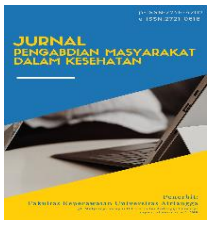

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"SEDIA" PROGRAMME BASED ON STRUCTURED SUPPORTIVE EDUCATION TO INCREASE KNOWLEDGE OF DIABETICS

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ABSTRACT

Introduction: Diabetes Mellitus (DM) is a chronic disease and good understanding regarding DM disease encourages patients to carry out diabetes management in a comprehensive and consistent manner towards quality of life. The purpose of this community service activity is to provide "SeDia" (Healthy Diabetes) education and training based on structured supportive education in an effort to increase knowledge in people with diabetes.

Methods: In this study using a Community Based Research (CBR) approach, education and training on DM material, diabetic foot exercises and the introduction of mobile phone-based applications to social health partner, DM patients and families in Pantenan, Panceng, Gresik are carried out. Final evaluation of the PKM program by comparing pre-test and post-test scores on knowledge regarding management of the DM of the DKQ-24 Questionnaire (Diabetes Knowledge Questionnaire). The analysis used was univariate and bivariate analysis using SPSS.

Results: There were 41 participants with an average age of 49 years and consisting of 14 social worker (34.1%), 16 DM patients (39%) and 11 families (26.9%) who participated in this activity. The measurement results on the level of knowledge p = 0.000 (p <0.05) so that there is a significant difference between before and after being given education and training in terms of increasing knowledge related to DM management.

Conclusion: Education and training on the five pillars of DM, simulation/practice of diabetic foot exercises and the introduction of mobile phone-based applications can increase the knowledge related to disease management, DM patients and their families to be able to carry out good self-efficacy in DM management.

KEYWORDS

diabetes mellitus; knowledge; supportive education; training.

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1. INTRODUCTION

The International Diabetes Federation (IDF) estimates that at least 462 million people between the ages of 20-79 in the world suffer from diabetes mellitus (DM) in 2019, or the equivalent of a prevalence of 9.3% of the total population at the same age. Indonesia is ranked 7th among 10 countries with the highest number of diabetics in the world, which is 10.7 million (Infodatin, 2018). In Indonesia, diabetes mellitus cases continue to increase every year as evidenced by data on the prevalence of DM cases in 2013 of 6.9% and 8.5% in 2018. (Kemenkes RI, 2018). East Java Province occupies the 5th highest position with the prevalence of Diabetes mellitus based on a doctor's diagnosis in the population aged ≥ 15 years of 2.4% of the national prevalence. In the Gresik area,

the number of Diabetes Mellitus sufferers increased dramatically in 2016 to 18,512 people and according to the Indonesian Diabetes Association (Persadia) in 2030 it is estimated to increase to 21.3 million DM sufferers. The number of DM sufferers in Pantenan is a high number compared to other villages that are included in the working area of the Panceng Health Center, Gresik in 2022 and around 154 people (Azmi, 2022).

Self-efficacy is very important because it relates to specific behaviors in DM management, such as blood glucose management, diet, exercise, use of insulin (De Sousa, 2020). Good self-efficacy encourages patients to carry out diabetes management comprehensively and consistently so that it affects the quality of life (de la Cruz *et al*., 2020). Low self-efficacy leads to poor self-management behavior thereby increasing the risk of developing diabetes mellitus complications (Munir, 2020). Diabetes complications can reduce patient life expectancy by 5-10 years (Infodatin, 2018), contributes to high mortality and morbidity rates in cases of diabetes mellitus (Decroli, 2019).

Good self-efficacy behavior plays an important role in the treatment of DM, especially in type 2 DM. Self-efficacy refers to long-term and effective decisions and behaviors, to maintain patient welfare, which involves medical, behavioral, and emotional management. Positive and effective self-efficacy not only controls the DM condition on physiological indicators but also improves the patient's quality of life (Hunt, 2015). Research in developed countries such as the United States, Canada, United Kingdom, and Singapore has found that common barriers to self-efficacy, one of which is the lack of family support and lack of knowledge about disease management (Chithambo & Forbes, 2015; Compeán et al., 2018; Poole, L., Hackett, R.A., Panagi, L., Steptoe, 2019).

In general, the education provided still conventionally uses printed materials and demonstrations, which prioritize visual messages without the effects of sound and motion stimulation so that respondents tend to be more passive and the educational effect cannot last for a long time (Agarwal *et al.*, 2019; Rahman *et al.,* 2020; Windani *et al*., 2016). Diabetes Healthy Education (SEDIA) is an application that includes five pillars of self-care based on recommendations including general knowledge about diabetes, diet control, physical activity or exercise (exercise), blood sugar monitoring, pharmacological therapy (medication), complications and foot care that has been presented in the form of a mobile application "teman diabetes" (Hasanah, Ikawati, & Zainal, 2021). Based on interviews with representatives of social health partner, it was concluded that there had been no training for social health partner and involving families of DM patients in the area in an effort to actively increase DM self-efficacy. Based on the explanation above, the authors designed a program for social health partner, DM patients and families in Pantenan, Panceng, Gresik in the form of community service activities through SeDia (Healthy Diabetes) education and training based on structured supportive education in an effort to increase knowledge related to DM management in people with diabetes.

2. MATERIAL AND METHODS

This community service program uses education and training methods on SeDia (Healthy Diabetes) education and training activities based on structured supportive education in an effort to increase knowledge in people with diabetes for social health partner, DM patients and families in Pantenan, Panceng, Gresik. This program is in collaboration with Pantenan Village and the Pantenan Health Center, Gresik. Before carrying out community service activities, previously carried out preparations for the implementation of activities starting from taking care of permits to carry out activities, coordinating with the puskesmas and holding internal meetings with the team to record community service needs. The implementation of this community service work

program will involve collaboration with groups of women health social health partner and families of DM patients in the Panceng area, Gresik which is included in the rural area.

The role of partner participation in the group of women health social health partner and families of DM patients in the Panceng area, Gresik, namely participating in all health education activities from start to finish according to the specified time contract and providing a representative place for carrying out activities. This PKM method uses a Community Based Research (CBR) approach characterized by collaborative, change-oriented, and inclusive principles. Community partners and academic experts work together to develop education and training that is responsive to community needs, define appropriate data collection methods, and develop effective knowledge dissemination strategies. Development of these methods with the application of science and technology in the following ways:

1. Knowledge Information Technology
   This activity uses lectures with powerpoint media for explanations and is followed by discussions with the community (social health partner, DM patients and families). Then consolidation is carried out through a pre-test and post-test to measure the respondent's understanding of the material presented and the results are written down through reporting.
2. Skill/skill training technology
   This activity also carried out simulations/practice of problem solving processes, diabetic foot exercises and the introduction of mobile phone-based applications so that they could be practiced by target audiences and create independence and cooperation in prevention and treatment.
3. Attitude stabilization technology
   Through simulations and discussions, stabilization will be obtained related to the material being taught so that interest/acceptance of attitude arises. The target audience is stimulated to increase awareness in prevention and treatment.

The counseling material provided includes an explanation of the importance of the 5 pillars of DM management which the target audience must understand with structured supportive education so that social health partner and families can motivate DM patients to express their complaints and contribute to the patient's daily management. In this implementation phase the activity consisted of several sessions, first namely pre-test then giving material, practicing diabetic foot exercises, introducing mobile phone-based diabetes applications and discussions then ending with a post-test. Introduction to features and application usage simulation “teman diabetes” (Hasanah et al., 2021) includes 5 pillars of education and consists of several other menus, namely registration menu, educational menu, diet menu, sports menu, foot care menu, blood sugar monitoring menu, stress management menu and counseling menu.

Pre-test and post-test activities to determine the level of understanding before and after the implementation of activities through the DKQ-24 Questionnaire (Diabetes Knowledge Questionnaire) is an instrument used to measure the level of knowledge about DM. The questionnaire explored knowledge related to DM management consist of diet control, physical activity or exercise (exercise), blood sugar monitoring, pharmacological therapy (medication), complications and foot care. This questionnaire contains 24 DM question items. The DKQ questionnaire has been designed and validated in the population of Mexican-Americans in Strarr Country, Texas and has been translated and tested for validity and reliability in type 2 DM patients. The DKQ-24 contains 11 items with favorable questions and 13 items with unfavourable questions (Bukhsh et al., 2019). Answer options for these questions include true (scored 1), wrong (scored 0), and don't know

(scored 0). Minimum score of 0 and maximum 24, which can be categorized into low knowledge (score 0-8), moderate knowledge (score 9-16) and high knowledge (score 17-24) (Garcia, Villagomez, Brown, Kouzekanani, & Hanis, 2001). Good internal consistency was observed for the DKQ (Cronbach's α = 0.757) (Zakiudin, Irianto, Badrujamaludin, Rumahorbo, & Susilawati, 2022).

The implementation of counseling activities focuses on education about DM in a structured way, the practice of diabetic foot exercises and the introduction of mobile phone-based applications, the material is delivered by the activity implementing team. The final stage is to carry out an evaluation to find out whether this service activity achieves its goals or not. The evaluation was carried out by comparing the average knowledge level values, the participants' DKQ-24 Questionnaire (Diabetes Knowledge Questionnaire) before and after counseling and practice. The analysis used was univariate and bivariate analysis using SPSS. Univariate analysis was intended to determine the distribution of categories of knowledge and attitudes towards prevention as well as the difference in average values before and after counseling was carried out. While bivariate analysis to determine the role of characteristics in increasing public knowledge. The results of the activity are presented in the form of a frequency distribution.

3. RESULTS

The implementation of community service activities (PKM) is carried out targeting groups of people who are at risk of experiencing DM complications if they do not carry out good self-efficacy. The implementation of the activity was attended by 41 participants consisting of social health partner, DM patients and families in the Pantenan, Panceng, Gresik areas. This activity is in collaboration with Pantenan Village and the Pantenan Health Center, Panceng, Gresik and the implementation location is at the Pantenan Village Hall, the activity was opened directly by the Pantenan Village Head and Representatives from the Pantenan Health Center. Activities consist of counseling about the importance of the 5 pillars of DM management based on structured supportive education so that social health partner and families can motivate DM patients to express their complaints and contribute to the daily management of patients (figure 1).

Based on table 1, it was obtained that the characteristics of the participants were that the majority of women totaled 40 people (97.6%) participants with an average age of participants was 49 years and consisted of social health partner totaling 14 people (34.1%), DM patients totaling 16 people (39%) and a family of 11 people (26.9%). The average number of participants who work as

Figure 1. Activity of providing SeDia (Sehat Diabetes) education and training materials based on structured supportive education in an effort to increase self-efficacy in people with diabetes for social health partner, DM patients and families in Pantenan, Panceng, Gresik.

Figure 2. Diabetic foot exercise activities for participants

Table 1. Characteristics of Community Service Participants (n=41)

Variable	n (%) or mean (SD) (min-max)
Age	49.22 ± 14.035 (20-80)
Participation as	
Social-health partner	14 (34.1)
DM patient	16 (39)
Family	11 (26.9)
Gender	
Male	1 (2.4)
Female	40 (97.6)
Work	
Self-employed	4 (9.8)
IRT	20 (48.8)
Farmer	12 (29.3)
Doesn't work	5 (12.2)
Perception of disease ownership	
Common problems	26 (63.4)
Not a shared problem	15 (36.6)

Table 2. Results of knowledge level related management of diabetes mellitus with the Diabetes Knowledge Questionnaire (DKQ-24) before and after being given SeDia (Healthy Diabetes) education and training

	n (number of participant)	Mean (minimum-maximum)	p
Knowledge before education	41	9.63 (1-16)	0,000*
Knowledge after education	41	13.54 (10-18)	

housewives is 20 people (48.8%). The majority of participants (63.4%) agreed that DM disease experienced by patients is a common problem that must be faced together.

Based on table 2, a value of p = 0.000 (p <0.05) is obtained so that it can be concluded that there is a significant difference in the average knowledge between before and after being given SeDia (Healthy Diabetes) education and training based on structured supportive education to social health partner, DM patients and families.

Based on table 2, the frequency of knowledge level of counseling participants using the DKQ-24 Questionnaire (Diabetes Knowledge Questionnaire) shows that before counseling the average value of community service participants was 9.63 and after counseling the average value increased by 13.54. The increase in the average value is very possible because the counseling activities carried out are very much adapted to the needs of the counseling participants. The counseling material is packaged so that it becomes information material that is very easy to understand and uses language that is easily understood by ordinary people.

4. DISCUSSION

The implementation of community service activities (PKM) is carried out targeting groups of people who are at risk of experiencing DM complications if they do not carry out good self-efficacy. The implementation of the activity was attended by 41 participants consisting of social health partner, DM patients and families in the Pantenan, Panceng, Gresik areas. SeDia (Healthy Diabetes) education and training based on structured supportive education for social health partner, DM patients and their families has an effect on increasing the average level of knowledge of participants. Supportive education provides motivation to individuals in undergoing behavior change procedures by influencing the values, beliefs, and attitudes of individuals who are at risk or already have the disease (Kusnanto, Satriyaningarum, Pratiwi, & Arifin, 2020; Mumpuningtias, Suprayitno, & Damayanti, 2022; Pratiwi, Nimah, Widyawati, & Dewi, 2019; Sinawang, Kusnanto, & Pratiwi, 2020). The difference between supportive education and health education in general is that in addition to increasing patient knowledge, supportive education also provides motivation and

guidance through active consultations and teaches new things (Kusuma & Setiyaningrum, 2021; Pratiwi, Dewi, & Widyawati, 2020; Pratiwi et al., 2018). In addition, with an increase in patient knowledge regarding disease management, adherence to treatment regimens can be increased (Akoko, Fon, Ngu, & Ngu, 2017). Several barriers to adherence such as cost, access to health services and the influence of hereditary culture adhered to by hypertensive patients can be overcome by providing counseling (Edward, Campbell, Manase, & Appel, 2021).

One effort to increase self-efficacy is through the provision of education as a basis for forming perceptions (Mohammadi *et al,* 2018) that helps patients adopt certain behaviors for their health (ADA, 2017). In general, the education provided by health workers still conventionally uses printed materials and demonstrations, which prioritize visual messages without the effects of sound and motion stimulation so that respondents tend to be more passive and the educational effect cannot last for a long time (Agarwal *et al.*, 2019; Rahman *et al.,* 2020; Windani *et al*., 2016). Most of the research related to the development of digital media-based educational applications for diabetes patients has mostly been carried out with various variations of presenting material such as diaries, pictures, videos or animations (Doupis, Festas, Tsilivigos, Efthymiou, & Kokkinos, 2020). In this community service activity, the average knowledge score increased because the counseling activities carried out were highly adapted to the needs of the counseling participants. The counseling material is packaged so that it becomes information material that is very easy to understand and uses language that is easily understood by ordinary people.

Comprehensive education using an independent approach can help individuals and families to be able to identify risk factors, be able to carry out early detection and prevention, as well as self-care when at home (Orji, 2020; Van Nettten, 2020). Introduction to features and application usage simulation "teman diabetes" (Hasanah et al., 2021) includes 5 pillars of education and consists of several other menus, namely registration menu, educational menu, diet menu, sports menu, foot care menu, blood sugar monitoring menu, stress management menu and counseling menu. In this community service activity, the majority of respondents thought that DM is a common problem that must be addressed together. Patients or patient companions will receive management guidelines, information, and report implementation through the mobile application (Kuzmin, Ignatiev, & Grafov, 2020). Today's mobile technology and applications have successfully entered and been adopted by almost all levels of society. The affordability of prices and the conditions of the pandemic have caused the time to use mobile devices and applications to increase. Thus, technology and mobile applications can be utilized to answer various problems in society, including monitoring the management of diabetes mellitus patients.

5. CONCLUSION

The implementation of community service activities (PKM) is carried out targeting groups of people who are at risk of experiencing DM complications if they do not carry out good self-efficacy, which is strongly influenced by the understanding of DM management. In this activity, education and training was also carried out on the 5 pillars of DM, simulation/practice of diabetic foot exercises and the introduction of mobile phone-based applications so that it could be practiced by target audiences involving social health partner, DM patients and families and creating independence and cooperation in prevention and treatment. The community service activities carried out can form a group of people who care about diabetes and contribute to the daily management of the disease which helps create peace, comfort in a healthy community life in Pantenan, Panceng, Gresik.

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