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INFLUNCE OF HEALTH EDUCATION USING AUDIOVISUAL FOOT EXERCISES OF KNOWLEDGE AND SPECIALIZATION IN PATIENTS WITH DIABETES MELLITUS AT RSUD dr. DRADJAT PRAWIRANEGARA SERANG

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ABSTRACT

Diabetes mellitus (DM) is the presence of insulin deficiency, reduced insulin or both of which cause metabolic disorder characterized by hiperglicemia, can cause diabetic neuropathy, foot ulcers, retinopathy, nephropathy, and vascular disorders. One way to prevent injury and improve blood circulation with foot exercises health education. But there are still many people with diabetes mellitus who do not know and do foot gymnastics.. The objective of this reseach is how to know influence of health education using audio-visual foot exercises of knowledge and specialization in DM patients in RSUD dr. Dradjat Prawiranegara Serang. This is quasi experimental reaseach with One Group Pre and Post Test Design that was done at the medical care room in RSUD Dr. Dradjat Prawiranegara Serang from Desember 2017 to February 2018 with 33 samples. Data instruments were quesionery. Univariate analysis (mean of knowledge and specialization) and bivariate analysis with computerized T dependen test. Result shows significant influenced of mean knowledge and specialization between before and after foot exercises (p= 0,00; p= 0,000). Based on the results of this research is expected to the hospital, especially the health promotion department to develop promotional activities using various methods and media so as to increase interest and motivation for people with DM. Also expected to incorporate foot exercise in DM patients into one of the health promotional activities in RSUD dr. Dradjat Prawiranegara Serang.

Keyword: Diabetic mellitus, foot exercises, knowledge, specialization, health education

I. INTRODUCTION

Diabetes Mellitus (DM) is a degenerative disease characterized by the presence of hyperglycemia or excess glucose levels in the blood that require proper treatment. Diabetes Mellitus is a metabolic disorder of carbohydrates, proteins and fats characterized by hypergychemia. Hyperglycemia occurs due to insulin deficiency, decreased insulin work, or both (American Diabetes Association, 2012). It is this high blood glucose that adversely affects various organs of the body such as diabetic neuropathy, leg ulcers, diabetic retinopathy, diabetic nephropathy, and vascular disorders (Sherwood, 2014).

The prevalence of diabetes mellitus in the world is as many as 415 million people (IDF, 2015), where the proportion of the incidence of type 2 diabetes mellitus is 95% of the world's population who have diabetes mellitus and only 5% of those have type 1 diabetes mellitus (CDC, 2016). According to a report by the World Health Organisation (WHO) in 2016, 371 million people have type 2 diabetes mellitus and it is estimated that by 2030 there will be an increase of another 195 million people who will have type 2 diabetes (WHO, 2016). Basic Health Research

Report (2013), states that the population of diabetes mellitus age > 18 years in Indonesia, the prevalence of diabetes mellitus is highest in yogyakarta province as much as 2.6%, the lowest in Lampung Province as much as 0.7%, and in Banten the population of diabetes mellitus as much as 1.6%.

One of the complications of diabetes mellitus that interferes with biological, psychological, and social conditions in patients is diabetic legs. Biological disorders of diabetic legs are pain and discomfort that occurs in the legs. The manifestation of social disorders is the embarrassment of socializing and meeting others due to the condition of the already infected legs. If there is already a diabetic leg, then the patient will be at high risk for amputation of the diabetic leg (Gitarja, 2014).

Foot gymnastics in diabetic mellitus patients needs to be done regularly, because if the foot is left will be at risk of ulcers. Ulcers would be risky for amputation. The risk of amputation is 15-40 times more common in diabetics compared to non-diabetics. In Indonesia, according to data at Cipto Mangunkusumo Hospital, as many as 25% of diabetic leg patients have amputation and 16% of them died (Adhiarta, 2011).

This diabetic foot gymnastics can be given to all people with type 1 and type 2 diabetes mellitus. However, it should be given since the patient is diagnosed with diabetes mellitus as an early precaution. According to Wibisono (2009) foot gymnastics it has an effect to improve blood circulation and improve leg sensitivity. Foot gymnastics is highly recommended for people with diabetes mellitus who have impaired blood circumcultion and neuropathy in the legs, but adapted to the condition and ability of the patient's body. it has an effect to improve blood circulation and improve leg sensitivity. Foot gymnastics is highly recommended for people with diabetes mellitus who have impaired blood circumcultion and neuropathy in the legs, but adapted to the condition and ability of the patient's body.

The results of Ruben's study (2016) on the influence of diabetic foot gymnastics on changes in blood sugar levels showed that foot gymnastics can lower sugar levels, where foot gymnastics plays a role in stimulating the pancreas producing insulin in suppressing blood glucose. In a study at the University of Florance, Italy (2014) on diabetic mellitus it was mentioned that foot activity therapy performed by sufferers can improve body movement, muscle strength, and improve walking speed, which is a disability prevention measure (Francia, 2015). The American College of Sports Medicine and The American Diabetes Association (2010) issued a statement that physical exercise in diabetic mellitus is beneficial in the regulation of blood sugar levels, prevention of diabetes in pregnancy, and a safe and effective exercise for people with diabetes mellitus with complications.

Although there is already foot gymnastics in people with diabetes mellitus, but there are still many dm sufferers who do not know how to exercise foot, and still lack of motivation to do foot gymnastics. According to Notoatmodjo (2007) who quoted from Lewin the behavior of obedience in individuals is strongly influenced by several factors, one of which is knowledge. Knowledge is a thing that greatly influences the formation of a person's behavior. Knowledge of diabetes mellitus about low foot gymnastics can cause low awareness as well so that it has an impact and affect the behavior of foot gymnastics as a result of which there can be continuing complications such as diabetic ulcers.

Knowledge can be improved through health promotion efforts, one of which is by counseling. The success of public health counseling depends on the learning component. One component of the learning process in counseling activities is the media. Interesting media will give confidence, so that cognitive changes of affection and psychomotor can be accelerated. Audiovisual is one of the media that presents information or messages audio and visually (Kapti R.E., 2013). Audio-

visual counseling media provides stimulus to the eyes (vision) and ears (hearing), while print media only stimulates the senses of the eye (Setiyo, A.N., 2011).

A person's knowledge can be enhanced by a model of health promotion or commonly called health promotion which is a model for nurses to explore complex biopsychosocial processes, which motivate individuals to behave in particular, aimed at improving their health (Martha R.A., 2014).

Audiovisual media can be used as teaching aids that have the form of images and make sounds (Bertalina, 2015). Audiovisual media displays elements of images and sounds simultaneously when receiving messages or information. The advantage of education using audiovisual media is that it provides a more tangible picture and improves memory retention because it is more interesting and memorable (Notoatmodjo, 2010). Audiovisual media contributes greatly to changes in people's behavior. This method provides stimuli to hearing and vision so that the results obtained are more maximum (Kholid, 2014).

This statement is in line with the research results of Putri Farit, Rezal, and Akifah (2017) which proves the use of effective audiovisual media for health promotion activities in improving knowledge, attitudes and precautions of gastritis disease. Health education using audiovisual or simulation combinations can improve maternal knowledge and attitudes related to diarrhoea management at home in toddlers (Nisa, 2016). According to Nurhayati (2016) leaflet and audiovisual media have an influence in improving the knowledge and attitude of smoking hazards.

The memory to increase the interest in foot gymnastics is necessary, namely the interest to follow, including easy foot gymnastics movements, the duration of time to do foot gymnastics is not too long, the patient's comfort, and lower the risk factors. An important problem is the declining quality of life of diabetic leg sufferers who have been amputated in relation to self-concept (Nabyl, 2009).

The observations of researchers at this time of foot gymnastics education have not been part of the counseling activities at Dr. Dradjat Prawiranegara Serang Hospital. Education of foot gymnastics by health workers is very important, which is part of the management of DM sufferers.

The purpose of this study was to find out the influence of foot gymnastics health education using audio visuals on knowledge and concentration in diabetes mellitus patients in the disease room in dr. Dradjat Prawiranegara Serang Hospital 2017.

II. METHOD

This type of research is Quasy Experiment with One Group Pret and Post Test Design. This research was conducted from December 2017 – February 2018, data collection was conducted in December 2017 in the disease room in dr. Dradjat Prawiranegara Serang. The population in this study was DM patients in the disease room in dr. Dradjat Prawiranegara Serang Hospital in 2017. The number of samples in this study was 33 people.

Data collection was carried out on DM patients treated at dr. Dradjat Prawiranegara Serang Hospital. The data collection technique used in this study was to use instruments in the form of knowledge questionnaires and concentration of foot gymnastics in DM patients. This questionnaire has been conducted validity test and reliability test at Cilegon Hospital. Reliability test results were 0.838 higher than the value r = 0.514, so the questionnaire was declared valid and reliable.

Data processing in this study using SPSS program. Univariate analysis consists of knowledge variables and concentration of foot gymnastics with descriptive analysis to get a picture of mean, standard deviation, maximum and minimum values. Bivariate analysis is performed with dependent T Test.

III. RESULT AND DISCUSSION

Overview of Knowledge Before and After Foot Gymnastics

Knowledge is a process by using the senses that a person does to a particular object that can produce knowledge and skills. Knowledge can shape certain beliefs, so that a person behaves according to his beliefs (Istiari, 2010). According to Bloom's theory, broadly speaking knowledge is divided into 6 levels namely know, understand, application, analysis, synthesis and evaluation. Knowledge is the lowest but most important cognitive aspect in shaping a person's actions (Notoatmodjo, 2010).

Foot gymnastics is an activity or exercise performed by patients with diabetes mellitus to prevent the occurrence of wounds and help blood circulation of the leg (Sumosardjuno, 2012). Knowledge of foot gymnastics is necessary for DM sufferers to foster interest in foot gymnastics activities in order to prevent complications that occur, namely diabetic legs. Based on table 1 the average knowledge before foot gymnastics in patients was 5.76. Based on table 2 The average knowledge after foot gymnastics penkes is 16.70, meaning at alpha 5% there was a significant difference in average knowledge of DM patients before and after foot gymnastics. Based on the results of the study it appears that there is an increase in knowledge of foot gymnastics in DM patients.

Table 1 Distribution of Knowledge Before Foot Gymnastics In DM Patients in The Treatment Room of Dr. Dradjat Prawiranegara Serang Hospital in 2017

Variable	Mean	SD	Min - Max	95% CI
Knowledge	5,76	1,76	3 – 10	5,13 – 6,38

Table 2 Distribution of Knowledge After Foot Gymnastics In DM Patients in The Treatment Room of Dr. Dradjat Prawiranegara Serang Hospital in 2017

Variable	Mean	SD	Min - Max	95% CI
Knowledge	16,70	1,686	13 – 20	16,10 – 17,29

The results showed an increase in knowledge due to information and experience of foot gymnastics is acceptable. From the results of the study there appeared to be an increase in respondents' knowledge about the understanding of DM, symptoms of DM disease, management of DM disease, understanding of foot gymnastics, health conditions for doing foot gymnastics, and tools used to do foot gymnastics. Respondents were also able to analyze the position of the body to perform foot gymnastics, the position of the legs to start foot gymnastics, the number of repetitions of each movement in foot gymnastics, and the duration of time to perform foot gymnastics. According to Martha R.A. (2014), a person's knowledge can be enhanced by a model of health promotion or commonly called health promotion which is a model for nurses to

explore complex biopsychosocial processes, which motivate individuals to behave certainly, aimed at improving their degree of health

Good knowledge of foot gymnastics can form behaviors to realize foot gymnastics so as to prevent the occurrence of complications of diabetic legs early on. According to Notoatmodjo (2007) who quoted from Lewin the behavior of obedience in individuals is strongly influenced by several factors, one of which is knowledge. Knowledge is a thing that greatly influences the formation of a person's behavior. Knowledge of diabetic mellitus about increased foot gymnastics can cause increased awareness so that increasing the concentration and behavior of foot gymnastics as a result of DM complications such as diabetic ulcers can be prevented.

Differences in Knowledge Before and After Foot Gymnastics

Based on table 3 that the average knowledge before foot gymnastics in DM patients is 5.76. The average knowledge after leg gymnastics is 16.70. Statistical test results obtained a value of p = 0.000, meaning at alpha 5% there was a significant difference in the average knowledge of DM patients before and after foot gymnastics. The results of this study showed the influence of foot gymnastics penkes using audiovisual to the knowledge of foot gymnastics in DM patients. This reinforces the concept that certain behaviors are formed because it is based on knowledge. Behaviors formed on the encouragement of knowledge are based on awareness, interest, and positive considerations and attitudes.

Table 3 Distribution of Average Knowledge Before and After Foot Gymnastics In DM Patients in The Treatment Room of Diseases In Hospital dr Dradjat Prawiranegara Serang Year 2017

Knowledge	*Mean*	SD	SE	*P value*
Before foot gymnastics	5,76	1,768	0,308	0,000
After foot gymnastics	16,70	1,686	1,686	

The results of this study are in line with research conducted by Kapti R.E. (2013) that interesting media will give confidence, so that cognitive changes of affection and psychomotor can be accelerated. Audiovisual is one of the media that presents information or messages audio and visually. It is also supported by the research of Setiyo, A.N (2011) that audiovisual counseling media provides stimulus to the eyes (vision) and ears (hearing), while print media only stimulates the senses of the eyes.

Dm sufferers are very important to be given information (knowledge) about foot gymnastics through health education, because foot gymnastics is part of the pillars of DM disease management. Foot gymnastics is an activity or exercise performed by patients with diabetes mellitus to prevent the occurrence of wounds and help blood circulation of the leg (Sumosardjuno, 2012). Foot gymnastics can help improve blood circulation and strengthen the small muscles of the legs and prevent the occurrence of deformities of the legs. In addition, it can increase the strength of the calf muscles, thigh muscles, and also overcome the border of joint movement (Wibisono, 2009).

The implementation of foot gymnastics needs to be done by patients with DM type 1 and 2. This action as an early prevention effort occurs diabetic ulcers. In this study, respondents who participated in penkes activities with audiovisual media and methods of foot gymnastics practice numbered 33 people. During the implementation of foot gymnastics, respondents followed the movements contained in the compact disk through audiovisual guided by researchers. Tools used

in the implementation of foot gymnastics are chairs and newspapers. All respondents performed foot gymnastics in a sitting position, the time required in the implementation of foot gymnastics approximately for 30 minutes. Most of the respondents were very enthusiastic to follow the foot gymnastics movement, some respondents experienced fatigue while carrying out foot gymnastics, then respondents rested about 5 minutes, and stated that they could continue again. Some other respondents found it difficult to move foot gymnastics, the last one is tearing up the newspaper that had previously been a ball.

Foot gymnastics is highly recommended for DM sufferers who have impaired blood circumcultion and neuropathy in the legs, but adapted to the condition and ability of the patient's body. Foot activity therapy in the form of foot gymnastics by DM sufferers can improve body movement, muscle strength, and increase walking speed, which is a disability prevention measure (Piergiorgio, et all, 2015). In addition, according to the results of sigal research, et all (2016), diabetic foot gymnastics affects changes in blood sugar levels. The results showed that foot gymnastics can lower sugar levels, where foot gymnastics plays a role in stimulating pakreas producing insulin in suppressing blood glucose.

Picture of Concentration Before and After Foot Gymnastics

According to Ahmadi (2009) interest is the attitude of one's soul including the three functions of his soul (cognition, connotation, and emotion) that are directed at something and in that relationship the element of strong feelings, the presence of a sense of attraction, attention, desire more that a person has towards a thing, without any encouragement so that there is a fixed tendency to pay attention and reminisce about some activities without anyone ordering and exciting by the activity itself. Based on table 4 the average concentration before foot gymnastics in patients was 21.21. Based on table 5 the average concentration after foot gymnastics is 32.91. From the results of the study, there appears to be an increase in interest.

Table 4 Distribution of Concentration Before Foot Gymnastics Penkes in DM Patients in The Treatment Room of Diseases In Hospital dr Dradjat Prawiranegara Serang Year 2017

Variabel	Mean	SD	Minimal-Maksimal	95%CI
Interst	21,21	2,54	17 – 27	20,3 – 22,1

Concentration and motivation is an important role in DM patients to facilitate respondents in carrying out foot gymnastics activities as the management of dibetes mellitus disease. Patients who have high concentration and motivation will carry out foot gymnastics regularly and independently. The factors underlying dm patients' interest in carrying out foot gymnastics activities are internal factors, social motivation factors and emotionally related factors. Internal factors are physical or psychiatric needs, in this case DM disease suffered by patients. Social and emotional motivational drive factors are hospital environments and nurses who show the intensity of attention so that DM patients are involved in foot gymnastics activities.

Table 5 Distribution of Concentration After Foot Gymnastics Penkes in DM Patients in The Treatment Room of Diseases In Hospital dr. Dradjat Prawiranegara Serang Year 2017

Variabel			Minimal-Maksimal	I
Interest		1,56	30 - 36	32,3 – 33,4

Differences in Concentration Before and after Foot Gymnastics

Based on table 6, the average concentration before foot gymnastics in patients was 21.21. The average concentration after a foot gymnastics penkes is 32.91. Statistical test results obtained a value of p = 0.001, meaning at alpha 5% there was a significant difference in the average concentration of DM patients before and after foot gymnastics.

Table 6 Distribution of Average Concentration Before and After Foot Gymnastics in DM Patients in The Treatment Room of Diseases In Hospital dr Dradjat Prawiranegara Serang Year 2017.

Peminatan	*Mean*	SD	SE	*P value*
Before foot gymnastics	21,21	2,547	0,443	0,000
After foot gymnastics	32,91	1,569	0,273	

There is an increase in interest, among others, due to environmental stimuli, namely foot gymnastics with audiovisual media and practical methods in accordance with the needs of DM patients, social motives, and the feelings or emotions of patients supporting the implementation of foot gymnastics. The interest in respondents occurred intentionally caused by the activity of foot gymnastics. The interest is subjective, namely the experience of foot gymnastics is certain experiences that are fun and objective interest that is the reaction of respondents to foot gymnastics activities. The increase in respondents' interest was seen through the statement of the body feeling better after following foot gymnastics, and the interest to participate in foot gymnastics activities from start to finish.

The results of this study are in line with the research of Putri Farit, Rezal, and Akifah (2017) which proves the use of effective audiovisual media for health promotion activities in improving knowledge, attitudes and precautions of gastritis disease. Health education using audiovisual or simulation combinations can improve maternal knowledge and attitudes related to diarrhoea management at home in toddlers (Nisa, 2016).

The purpose of foot gymnastics activities is held in the disease treatment room in dr. Dradjat Prawiranegara Serang Hospital so that diabetes mellitus patients are more motivated in managing diabetes mellitus disease. Through penkes with foot gymnastics practice method also DM patients can add insight into activity activities that are closely related to the pillars of DM disease management.

Dm patients' interest in carrying out foot gymnastics activities is a psychic aspkek owned by DM patients who cause a sense of likes or interest and desire to carry out foot gymnastics activities. Interest has a close relationship with the encouragement in DM patients that then gives rise to the desire to participate or engage in foot gymnastics activities. DM patients who are interested in foot gymnastics tend to feel happy in foot gymnastics activities, tend to pay serious attention to these activities. The attention given has been manifested by curiosity and learning foot gymnastics.

To increase the concentration of DM patients, the learning model of foot gymnastics activities is packaged as attractive as possible, namely by making guidelines audio visually, so that it can be re-studied independently at home when DM patients have been allowed to undergo outpatient treatment. Learning foot gymnastics activities audio visually is an effort to create a climate and service to the ability, potential, concentration and needs of DM patients in order to have interaction between researchers and respondents, so that the interest of DM patients in foot gymnastics activities is growing rapidly. This is in accordance with The American College of Sports Medicine and The American Diabetes Association (2010) which issued a statement that physical exercise in people with diabetes mellitus is beneficial in the regulation of blood sugar levels, prevention of diabetes in pregnancy, and a safe and effective exercise for people with diabetes mellitus with complications.

IV. CONCLUSION

The conclusion in this study is that there is a significant difference between the average knowledge before and after foot gymnastics and the significant difference between the average concentration before and after the foot gymnastics in dr. Dradjat Prawiranegara Serang Hospital in 2017.

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