

## The program “KASSI (KAKi Sehat diabeteSI)” in the Elderly with Diabetes in the Target Area UPTD Sekar Jaya Health Center OKU

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### ABSTRACT

Diabetes is a Non-Communicable Disease (PTM) with the highest incidence rate in Indonesia. The low number of elderly (Elderly) visits to the Puskesmas since the Covid-19 Pandemic resulted in a low PTM performance in 2021, namely 89%. DM elderly in the working area of the Sekar Jaya Health Center UPTD with an incidence of leg injuries of 25%. The person in charge of the PTM program said that there were no assistance activities for monitoring the implementation of the Ankle Brachial Index in the elderly who had DM. Foot exercise is an exercise performed by people with Diabetes Mellitus (DM) to prevent injuries and help improve blood circulation in the extremities of the body (hands and feet). The solution to the partner problem implemented by the service team is the implementation of the KASSI (Healthy Diabetic Feet) program which aims to increase the Ankle Brachial Index in Elderly with Diabetes in the Sekar Jaya Health Center's UPTD Assisted Area. The activity was carried out for 2 months and was attended by 20 participants who regularly attended 5 meetings. The results of the implementation of the program were an increase in knowledge by 16.7% and skills by 59.9% in participants, as well as an increase in the average ankle-brachial index in 5 participants with an average value of 1.04 at the end of the activity.

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### INTRODUCTION

The high incidence of Diabetes Mellitus (DM) and the low achievement of MSS in South Sumatra have resulted in non-communicable disease (NCD) prevention programs not being achieved. South Sumatra is ranked 7th with the highest DM incidence rate in Indonesia, with an incidence rate of 32,126 people diagnosed by a doctor [1]. OKU district is ranked 4th out of 17 districts with DM prevalence rates. The percentage of service coverage for DM sufferers has not yet reached the Minimum Service Standards (SPM), namely 100% of the community served. DM patients recorded in SIPTM (Non-Communicable Disease Information System) in Ogan Komering Ulu Regency in 2021 were 7,150 people, while those who received health services according to standards were 6,363 people (89%) [2].

The high incidence of DM and the low use of health services in OKU Regency have an impact on the emergence of complications and uncontrolled symptoms felt by patients. The results of interviews with the

Person in Charge (PJ) for the DW program at the Sekar Jaya Health Center obtained data, for the period January 2021 to August 2022, data obtained that 198 people were undergoing DM treatment at the Health Center. The implementation of POSBINDU PTM also has data on people who come for visits with early signs and symptoms of DM to those who have been diagnosed with DM in the community with a total of 1,213 people. People's habits and behavior such as not keeping feet clean and not using footwear when doing activities will be at risk of injury to the foot area. Advanced diabetic foot conditions that are not handled properly can develop into a leg amputation. The presence of wounds and other problems on the feet is a major cause of morbidity, disability, and death and mortality in someone with diabetes mellitus [3].

The results of the study conducted on DM patients who received treatment at the Sekar Jaya Health Center found that 45% of DM patients had impaired peripheral function, there was blackness in the area around the patient's feet, and there were 3 patients who had experienced injuries and neuropathy. Hyperglycemia in Diabetes Mellitus, especially in type 2 Diabetes causes complications of both microangiopathy and macroangiopathy [4]. High blood sugar levels can cause chronic complications which result in high morbidity, one of which is neuropathy and peripheral arterial disease. The prevalence for the occurrence of Diabetic Neuropathy is around 50% [5]. Afreen, et al (2017) stated that Diabetic Neuropathy is the third most common disorder of neurological cases with an incidence of 54% of 100,000 people per year [6]. Meanwhile, cases of Peripheral Artery Disease (PAD) have also increased. Currently, it is estimated that more than 202 million people in the world suffer from PAD [7]. The prevalence of PAD in Indonesia is around 9.7%. The risk of developing PAD increases with the severity and duration of diabetes, whereas those with DM have a 7-15 times higher chance [8]. These complications are associated with impaired vascular or metabolic mechanisms or both.

Early detection of disturbances of sensation needs to be done by conducting a neurological examination. Neurological examination, in this case, examination of foot sensation, is one of them through the Ipswich Touch Test, which is a new method that is simple and without tools for neurosensory examination of diabetic feet which is simple, fast to perform, free of charge, and can be performed as a screening for diabetic neuropathy. In addition to sensory disturbances, decreased circulation to the peripheral nerves is one of the causes of Diabetic Neuropathy, peripheral arterial disease, and Diabetic Ulcers in type 2 Diabetes Mellitus as a result of decreased oxygen and nutrient supply [9]. One of the efforts to determine the existence of this disorder is to examine the Ankle Brachial Index (ABI). There have never been any activities carried out at the Sekar Jaya Health Center, nor the PTM Bindu Post that focused on education and health checks for the feet of DM patients.

Several nursing interventions are carried out to prevent and control the occurrence of diabetic neuropathy and improve peripheral circulation through the 4 pillars of DM management namely education, nutrition, physical exercise, and pharmacological interventions. DM management can also be alternative or complementary therapy. One type of complementary therapy that can be used is diabetic foot exercise [4]. This foot exercise movement can improve blood flow in the legs, improve blood circulation, strengthen leg muscles, and facilitate movement of the leg joints, thus it is hoped that the feet of people with DM can be well cared for and improve the quality of life of people with DM [10]. The Ankle Brachial Index (ABI) measurement method was carried out to detect the presence of arterial insufficiency which indicates the possibility of peripheral arterial disease (PAD) in the legs. The ABI examination is also used to see the results of an intervention (medication, program, exercise, angioplasty, or surgery). Normal blood circulation in the legs if the ABI value is  $> 0.9$ , while an abnormal condition can be obtained if the ABI value is  $< 0.9$  indicating there is a high risk of leg injuries, ABI  $> 0.5$  patients need follow-up care, and ABI [11].

Existing research shows that foot exercises are very effective in increasing ABI values. Diabetic foot exercise can be applied to DM patients as an independent nursing intervention. Nurses as providers of nursing care as well as educators can teach patients to be able to apply diabetic foot exercises as independent foot interventions for patients at home which will improve blood circulation in the foot area to prevent complications due to vasculopathy. This Community Service activity is a series of programs that aim to increase the value of ABI in the elderly with DM who experience PAD on their feet and provide prevention education for those who have not experienced it.

## METHOD

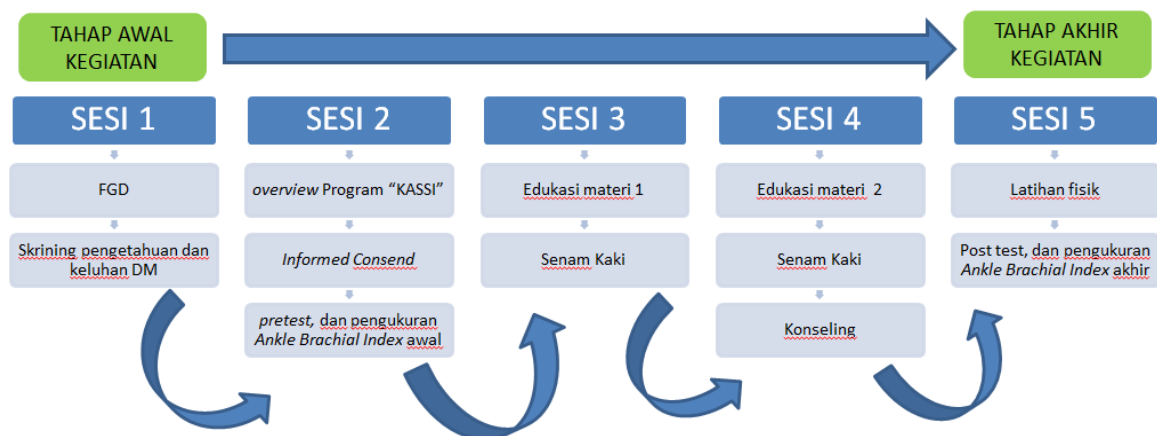
The theme of this community service is an effort to increase the Ankle Brachial Index in Diabetes Mellitus (DM) patients in the Sekarjaya Health Center UPTD Assisted Area, which is a nursing intervention to support adherence to treatment programs using the community empowerment method (Self Help Group) which is referred to as the Community Service Program. "KASSI (KAKI Sehat diabetesi)". Partners in the implementation of this Community Service activity are the elderly who have DM in the community, cadres of the BINDU PTM Post, and also the Puskesmas Health Officers who are in charge of the assisted areas, totaling 20 people. The results of the Forum Group Discussion (FGD) in session 1 found 5 elderly people who had peripheral arterial disease (PAD). This activity will provide benefits to the local community assisted by the Sekar Jaya Health Center who carry out health checks at the PTM BINDU Post closest to their homes. The development of science and technology contained in this community service activity is the treatment of 4 (four) DM management pillars. This program is divided into 5 activity sessions which are carried out over 2 months, with details of the activities as follows:

## RESULTS

In this section, it is explained the results of research and at the same time is given the comprehensive discussion. Results can be presented in figures, graphs, tables and others that make the reader understand easily [8]. The discussion can be made in several sub-sections.

1. Session 1: FGD with PJ Program PTM UPTD Sekar Jaya Health Center and health cadres to determine activity locations and collect activity participants according to the qualifications of program recipients,
2. Session 2: Explanation of the program overview "KASSI" time contract, Informed Consent, pretest, and initial Ankle Brachial Index measurement,
3. Session 3: Education on DM disease, nutritional control for DM patients, and foot exercises,
4. Session 4: Education on treatment and management of healthy feet for diabetes, foot exercises, counseling, and
5. Session 5: CERDIK physical exercise and leg exercise and post-test, and final Ankle Brachial Index measurement.

An illustration of the entire series of "KASSI" program activities is presented in the form of a flow chart as follows:



**Diagram 1. Activity Flow**

**RESULTS AND DISCUSSION**

Community service activities by the Baturaja Nursing Study Program Lecturer group at the preparatory stage began with a meeting with the leadership of the Community Health Center and the Person in Charge of the Non-Communicable Diseases Program (PTM) at the Sekar Jaya Health Center. The results of coordination with community service partners agreed that the implementation of the "KASSI" Program activities would be carried out in hall 3 of the active POSBINDU Aisyiyah in the UPTD work area of the Sekar Jaya Health Center. The participants who attended were elderly people who had DM in the community, BINDU PTM Post cadres, and also Puskesmas Health Officers who were in charge of the assisted areas, totaling 20 people. Human resources in the community can play a role in providing motivation and become a complementary intrinsic component for health workers, namely health cadres [12].

The distribution of the characteristics of participants who take part in community service activities is as follows:

**Table 1. Distribution of Characteristics of "KASSI" Program Participants in Kelurahan Sekar Jaya OKU, April-May 2023 (n=20)**

Characteristics of Respondents	Frequency	%
<b>Age</b>		
Pre Elderly	12	60
Elderly	8	40
<b>Gender</b>		
Man	3	15
Woman	17	85

Source: KASSI Program Questionnaire, 2023

Based on Table 1 it can be seen that the distribution of respondents by age in the application of the "KASSI" program was dominated by the pre-elderly age of 60%. By the high incidence of DM cases that often occur in adults aged over 40 years [4]. The age of the participants in this activity was similar to the previous similar community service implementation which was attended by pre-elderly mothers [13]. Age is a physiological process that increases with time in an individual's life. Increasing age will be accompanied by changes in the cardiovascular system, including widened and stiffened heart valves, decreased blood pumping ability, decreased blood vessel elasticity, and increased peripheral vascular resistance resulting in mild arterial disorders [11].

The gender of participants in this activity was dominated by women by 85%. Gender is a risk factor for hypertension that cannot be modified. Gender also affects differences in healthy behavior patterns, women are more active in treating themselves if they are sick than men [14]. Women who are housewives have the responsibility to maintain and improve the quality of life and health of their families, so they are more active in seeking information and types of health services [15]. The implementation of community service which is carried out during the day so that more female participants are housewives, is possible because during the day men are working so they cannot participate and women are also more aware of the importance of treating illnesses.

**Table 2. Average Distribution of Participants' Knowledge and Skills Before and After the Implementation of the "KASSI" Program in the Sekarjaya OKU Village, May**

Category	Measurement	Means	Knowledge Enhancement (%)
Knowledge	Before	45,7	16,7
	After	62,4	
Skills	Before	12,3	59,9
	After	72,2	

Source: DM Knowledge Questionnaire and Foot Exercise, 2023

Based on Table 2, it can be seen that the mean value of participant knowledge (elderly DM group) before the "KASSI" program was carried out was 45.7 after participating in the "KASSI" program activities was 62.4, which means that there was an increase in knowledge of 16.7%. The average skill before the "KASSI" program was carried out was 12.3, and after the implementation of the program, the average value was 72.2. There was an increase in skills of 59.9% after the implementation of the "KASSI" program. The results of this



study are in line with the results of previous studies which stated that there were significant differences in the knowledge and skills of DM patients in Malang Regency [16].

Details of the implementation of community service activities can be seen in the following figure:



**Figure 1. Activity Licensing**



**Figure 2. Blood Sugar Check**



**Figure 3. Foot Exercise**



**Figure 4. Foot Exercise**



**Figure 5. Participants and Executors of Community Service Activities**

**Table 3. Ankle Brachial Index Values Before and After Diabetic Foot Exercise in DM Patients Experiencing Blackness and Stiffness of the Feet in Sekar Jaya OKU Village, April-May 2023 (n=20)**

DM patient with black and stiff feet	Before Foot Exercise	After Leg Exercise	Means
1	0,60	0,90	1,04
2	0,70	1,20	
3	0,70	0,90	
4	0,80	1,20	
5	0,60	1,00	

Source: Examination Results

Based on table 3 above, shows that there was an increase in ABI in the five patients after being given the diabetic foot exercise intervention for three months with an average increase in ABI of 1.04. DM patients tend for ABI values to be lower than the normal range, where normal values range from 0.90 to 1.3 [17]. DM condition is one of the factors that affect blood flow pressure (viscosity factor) due to the accumulation of sugar

in the blood. Blood viscosity results in disrupted blood flow throughout the body, and causes a decrease in body tissue perfusion, especially in the extremities. This happens because blood circulation is influenced by 3 (three) factors, namely viscosity (blood thickness), diameter and length of blood vessels [18].

Diabetes mellitus patients who routinely carry out foot exercises will move their legs which results in tension in the leg muscles which can compress the veins around these muscles. This movement can push blood to the heart and reduce venous pressure, commonly referred to as a venous pump mechanism which will improve blood circulation in the legs. In DM patients who do not perform leg exercises, the venous pump mechanism will become less effective and result in poor blood circulation. Previous research stated that the effect of foot exercise in DM patients increased the average ABI value by 0.31 after carrying out foot exercise for 3 consecutive days [11].

## CONCLUSION

Community service activities have been carried out in the UPTD target area of the Sekarjaya Health Center, Ogan Komering Ulu Regency, because collaboration has been established in the implementation of Higher Education's Tri Dharma activities with the Baturaja Nursing Study Program, the Health Polytechnic of the Palembang Ministry of Health. Participants who attended the Community Service implementation were very enthusiastic. As a result of the community service activities, it was found that there was a transfer of science and technology in the form of knowledge about managing DM, and skills in performing foot exercises to the community, as well as skills in examining the Ankle Brachial Index (ABI) to Puskesmas staff.

The increase in results achieved in the pretest and posttest activities was 16.7% knowledge, 59.9% skills, and an average ankle-brachial index in 5 participants with an average value of 1.04 at the end of the activity. Participants expressed a desire for the activities to be carried out continuously, and health cadres provided suggestions for increasing drug availability during service delivery. It is hoped that this activity will be continued by UPTD Health officers at the Sekarjaya Health Center and Health Cadres. The service team would like to thank the UPTD Sekarjaya Health Center and Sekarjaya Village for facilitating facilities and infrastructure in the program implementation process.

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