that the booklet can function as an effective channel, tool, facility, and source of support. The benefits of booklets as a health education communication medium according to Kemm and Close in Aini (2010) include arousing interest in educational goals, helping to overcome various obstacles, helping educational targets to learn more and quickly, and motivating educational goals to spread the messages learned to others (Aini, 2010).

Learning resources and learning media are influenced by the impact of science and technology (IPTEK) on the learning process. Information and communication technology (ICT) was first utilized to create computer-based learning media. ICT became a significant tool to change the standard of education in a country (Tolani-Brown et al. 2009). When creating learning materials, it is important to remember the VISUALS principle, which means visual, attractive, simple, practical, accurate, legitimate, and structured (Nurseto, 2011). The use of social media through WhatsApp groups also has the advantage of contactlessness or the absence of direct interaction, which is a kind of technical advancement. WhatsApp groups will be used in this study to increase the effectiveness of health education. The emergence of digital books stimulates the integration of social media chat rooms with print technology in educational settings. Digital books are a way to deliver books and other teaching materials online (Mulyaningsih & Saraswati, 2017).

The effect of education using booklets on adherence to taking medication in hypertensive patients at the Sidareja Regional Clinic is described in a wiyata journal study by Marlina Indriastuti, Susan Sintia R, Anna L Yusuf, M Jafar, Davit Nugraha, and Panji Wahlanto (2021). This study used an observational design with a single group pre and post test. A group of research respondents was measured once after receiving an educational intervention through booklet media. Based on a reliable and valid questionnaire, data were collected through interviews. A significant difference between the level of adherence of hypertensive patients before and after receiving education through booklets was revealed from the results of the Wilcoxon statistical test (p 0.05). Therefore, it can be said that the use of booklet media in health counseling has an impact on patients' medication adherence.
Based on the above problems, the researcher adapted Nola J. Pender's Health Promotion Model (HPM) theory as a nursing model in this study. Various characteristics, including internal and external components contained in specific behavioral cognitions and affect, such as perceived self-efficacy, activity-related affect, and interpersonal influence, are required based on the Health Promotion Model theory to encourage adherence behavior. The researcher used Nola J. Pender's theory because it is in line with the idea she put forward, namely the idea that health education can change people's behavior and improve their health.

The number of patients in the type II DM polyclinic in the last three months of 2022 has increased, according to the findings of a preliminary study conducted by researchers at Mitra Kasih Hospital, which in August there were 462 patients, 532 patients in September, and 543 patients in October. (Source: Polyclinic Data of Mitra Kasih Hospital in 2022). Then the researchers conducted interviews with 10 DM respondents at the Mitra Kasih Hospital polyclinic to obtain information about education and compliance. The results showed that 6 out of 10 DM patients were not compliant with taking medication. Patients claimed to take medicine and diligently take medicine during control and believed their body was in good health and did not need to take medicine regularly. Due to their ignorance on how to treat the condition of type II DM, it was seen that most of them still had a low level of medication adherence. It was also found that there was little follow-up by health professionals with patients to remind them of the regular control regimen.

Based on the phenomenon in the background above, the researcher is interested in conducting research related to efforts to increase knowledge of adherence to taking medication with type II DM patients, namely with the title: "The Effect of Education Using E-Booklets on Adherence to Taking Medication in Type II DM Patients.

This study aims to determine the effect of health education using E-Booklet on compliance with taking medication in type II DM patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital. Specifically, this study aims to describe drug compliance before and after being given health education using E-Booklet in patients with type II DM, and to determine the effect of health education through E-Booklet on drug compliance in patients with type II DM in the polyclinic.

The results of this study have theoretical benefits in increasing surgical medical nursing knowledge related to medication compliance in patients with diabetes mellitus. Practically, this research is useful for Mitra Kasih Hospital to improve education and health promotion about adherence to taking diabetes mellitus medication. For STIKes Budi Luhur, the results of this study can be used as a reference in nursing interventions. In addition, this study is also expected to be a source of information and reference for further researchers who examine education using E-Booklets on compliance with taking medication in type II DM patients.

**METHOD RESEARCH**

Research design is essentially a strategy to achieve predetermined research objectives and acts as a guide or guide for researchers throughout the research process (Notoatmodjo, 2005). The research design was used to test whether there was an effect of health education using E-Booklet on compliance with taking medication in Dm type II patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital.
The research method used in this study is the "Pre-Experiment" method with the One Group Pre test Post test" design there is no comparison group at least the first observation has been made (pre test) which allows testing changes that occur after the experiment (program) (Notoatmodjo, 2005).

01: Measurement of the average knowledge score before the intervention (pre test).
X: Providing intervention with E-Booklet media education on medication adherence.
02: Measurement of the average knowledge score after the intervention (post test).

Research Variables

Variable is a measure or characteristic possessed by a member of a group that is different from that possessed or obtained by a research unit that is possessed or obtained by a research unit about a concept. Based on its functional relationship or role, the independent variable is the variable that affects and the dependent variable is the variable that is influenced by the independent variable (Notoatmodjo, 2005). The variables in this study are as follows:

1. Independent Variable

   Independent variables are variables that affect or determine the value of other variables. The independent variable in this study is education through e-booklet media because the variable is used intentionally on the object to then determine the effect on the object.

2. Variable Dependent

   The dependent variable is the variable whose value is influenced by other variables. The independent variable in this study is drug compliance, because this variable depends on the factors that influence it, so that the results obtained are whether there is a change or not.

Operational Definition

An operational definition is the scope or understanding of the variables observed or studied so that the variables are limited. Operational definitions are also useful for guiding the measurement or observation of the variables concerned and the development of instruments.

To be able to see clearly the operational definition of this research can be seen in the following table:

<table>
<thead>
<tr>
<th>Research Variables</th>
<th>Operational Definition</th>
<th>How to Measure</th>
<th>Measurement Result</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Education with E-Booklet Media</td>
<td>A method of providing health education related to DM medication adherence knowledge provided through technology (whatsapp group).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Effect Of Health Education Using E-Booklets On Medication Adherence In Type II DM Patients

<table>
<thead>
<tr>
<th>Research Variables</th>
<th>Operational Definition</th>
<th>How to Measure</th>
<th>Measurement Result</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent type II DM medication adherence</td>
<td>Actions are willing to carry out taking DM medication by following the dosage recommended by the health care provider according to established rules.</td>
<td>MMAS-8 Questionnaire</td>
<td>Low compliance: if score &lt;6 moderate compliance: if the score is 6-&lt;8 High compliance: if the score is 8</td>
<td>Ordinal</td>
</tr>
</tbody>
</table>

Research Population

Population is the entire object of research or the object to be studied. The population in this study were all patients who came and recorded in the internal medicine polyclinic at Mitra Kasih Hospital, in 2023, namely in August as many as 462 people then in September 532 people and in October a total of 543 people (Source: Polyclinic Data of Mitra Kasih Hospital in 2023).

Research Sample

1. Sample Size

The sample size in this study was 55 people, this is in line with the advice of research methods for simple experiments requiring a minimum sampling of 20 according to (Sugiyono, 2019)

2. Sampling Technique

The sample to be used in this study uses accidental sampling technique, which is a sampling technique based on who happens to meet the researcher, so it can be used as a sample (Notoatmodjo, 2005).

3. Sample Criteria

The sample criteria are the criteria for this study consisting of inclusion and exclusion criteria, as follows:

a. Inclusion criteria

Inclusion criteria are criteria or characteristics that need to be met by each member of the population that can be taken as a sample, in this study the inclusion criteria are:

a) Willing to be a respondent as evidenced by the informed consent sheet.
b) Outpatients at the internal medicine clinic with type II DM cases.
c) Have a smartphone, have a quota and have the whatssap application.
d) Middle age / pre elderly 45-59 years old

4. Exclusion criteria

Exclusion criteria are characteristics of population members that cannot be taken as samples. The exclusion criteria for this study are.

a) Respondents who unreasonably disconnect from the whatever discussion group.
b) Respondents with visual impairment

RESULTS AND DISCUSSION

In this chapter, the results of research on the Effect of Health Education Using E-Booklets on Adherence to Taking Medication in Type II DM Patients at the Internal Medicine
Polyclinic of Mitra Kasih Hospital which was conducted in March 2024 will be presented. The results of research conducted on type II DM patients as many as 55 respondents using a pre-Experiment design with a One Group Pretest Postest design and univariate and bivariate data analysis in this study are as follows:

1. Analisis Univariat Analisis Univariat

Univariate analysis in this study was conducted to determine the description of compliance before and after being given health education using E-Booklet on compliance with taking medication in type II DM patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital.

a. An overview of medication compliance before being given health education using E-Booklet in patients with Type II DM at the Internal Medicine Polyclinic of Mitra Kasih Hospital.

Table 2
An overview of compliance with taking medication before being given Health Education using E-Booklets in patients with Type II DM at the Internal Medicine Polyclinic of Mitra Kasih Hospital.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>46</td>
<td>83.6</td>
</tr>
<tr>
<td>Medium</td>
<td>9</td>
<td>16.4</td>
</tr>
<tr>
<td>High</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Results</td>
<td>55</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary data 2023

Based on the results of univariate analysis in table 2, it is known that before being given health education using E-Booklet in Type II DM patients totaling 55 respondents, almost all of them, namely 46 people (83.6%) had a low level of compliance, and almost a small portion, namely 9 people (16.4%) had moderate compliance, and no one (0.0%) had a high level of compliance.

b. An overview of adherence to taking medication after being given health education using E-Booklets in patients with Type II DM at the Internal Medicine Polyclinic of Mitra Kasih Hospital.

Table 3
An overview of compliance with taking medication after being given Health Education using E-Booklets in patients with Type II DM at the Internal Medicine Polyclinic of Mitra Kasih Hospital.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>34</td>
<td>61.8</td>
</tr>
<tr>
<td>Medium</td>
<td>8</td>
<td>14.5</td>
</tr>
<tr>
<td>High</td>
<td>13</td>
<td>23.5</td>
</tr>
<tr>
<td>Results</td>
<td>55</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary data 2023

Based on the results of univariate analysis in table 3, it is known that after being given health education using E-Booklet in Type II DM patients totaling 55 respondents, the results show that most of them, namely 34 people (61.8%), have a low level of compliance, and only a small portion, namely 13 people (23.6%), have a high level of compliance, and a small portion, namely 8 people (14.5%), have moderate knowledge.
2. Bivariate Analysis

Bivariate analysis in this study was used to determine the effect of health education using e-booklets on compliance with taking medication in Type II DM patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital, with results as in table 4 as follows:

<table>
<thead>
<tr>
<th>Compliance</th>
<th>After Education</th>
<th>Total</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Before Education</td>
<td>25</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Medium</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>High</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>8</td>
<td>13</td>
</tr>
</tbody>
</table>

Source: Primary data 2023

Based on the analysis of table 4, the results obtained before being given Health education using E-Booklet in Type II DM patients out of 55 respondents, there were 46 people with low compliance, 9 people with moderate compliance, and none with high compliance. After being given education, there were 34 people with low compliance, 8 people with moderate compliance, and 13 people with high compliance.

The results of the Marginal Homogeneity test obtained a p value = 0.003 <0.05, so Ho is rejected, thus there is an effect of health education using E-Booklet on compliance with taking medication in type II DM patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital.

**Discussion**

This section will describe the discussion of research results and statistical data processing regarding the effect of health education using E-Booklets on adherence to taking medication in type II DM patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital.

**Overview of drug compliance before being given health education using E-Booklet in patients with Type II DM at the Internal Medicine Polyclinic of Mitra Kasih Hospital**

The results of the study described in table 4 regarding the frequency distribution of compliance with taking medication in type II DM patients before being given health education using e-booklets, obtained pretest results that the most components are almost all, namely 46 patients (83.6%) with a low level of compliance with taking DM medication that has been recommended by the doctor in charge.

Adherence to taking medication is a form of behavior shown by individuals in taking medication according to the recommended schedule and dose of medication, said to be obedient if taking medication according to the rules and the right time, said to be non-compliant if they do not want to take medication according to the rules and time that has been recommended. Type II DM patients will most likely continue to take oral hyperglycemic drugs during life, because the use of these drugs is needed to control the patient's blood sugar levels so that both acute and chronic complications can be slowed down.

A person's level of compliance is influenced by several factors, namely demographics, disease, knowledge, therapeutic programs, psychosocial, and social support. If researchers look further based on one of these factors, namely demographics, which includes age and
gender, from the results of supporting data collection it was found that almost all of them, namely 40 people (72.7%) were female and in terms of the age of respondents, almost all of them, namely 44 people (80%) were in the age range of 46 - 65 years (elderly). In general, it is said that the level of compliance of women is higher than men and young women are more obedient than old women, and for the age factor with increasing age, a person's memory and hearing decrease (Indonesia, 2021).

This is supported by research from Fandinata, S. S., & Darmawan, R (2020) which reports that compliance with taking medication is significantly related to changes in blood sugar levels, and based on further analysis it was found that most patients, namely 18 people (60% of the total 30 people), women experienced more DM than male patients, this phenomenon is thought to be because women tend to experience a fairly increased risk of stress, as well as factors of pregnancy history and obesity experienced by women so that it can trigger an increase in blood sugar levels; as well as age, in this study the most DM patients were in the range of 46 - 65 years, namely 26 people (86.6%).

In line with the results of research from Diantari, I. A. P. M., & Sutarga, I. M. (2019) which states that based on age data, respondents aged ≥60 years (86.11%) are more compliant with taking medication than respondents aged <60 years (63.64%); This is because respondents aged ≥60 years are mostly not working, so they have fewer activities than respondents aged <60 years who are still of productive age, so respondents aged ≥60 years are more compliant in taking medication; Likewise, gender data showed that male respondents (81.08%) were more compliant with taking medication than female respondents (68.75%); this was because female respondents admitted to having busy activities that made them forget to take medicine and were late in redeeming medicine.

The results of this study are also reinforced by research from Ulum et al., (2019) which found that the level of low compliance in medication therapy was mostly female.

The results of the researcher's observations that access to information about treatment provided by Mitra Kasih Hospital in the form of leaflets and health posters, besides that the lack of interest in reading and the limitations of patients in utilizing information systems are other factors that cause patients to have a low level of compliance.

Providing continuous education, attractive and diverse educational media, and an intensive approach from health workers is a way adapted from the Nola J. Pender Health Promotion Model theory to increase knowledge which can have an impact on increasing compliance of type II DM patients in taking medication as recommended.

An overview of adherence to taking medication after being given health education using E-Booklet in patients with Type II DM at the Internal Medicine Polyclinic of Mitra Kasih Hospital.

The results of the study described in table 4.2 regarding the frequency distribution of respondents regarding adherence to taking type II DM medication after being given health education using E-Booklet, obtained posttest results, namely most of the 34 people (61.8%) had a low level of compliance. Education is all conditions, things, events, events, or about a process of changing the attitudes and behavior of a person or group in an effort to mature humans. Education is carried out through teaching and training efforts (Notoatmodjo, 2005).
The most important goal of health education is to achieve changes in the behavior of individuals, families, and communities in maintaining healthy behavior and playing an active role in realizing optimal health status. The selection of interactive and targeted media can be an attraction in increasing knowledge and having an impact on changes in patient behavior in relation to adherence to taking DM medication. Booklets as a medium for conveying health messages in the form of text and images are considered to be more attractive to patients, especially the elderly.

This is supported by the results of research from Fatiha, C. N., & Sabiti, F. B. (2021) which reports that there is a significant difference between the compliance score for taking medication in DM patients before and after counseling. In line with the results of research from Ulum, et al., (2019) stated that there is a relationship between knowledge and medication adherence in patients with type 2 DM, patients with less knowledge have a higher proportion in the low adherence level category than patients with high knowledge; in other words, good knowledge means a high level of compliance, on the other hand, lack of knowledge means a low level of compliance; Knowledge is an important factor for the formation of an action, actions based on knowledge will last longer than those that are not based on knowledge.

The description of human interactions with the physical and interpersonal environment in various dimensions of the Nola J. Pender Health Promotion Model theory is applied in the form of providing education using e-booklets in improving adherence to taking medication in patients with type 2 diabetes.

Health Education Using E-Booklets on Adherence to Taking Medication in Type II DM Patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital

Based on the analysis of table 3 the results obtained before and after being given health education using e-booklets through the marginal homogeneity statistical test show that the value of the level of adherence to taking oral hyperglycemic drugs among others: low, medium, and high in type II DM patients at the Mitra Kasih Hospital Polyclinic with a p value of 0.003 <0.05, so Ho is rejected so it can be concluded that there is an influence on compliance with taking type II DM medication.

E-booklets are a suitable media for health counseling because they are well received by the community. This media offers counseling that is more interesting and not monotonous. And counseling using attractive images like this is very rarely done so researchers are interested in conducting research on the effect of providing information with e-booklet media. The posttest conducted after 12 days after the provision of education showed a significant effect marked by the utilization of the consultation corner, taking medication began regularly, verbally expressing the desire to monitor blood sugar independently, and actively reminding each other of taking medication.

This is supported by research from Güner (2020) which states that diabetes education and SMS reminders sent for six months are effective in improving metabolic control and disease management in patients with type 2 diabetes mellitus.

Research Limitations

Researchers realize that there are many shortcomings in this study, due to several limitations in implementation, including the following:

1. The respondents studied are still lacking but have met the criteria.
2. When collecting data, the information provided by respondents through questionnaires sometimes does not show the actual opinions of respondents, this happens because sometimes there are different thoughts, assumptions and understandings of each respondent. Also other factors, such as the honesty factor in filling out the respondent's opinion in the questionnaire.

3. Lack of quick response from respondents via whatsapp group due to the busyness of each individual.

**CONCLUSION**

After analyzing the data regarding the effect of health education using e-booklets on compliance with taking medication in Type II DM patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital, the following conclusions were obtained: Before being given health education using e-booklets, almost all patients (46 respondents or 83.6%) had a low level of compliance. After being given health education using e-booklets, the level of low compliance decreased to more than half (34 respondents or 61.8%). This shows that there is an effect of health education using e-booklets on drug compliance in Type II DM patients at the Internal Medicine Polyclinic of Mitra Kasih Hospital, with a p value = 0.003 at a significance level of 0.05.

**Advice**

The results of this study have several important implications. For STIKes Budi Luhur Cimahi, these results can be used as an additional reference to the literature, especially regarding the effect of health education using e-booklets on compliance with taking medication in Type II DM patients, as well as a reference in community service activities by lecturers and students to reduce and prevent DM disease. For Mitra Kasih Hospital, this study provides information and input to improve regular and scheduled educational activities using e-booklet media regarding medication compliance in Type II DM patients, as a preventive and promotive effort for the community, especially Type II DM patients at the hospital. For future researchers, it is hoped that they can continue this research by focusing on the effect of health education using e-booklets on adherence to taking medication in Type II DM patients based on gender differences.

**REFERENCES**


The Effect Of Health Education Using E-Booklets On Medication Adherence In Type II DM Patients

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