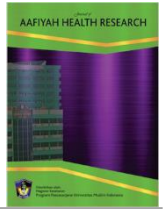


JOURNAL OF AAFIYAH HEALTH RESEARCH (JAHR)

Publisher: Postgraduate Program, Universitas Muslim Indonesia
Journal Homepage:
<http://pascaumi.ac.id/index.php/jahr/index>



Original Article

The Effect of Education by Leaflet and Audio-Visual Media on the Use of Insulin at Kimia Farma Pharmacy Hasanuddin Makassar

*Nur Chaerunnisa

Kimia Farma Hasanuddin Makassar, Indonesia

Article History

Received: 09 March 2022

Revised: 11 April 2022

Accepted: 09 June 2022

Keywords: Leaflet Media;
Knowledge; Attitude; Insulin

Corresponding Author:

nur.chaerun.nisanew@gmail.com

Abstract

Backgrounds: At Kimia Farma Hasanuddin Pharmacy Makassar, researchers found problems in the form of type 2 diabetes patients experiencing confusion and not even knowing how to inject insulin properly. This action results in insufficient use or overdose and injection timing that is not in accordance with the schedule set by the clinician, so this condition can cause hypoglycemia. This study aims to analyze the effect of education through leaflets and audio-visual media on the correct use of insulin at Kimia Farma Hasanuddin Pharmacy Makassar.

Methods: The research approach used is quantitative research, using a quasi-experimental method with a one-group pretest-posttest design. The sample in this study amounted to 78 people, consisting of 39 people in the counseling group with leaflet media and 39 people in the audio-visual counseling group. Data analysis used univariate and bivariate analysis with paired sample t-test and independent sample t-test using SPSS 20.0 program.

Results: Several results were obtained; There is an effect of leaflet and audiovisual media education on the correct use of insulin; There was a significant difference in knowledge (significantly) between the leaflet media group and the audiovisual group (p-value 0.018); There was no significant (significant) difference between the leaflet media group and the audiovisual group, and there is no significant (significant) difference in the mean of action between the leaflet media group and the audiovisual group.

Conclusions: Leaflet Media Education has a higher influence than the Audio-Visual Media Education group as evidenced by the statistical test results.

INTRODUCTION

According to data from the Makassar City Health Office, the incidence of DM is relatively high, namely 6,809 people. Apart from the description above, it is also supported by preliminary studies and it is said that it is still rare to provide health education about DM. The high number of people with diabetes mellitus is based on increasing symptoms, people who are obese, smokers and with increasing age, and lack of knowledge. The level of education also affects the occurrence of diabetes mellitus because it affects the lack of awareness of health, especially understanding of diabetes (McPherson et al., 2019).

The increasing prevalence of diabetes mellitus will indirectly increase the morbidity and mortality rate caused by diabetes mellitus and complications will occur. (Kurniasari & Rahmatunisa, 2019). Long-term diabetes mellitus can cause serious complications, both macrovascular and microvascular, such as heart disease, peripheral vascular disease, kidney failure, nerve damage, and blindness. Complications that accompany diabetes mellitus contribute to a person's physical,

psychological, and social changes. Given the higher prevalence of people with diabetes mellitus, it is necessary to prevent diabetes mellitus from an early age (Hasanah et al., 2017).

Prevention is intended so that people do not do new habits such as consuming fast food and do not like to exercise in society which can pose a risk to several diseases (Hasnah, 2009). Prevention is a threat to diabetes, especially primary prevention where this prevention is aimed at groups who have risk factors or those who have not had diabetes mellitus but have the potential to get diabetes mellitus (Whelton et al., 2018). Prevention of diabetes mellitus that is carried out includes a healthy lifestyle including eating patterns that must be maintained and regularly, physical activity, checking blood sugar levels regularly, and increasing knowledge or education with health education (Sellmann et al., 2015).

Learning media or health education using video has the capacity to support the results of understanding in a good category and can be a motivation to understand the information conveyed. Video media can increase motivation about the importance of maintaining health and can provide information and teaching about health, one of which is the Indonesian Muslim University in preventing diabetes mellitus. Knowledge, attitudes and behavior are very important factors for changing a person's behavior. That way, good knowledge and attitudes for someone about diabetes mellitus and its prevention are very important and necessary in shaping a person's behavior in preventing diabetes mellitus (Wiro, 2013).

Health promotion media are all means or efforts to display messages or information to be conveyed by communicators. Health promotion cannot be separated from the media because through the media, the messages conveyed can be more interesting and understood, so that the target can learn more about the message so that they decide to adopt positive behavior. There are many health promotion media that can be used, one of which is audio-visual. Audio-visual media is a type of media which in addition to containing sound elements also contains visual elements, such as video recordings, sound slides and so on (Notoatmodjo, 2007). The ability of this audio-visual media is considered better and more interesting, because it contains two elements, namely being heard and seen. One of the other health promotion media is leaflet. Leaflets are a form of delivering health information or messages through folded sheets. Information content can be in the form of sentences or pictures or a combination. Information through leaflet media is part of health education media, which is an effort to improve the ability (behavior) to achieve optimal health.

The effectiveness of audio-visual media on researchers conducted by Jusmiat (2012) found that health education using audio-visual media was effective in increasing knowledge about the ability to care for newborns with a p value of 0.00 at a < 0.05 . According to Dena (2015) stated that health counseling on BSE examination with video affects knowledge so that it is effective in increasing knowledge ($p = 0.30$). According to Shorea, Agrina & Woferst, (2011) stated that using interesting video media and not watching to increase the knowledge of 16-year-old girls in the experimental group increased knowledge by 4.28%. Meanwhile, the effectiveness of leaflet media in Budiyanto's research (2016) concluded that leaflet media was effective in increasing the knowledge and skills of washing hands with soap in dormitory students.

Treatment of Diabetes Mellitus (DM) can be done by administering Oral Hypoglycemia Drugs (OHO) and insulin. OHO is given to patients whose blood sugar levels increase 126mg/dL during fasting. On the other hand, in diabetic patients whose blood sugar is not controlled using OHO or HbA1c is still above 9%, it is recommended to use insulin. The use of insulin aims to control blood glucose in order to achieve optimal. However, blood sugar is not controlled with the use of insulin due to the patient's non-compliance in using the drug, the patient's fear of needles, and lack of understanding of how to use it, these conditions affect the non-achievement of optimal blood sugar.

Based on the initial observations made, the researchers found the problem was that type 2 diabetic patients were confused and didn't even know how to inject insulin properly. These actions result in insufficient use or overdose and injection times that are not in accordance with the schedule set by the clinician. This condition often causes hypoglycemia. Patients with type 2 diabetes have less knowledge about insulin use, and researchers are encouraged to increase their knowledge through education about how to use insulin. Insulin is injected subcutaneously in patients with type 2 diabetes. It can be injected into the arms, abdomen, upper thighs and buttocks. The patient's level of knowledge was assessed by conducting a questionnaire survey before and after education.

Based on the previous description, I am interested in studying the influence of education through leaflets and audio-visual media on the correct use of insulin at Kimia Farma Hasanuddin Pharmacy Makassar.

METHOD

Type, Location and Time of Research

The research approach used is a quantitative research approach. In this study, the researcher explained the data in the form of numbers and analyzed using statistics. This study uses a quasi-experimental design with a one-group pretest-posttest design approach.

This research was conducted at Kimia Farma Hasanuddin Makassar Pharmacy which is located on Jl. Sultan Hasanuddin No. 46, Makassar, South Sulawesi. Kimia Farma Hasanuddin Pharmacy is a State-Owned Enterprise (BUMN). This research will be conducted in July 2021.

Population and Sample

The population in this study were 356 respondents based on data from PRB patients who used insulin at Kimia Farma Hasanuddin Pharmacy. The sampling technique used in this study is non-probability sampling. According to Sugiyono (2013), non-probability sampling is a sampling technique that does not provide equal opportunities or opportunities for each element or member of the population to be selected as a sample. The type of non-probability sampling used in this study is incidental sampling. The number of samples was 78 people, consisting of 39 people from group I: counseling using leaflet media and group II: counseling using audio-visual media as many as 39 people.

Data Collection and Experiment

To obtain primary data, direct observations were made with research respondents and also distributed questionnaires to patients who were respondents. This data was obtained by distributing pretest and posttest questionnaires filled out by respondents. Questionnaires are used to measure the knowledge, attitudes and actions of respondents. The pretest was given before counseling on the proper use of insulin using leaflets and audio-visual media, while the post-test after counseling on the proper use of insulin used leaflets and audio-visual media.

Preparation Stage. Implementation after the research permit was approved by the Head of Kimia Farma Hasanuddin Makassar Pharmacy, the next step was to confirm the continuation of activities and arrange a joint activity schedule. Pre-Test and Post-Test were given to patients (respondents) before being given education and 1 week after being given education. Making leaflets and audio visual media materials. Making materials is needed when educating the use of insulin at Kimia Farma Hasanuddin Pharmacy.

Pretest patients (respondents) related to the use of insulin. Providing education to patients (respondents) using leaflets and audio-visual media. Post test on patients (respondents) one week after giving education.

The steps of health promotion activities carried out are: Filling out the Pre-test sheet by the patient (respondent). This activity is carried out to measure the extent to which the patient (respondent) understands about how to use insulin. Health promotion on How to Use Insulin at Kimia Farma Hasanuddin Pharmacy Makassar.

Post test by activity participants 1 week after providing education to determine the extent of knowledge, attitudes and actions of patients (respondents) on the use of insulin at Kimia Farma Hasanuddin Pharmacy.

At the end of the program the realization of increased knowledge, attitudes and actions of patients (respondents) on the use of insulin at Kimia Farma Hasanuddin Pharmacy. Patients (respondents) are able to understand and apply the appropriate and correct use of insulin in their environment.

Data analysis

Questionnaire as an instrument must meet the main requirements, namely valid and reliable. Therefore, to test the instrument in this study, researchers used validity and reliability tests with the help of the SPSS 25 program.

Univariate analysis was used to see the description of each measured research variable, both the independent variable and the dependent variable. Variable descriptions that will be known include the value of frequency, average (mean), median, standard deviation, maximum and minimum values of each research variable. Bivariate analysis is an analysis carried out to see the relationship between two variables, namely between the independent variable and the dependent variable. The analysis used in this study is the paired sample t test. Paired T-Test is a parametric test that can be used on two paired data. The purpose of this test is to see if there is a difference in the mean between two paired or related samples.

Research Ethics

In this study, the researcher assures that respondents need to be protected from things that are detrimental during the study, by paying attention to the aspects of self-determination, privacy, anonymity, confidentiality and protection from discomfort. Researchers also made informed consent before the study was conducted.

RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents

Variable		n	%	n		%
Media Leaflet				Audio Visual Media		
Type	Man	17	43.6%	Man	18	46.2%
	Woman	22	56.4%	Woman	21	53.8%
Age	35	2	5.1%	35	0	0.0%
	36-40	6	15.4%	36-40	3	7.7%
	41-50	10	25.6%	41-50	8	20.5%
	51-60	12	30.8%	51-60	15	38.5%
	61-70	9	23.1%	61-70	13	33.3%
Profession	General employees	7	17.9%	General employees	5	12.8%
	PNS/TNI/POLRI	16	41.0%	PNS/TNI/POLRI	8	20.5%
	Not working	4	10.3%	Not working	9	23.1%
	Self-employed	12	30.8%	Self-employed	17	43.6%

Education	< high school	15	38.5%	< high school	19	48.7%
	D3	7	17.9%	D3	2	5.2%
	S1	11	28.2%	S1	13	33.3%
	S2	6	15.4%	S2	5	12.8%

Table 2. Results of Education Using Leaflet Media and Audio Media

Variable	Education Using Media	Respondent Knowledge				Sig.
		Pretest		Posttest		
		Know	Don't know	Know	Don't know	
Knowledge	Media Leaflet	49%	51%	69%	31%	0.001
	Audio Visual Media	51%	49%	70%	30%	0.001
Attitude	Media Leaflet	48%	52%	58%	42%	0.001
	Audio Visual Media	42%	58%	74%	26%	0.001
Action	Media Leaflet	65%	35%	76%	24%	0.001
	Visual Audio Media	53%	47%	67%	33%	0.001

Table 3. Independent Test Results Sample T Test

Variable	Group	Sig. (2-tailed)	Mean Difference
Knowledge	1 (Media Leaflet)	0.018	8.92465
	2 (Audio Visual Media)		
Attitude	1 (Media Leaflet)	0.067	2.87466
	2 (Audio Visual Media)		
Action	1 (Media Leaflet)	0.181	4.94872
	2 (Audio Visual Media)		

Respondents' Responses Based on Knowledge of Correct Use of Insulin

Media Leaflet

The results of the analysis show that the knowledge of respondents before being given education on leaflet media was known as 19 people in answering correctly and as many as 20 people in answering incorrectly. As for the knowledge of respondents after being given education with leaflet media, it was found that there was an increase of 46% who answered correctly and there was a decrease of 20% who answered incorrectly.

Moussa (2014) also mentioned the same thing in his article entitled Effect of Breast Self-Examination Education Program on Knowledge, Attitude, and Practice of Nursing Student, a quarter of students have satisfactory knowledge, but still have low awareness of health. After an educational program using leaflet media was carried out, the level of student knowledge increased drastically. Furthermore, according to Notoatmodjo (2010) Leaflet media looks attractive because the leaflet itself is carefully designed with illustrations and uses simple, concise and easy-to-understand language. Leaflet media is a sheet of paper containing writing in short, dense, easy-to-understand sentences and simple pictures.

Syamsiah (2013) stated in his research that the advantages of using leaflet media are that the target can adjust and learn independently and is practical because it reduces the need for notes, the target can view the contents while relaxed and very economical, various information can be given or read by members of the target group, so that it can be discussed. , can provide detailed information which is not given orally, is easy to make, reproduced and corrected and easily adapted to the target group

Audio Visual Media

In accordance with the opinion of Notoadmojo (2011), that knowledge is the result of knowing that occurs after humans have sensed certain objects. Sensing can be through the five human senses where most of the knowledge is obtained through the senses of sight and hearing (audio visual). Dale argues that “audiovisual materials can provide many benefits as long as the teacher plays an active role in the learning process. The teacher-student relationship remains the most important element in today's modern education system.” (Azhar Arsyad, 2014: 27). From Dale's opinion, we can understand that audiovisual educational media is a learning tool that can convey messages in the form of images and sound, thereby motivating participants and facilitating the process of receiving messages from presenters to participants.

According to Nana Sudjana (2012) who detailed that the benefits of audio-visual media in the health education process are that educational materials will have a clearer meaning so that they can be understood by participants and allow participants to better master educational goals and educational methods will be more varied, not merely verbal communication. through the narration of words by the resource person, so that participants do not get bored quickly and pay more attention.

Respondents' Responses Based on Attitudes Towards Correct Use of Insulin

Media Leaflet

The results of the analysis show that the attitude of the respondents before giving education with leaflet media based on attitudes in the good category as many as 16 people and for the bad category as many as 23 people. Then after giving education using leaflet media, it was found that there was an increase of 13% for the good category and a decrease of 9% for the bad category.

In line with Newcomb's opinion in Dini Kurniawati (2012), attitude is a readiness to react to objects in a certain environment as an appreciation of objects. After someone knows the stimulus or object, then makes an assessment or opinion on what is known, the next process is expected to carry out or practice the knowledge obtained.

Audio Visual Media

The results of the analysis show that the attitude of the respondents before giving education with audiovisual media based on attitudes in the good category was 17 people and for the bad category as many as 22 people. Then after providing education with audio-visual media, it was found that there was an increase of 60% for the good category and a decrease of (32%) for the bad category.

This is supported by Arsyad (2015) in his research that there is an increase in the achievement of learning to read and write the Qur'an for third grade students of MI Muhammadiyah Paremono Mungkid Magelang based on attitudes through the use of audio-visual media, as evidenced by the results of statistical analysis with the t-Test Formula the value of each student and the average value of class III students at MI Muhammadiyah Paremono Mungkid Magelang, there was a significant increase based on learning attitudes.

Respondents' Responses Based on Actions Against Correct Use of Insulin

Media Leaflet

The results of the analysis show that the respondent's actions before being given education on leaflet media are known to be 24 people in the good action category, while for bad actions as many as 15 people. For respondents' actions after being given education using leaflet media, it was found that there was an increase of 16% taking actions in the good category and a decrease of 5% taking actions in the bad category. In the theory of Laurence Green (2002), suggests that a person's actions are influenced by predisposing factors, supporting factors, and driving factors. Supporting factors are realized as facilities and infrastructure (media leaflets) to take action, which are already available to each respondent.

Audio Visual Media

The results of the analysis show that the respondent's actions before being given education on audio-visual media were known to be 18 people in the category of good actions and 21 people for bad actions. For respondent's actions after being given education with audio-visual media, it was found that there was an increase of 20% taking actions in the good category and a decrease of 25% for the bad action category. Based on the description above, it can be concluded that there was an increase in respondents' actions with audio-visual media education. The most dominant increase in respondent's actions is seen in statement No. 6 of checking sugar levels regularly before using insulin (79%).

According to Skinner quoted by Notoatmodjo (2011), formulates that action is a person's reaction to a stimulus. Because this action occurs through the process of a stimulus (audio-visual media) to the organism (respondent) and then the organism responds (change in action), Skinner's theory is called the stimulus-response organism theory.

Effect of Leaflet Media Education and Audio Visual on Correct Use of Insulin

Media Leaflet

Based on the results of the tests that have been carried out in the paired sample T-test in this study, it shows that there are differences in leaflet media education as evidenced where the Sig value is found. (2-tailed) Knowledge, attitudes and actions are less than 0.05, so it can be concluded that there is a difference in average before the leaflet media education is given (pre-test) and after the leaflet media education is given (post-test), which means that there is an effect leaflet media education for correct insulin users. This is because the leaflet media itself is a form of delivering health information or messages through folded sheets. The contents of the information can be in the form of sentences or pictures or a combination containing the injection site, injection time, dose, schedule for insulin use. Although education on the correct use of insulin is not new information for respondents, the leaflets can be re-read several times. Therefore, the leaflet media is effective because it provides information that can still be remembered well.

Increased knowledge of respondents through leaflet media can be seen from the responses of respondents who were previously dominant in answering incorrectly then after being given leaflet media education increased to dominant in answering right, while related to questions that experienced an increase in dominant was in question No. 7 about where to get insulin. The results of this study are supported by Glanz in Lezewski (2011) who says that when an individual understands that he is vulnerable and has a risk of disease, he will make behavioral changes to prevent it, including increasing knowledge on how to prevent and treat the disease he suffers as early as possible.

Then, the attitude of the respondents through the leaflet media which was previously dominant in a bad attitude then after being given leaflet media education there was a change to a good attitude, as for the statement that experienced a dominant increase in statement No. 1 about the need to know how

to use insulin properly. The results of this study are supported by Nilam Widyarini (2011) who says that to change the attitude of many people at once, persuasive communication can be used, namely communication that favors/defends one side of an issue. For example, the campaign to eradicate HIV/AIDS by presenting data and pictures in the form of leaflets, booklets, posters, flyers, and others of the like.

Furthermore, regarding the respondent's actions through leaflet media, it can be seen from the responses of respondents who were previously dominant in the good action category then after being given leaflet media education increased 16% in the good category and a 5% decrease in the bad category. 7, namely the act of finding out the use of insulin by looking at leaflet media such as flyers, flip charts, booklets, posters or billboards. The results of this study are supported by Nilam Widyarini (2011) who says that a person's intention to take action is also influenced by the media that gives him confidence that he can easily take the action, for example someone who finds it easy to do a health checkup, quit smoking, or do a task,

The strategy to obtain a change in someone's behavior that is manifested in knowledge, attitudes and actions according to WHO quoted by Notoatmodjo (2012) is to provide information, where the provision of information will be able to increase knowledge and attitudes so as to raise awareness that in the end the person will have an attitude. in accordance with his knowledge which will then take action in accordance with the knowledge and attitudes he has obtained. Health education media in the form of leaflets are prepared based on the principle that knowledge that exists in every human being is received or captured through the five senses. Increased knowledge occurs inseparable from respondents who get information from leaflet media containing words and pictures about Diabetes Mellitus so that respondents can know and understand about Diabetes Mellitus both signs, symptoms and management of Diabetes Mellitus. Media leaflets can be given or distributed during meetings such as about Diabetes Mellitus (Kholid, 2014)

The results of this study are in line with research by Kawuriansari, Fajarsari, and Mulidah (2010) regarding the Study of Leaflet Effectiveness on Adolescent Girls' Knowledge Scores about Dysmenorrhea at Christian Middle School 01 Purwokerto which showed better knowledge after receiving leaflets. The results of this study also strengthen research by Muslikha and Purwanti (2011) on the Role of Exclusive Breastfeeding Leaflets on Knowledge of Mothers' attitudes and actions about Exclusive Breastfeeding and Motivation for Exclusive Breastfeeding at BPS NY. Djuwedah Kebasen, Banyumas Regency who showed that leaflets have a role in increasing knowledge of mothers' attitudes and actions about exclusive breastfeeding and mothers' motivation to breastfeed exclusively.

Audio Visual Media

The increase in respondents' knowledge through audio-visual media can be seen from the responses of respondents who were previously dominant in answering incorrectly, then after being given audio-visual media education, they became dominant in answering right, while the question that experienced an increase was dominant in question No. 7 about where to get insulin. The results of this study are supported by Notoatmodjo (2012) where he reveals that knowledge is the result of knowing and occurs after people sense certain objects. Sensing occurs through the five human senses, namely smell, sight, hearing and touch. Knowledge itself is usually obtained from information both obtained from formal education and other information such as radio, TV, internet, counseling.

The increase in respondents' attitudes through audio-visual media can be seen from the responses of respondents who were previously dominant in bad attitudes, then after being given education, audio-visual media increased to become dominant with good attitudes, as for the statement that experienced a dominant increase in statement No. 3 about the need for Type II Diabetes sufferers. given insulin treatment. The results of this study are supported by Putri, Rezal, & Akifah (2017) who

say that counseling about disease prevention given to someone through audio-visual media affects changes in respondents' attitudes so that they experience an increase before and after the intervention, where the information they get is able to raise an understanding of themselves as to what they need and what they don't need.

The increase in respondent's actions through audio-visual media can be seen from the responses of respondents who were previously dominant in the category of bad actions, then after being given education the audio-visual media increased to become dominant in good actions, as for the dominant statement that experienced an increase in statement No. 6 checking sugar levels regularly before taking insulin. The results of this study are supported by the experiment of Leventhal et al (1967) which showed that smoking subjects took action to reduce the number of cigarettes consumed by the most after watching films (audio-visual media) that were frightening (the threat of cancer, etc.) and followed by instructions to reduce consumption. cigarette.

Audio-visual media not only produce effective ways of learning in a shorter time, but for some people what is received through audio-visual media lasts longer and is better left in the memory. Audio-visual media make it easier for people to convey and receive lessons or information and can avoid misunderstandings. The growing interest in the use of audio-visual media has led to many scientific investigations regarding the place and value of audio-visual media in health education.

This is in line with previous research by Blandina Wea Kristina, (2014) which stated that there was an effect of health education with audio-visual media on the knowledge, attitudes and actions of mothers in handling ARI among toddlers in Lebijaga Village, Ngada Regency. This audio-visual media can be used by nurses as a good counseling medium in posyandu. The results of this study are also supported by several studies, namely Abdullah (2007), Pandiangan (2005), Nugraheni (2012), Sandhi (2011), and Sulistyowati (2011). The study stated that the level of knowledge of respondents experienced a significant increase after being given health education with audio-visual media.

The Effectiveness of Leaflet Media and Audio Visual Media Education

As the research approach used is a quantitative research approach. According to Wiratna Sujarweni (2018) Quantitative research is a type of research that produces findings that are achieved using statistical procedures or other methods of quantification (measurement), where researchers explain data in the form of numbers and analyze using statistics. The characteristics of quantitative research are that it does not provide much opportunity for flexibility, imaginative input and reflexivity. So in this section the discussion is more on the surface or not in depth. So based on this, it can be concluded that the Leaflet Media Education group has a higher influence than the Audio Visual Media Education group.

According to Beni (2016), effectiveness is the relationship between output and goals or it can also be said to be a measure of how far the level of output, policies and procedures of an activity. Effectiveness is also related to the degree of success of an operation so that an activity is said to be effective if the activity has a major influence on the purpose of the activity, which in this study is an increase in the knowledge, attitudes and actions of respondents.

Mahmudi (2010) further explained that effectiveness is the relationship between output and goals or objectives that must be achieved. It is said to be effective if the activity process reaches the final goals and objectives. In this study, it can be said to be effective if there is an increase after the educational process with the media in terms of knowledge, attitudes and actions. The effectiveness of education/extension media is the average comparison between the results of leaflet media education interventions and audio-visual media, so that it can be used as a more effective measure than others in influencing knowledge, attitudes and actions.

The results of this study indicate that leaflet media has a greater influence than audio-visual media in increasing knowledge, attitudes and actions. Thus, insulin use education with leaflet media is considered more effective in increasing knowledge, attitudes and actions compared to audio-visual media. This is because in providing leaflet media education, researchers explain information that respondents do not understand in leaflet media and leaflet media is easier to store, so that the frequency of using leaflet media is more intense than audio-visual media, where after a posttest with an interval of 1 week respondents often reread repeatedly if there is something they do not understand and make them remember more about the proper use of insulin. Meanwhile, with audio-visual media in conveying messages, even though they show the right way of using insulin directly, there are details that are easily forgotten after a while, because in this study the majority of respondents were aged 50 years and over so that their memory and in absorbing the information provided such as audiovisual media is considered less effective than leaflet media.

Machfoedz (2010) explains that providing information both formally and informally can increase knowledge. One of the non-formal information that is often used in health education is leaflet media. Leaflet is a sheet of paper that is folded, containing printed writings and certain pictures on a specific topic for specific goals and purposes. Suarningsih, (2017) in his research suggests that leaflets as information media in the form of images or photos must be selected or used in accordance with the intended purpose, with the presence of interesting images or photos that can generate motivation and interest to help interpret and remember messages regarding with these pictures or photos.

Meanwhile, according to Meidiana (2018), he said that in addition to audio-visual media, leaflets are also very effective in conveying messages systematically, briefly and concisely in the form of both writing and pictures (usually more in writing). This media is very effective (can be read repeatedly) to convey messages that are systematic, short and concise.

CONCLUSION

Based on the results of the analysis and discussion in this study, it can be concluded that: 1). Leaflet media education has an effect on knowledge, attitudes and actions on how to use insulin correctly. The results showed that before the leaflet media education was given (pre-test) and after the leaflet media education was given (post-test) there was an increase based on knowledge, attitudes and actions, which means that there was an effect of leaflet media education on the correct use of insulin in patients at Kimia Pharmacy. Farma Hasanuddin Makassar. 2). Audio visual media education has an effect on knowledge, attitudes and actions on how to use insulin correctly. The results showed that before being given audio-visual media education (pre-test) and after being given audio-visual media education (post-test) there was an increase based on knowledge, attitudes and actions, which means that there was an effect of audio-visual media education on the correct use of insulin in patients. at Kimia Farma Hasanuddin Makassar Pharmacy. 3). Leaflet Media Education has a higher influence than the Audio-Visual Media Education group as evidenced by the statistical test results. This means that education on the correct use of insulin using leaflet media is considered more effective in increasing knowledge, attitudes and actions compared to audio-visual media. attitudes and actions, which means that there is an effect of audio-visual media education on the correct use of insulin in patients at Kimia Farma Hasanuddin Pharmacy Makassar. 3). Leaflet Media Education has a higher influence than the Audio-Visual Media Education group as evidenced by the statistical test results. This means that education on the correct use of insulin using leaflet media is considered more effective in increasing knowledge, attitudes and actions compared to audio-visual media. attitudes and actions, which means that there is an effect of audio-visual media education on the correct use of insulin in patients at Kimia Farma Hasanuddin Pharmacy Makassar. 3). Leaflet Media Education has a higher influence than the Audio Visual Media Education group as evidenced by the statistical test results. This means that

education on the correct use of insulin using leaflet media is considered more effective in increasing knowledge, attitudes and actions compared to audio-visual media.

SUGGESTION

The suggestions or input that can be given based on the results in this study are: 1). Learning media in this study can be used as additional media in providing health education. Kimia Farma Hasanuddin Makassar Pharmacy is expected to hold more frequent health counseling and to cooperate with the health department or related parties to the community, especially for people with DM in order to create an understanding of how to use insulin correctly. 2). Further researchers can use this research as consideration and reference for conducting further research and developing this research using different research models or with different variables, so that more satisfactory results are obtained. 3). For further researchers, they should be able to use other media to conduct education/health education such as pamphlets, brochures, video recordings, billboards, posters and etc. And, using other variables such as online socialization using existing social media applications such as Facebook, Instagram, Whatsapp, and others.

Declaration of Conflict of Interest

All authors state that there is no potential Conflict of Interest in this research and article.

BIBLIOGRAPHY

- Alfian, R. (2016). Compliance with the Use of Insulin in Diabetes Mellitus Patients at the Banjarmasin Polyclinic Correlation Between the Knowledge and the Adherence in Diabetes Mellitus Patients Using Insulin At Internal Disease Polyclinic. *Ibn Sina's Scientific Journal*.
- Djahido, M., Wiyono, WI, & Mpila, DA (2020). Patterns of Insulin Use in Diabetes Mellitus Patients. *Scientific Journal of Pharmacy*.
- Harmanto, N., Maulidya, I., & Nurcholis, W. (2019). Efficacy of Antidiabetic Herbal Medicine in Sprague Dawley Rats Induced by Streptozocin. *Indonesian Herbal Journal*.
<https://doi.org/10.29244/jji.v4i1.94>
- Hasanah, Z., Berawi, KN, & Wahyudo, R. (2017). Correlation of breakfast habits with glucose level control in Type 2 DM patients. *Medical Journal Of Lampung University*.
- Kurniasari, R., & Rahmatunisa, R. (2019). SOCIALIZATION OF BALANCED NUTRITION GUIDELINES USING THE NUTRIEDUTAINMENT METHOD IN SDN KARAWANG WETAN 1 AND SDN PALUMBONSARI. *JOURNAL OF HEALTH ABDIMAS TASEKMALAYA*. <https://doi.org/10.48186/abdimas.v2i1.150>
- Lakshmita, Meirisa Mona. (2019). The Use of Insulin Pen Therapy in Diabetes Mellitus Patients. *Hospital Dr. Gondo Suwarno. Semarang*.
- McPherson, KC, Shields, CA, Poudel, B., Fizer, B., Pennington, A., Szabo-Johnson, A., ... Williams, JM (2019). Impact of obesity as an independent risk factor for the development of renal injury: implications from rat models of obesity. *American Journal of Physiology-Renal Physiology*.
<https://doi.org/10.1152/ajprenal.00162.2018>
- Meidiana, R., Simbolon, D., & Wahyudi, A. (2018). Effect of Education through Audio Visual Media on Knowledge and Attitudes of Overweight Adolescents. *Journal of Health*.
<https://doi.org/10.26630/jk.v9i3.961>

- Pawestri. (2013). Knowledg , Attitudes and Behavior Adolescents With. Maternity Nursing.
- Pibriyanti, K., & Kurniawan, TP (2017). Study of Nutritional Status of Infants Age 6-12 Months in Kradenan Village, Trucuk District, Klaten Regency, 2017. Journal of Health. <https://doi.org/10.23917/jurkes.v10i2.5535>
- BPOM National Drug Information Center. 6.1.1. Insulin. (<http://pionas.pom.go.id/ioni/bab-6-sistem-endokrin/61-diabetes/611-insulin>) accessed on 17 July 2021.
- Sellmann, C., Priebs, J., Landmann, M., Degen, C., Engstler, AJ, Jin, CJ, ... Bergheim, I. (2015). Diets rich in fructose, fat or fructose and fat alter intestinal barrier function and lead to the development of nonalcoholic fatty liver disease over time. Journal of Nutritional Biochemistry. <https://doi.org/10.1016/j.jnutbio.2015.05.011>
- Sry, A., Nababan, V., Pinem, MM, Mini, Y., Hertati, T., Program, P., ... Correspondence, P. (2020). Factors Affecting The Blood Sugar Content Of Diabetes Mellitus (DM) Type II Factors Affecting The Blood Sugar Content Of Diabetes Mellitus (DM) Type II. World Journal of Nutrition.
- Sugiyono. (2017). Sugiyono, Research Methods. Study.
- Takahashi, Y., Soejima, Y., & Fukusato, T. (2012). Animal models of nonalcoholic fatty liver disease/nonalcoholic steatohepatitis. World Journal of Gastroenterology. <https://doi.org/10.3748/wjg.v18.i19.2300>
- Tjahjono, YP (2013). The Effect of Education Through Visual Media Illustration Books on Knowledge and Compliance of Type 2 Diabetes Mellitus Patients. Calypatra. <https://doi.org/10.24123/jimus.v2i1.149>
- Utami, AM, Ayu, WD, Fitriani, VY, Agustina, R., & Rijai, L. (2017). Analysis of Knowledge and Behavior of Type II DM Patients in Independent Use of Insulin in the Outpatient Installation of RSUD AW Sjahranie Samarinda. <https://doi.org/10.25026/mpc.v5i1.216>
- Wahyuni, KI, Rohmah, MK, & Setyawati, H. (2021). Evaluation of Personal Education in Understanding, HBA1c and Quality of Life of Type 2 DM Patients in Sidoarjo. Journal of Pharmascience. <https://doi.org/10.20527/jps.v8i1.9720>
- Whelton, PK, Carey, RM, Aronow, WS, Casey, DE, Collins, KJ, Himmelfarb, CD, ... Hundley, J. (2018). 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ ASH/ASPC/NMA/PCNA guidelines for the prevention, detection, evaluation, and management of high blood pressure in adults a report of the American College of Cardiology/American Heart Association Task Force on Clinical pr. Hypertension. <https://doi.org/10.1161/HYP.0000000000000065>
- Widiya, AA, Jatmiko, SW, & Widyatmoko, S. (2015). The Effect of Casual Walking on Blood Glucose Levels in Diabetes Mellitus Patients. biomedicine. <https://doi.org/10.23917/biomedika.v7i1.1672>
- Wijayanto, T., & Widya, W. (2019). The Relationship of Anxiety With Blood Sugar Levels In Diabetes Mellitus Patients. Panca Bhakti Health Journal Lampung. <https://doi.org/10.47218/jkpb1.v7i2.70>