

How to Assess and Prevent the Risk of Diabetic Foot Ulcer

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Abstract

The discovery of problems related to health status was the beginning of the idea to carry out activities with the basic theme "Semiloka on Assessment of Complications of Diabetes Mellitus in Pontianak, Kalimantan Barat, Pontianak City. The project aimed to increase the knowledge and skill of participants not to assess and prevent the risk of diabetic foot ulcer (DFU). The program consists of serving education about the early detection and prevention of DFU; and the practice of detecting and carrying out nursing actions to prevent the occurrence of DFU by participants. Most of the participants were aged 56-65 years 15 (50%), female sex 19 (63%), last education was high school 15 (50%), housewife work 13 (43.33%), the majority had DM < 10 years 23 (76.67%), and normal sensation 23 (76.67%). Participants took part in the activity from start to finish, and participants were able to apply a risk assessment for the occurrence of DFU.

Keywords: DFU detection; DFU prevention; DFU complications

INTRODUCTION

Diabetes Mellitus is a group of metabolic diseases with characteristic hyperglycemia that occurs due to abnormalities in insulin secretion, insulin performance, or both (Perkeni, 2015). The prevalence of diabetes mellitus increase year by year. Global data shows that the number of people with diabetes mellitus in 2011 reached 366 million, and is expected to increase to 552 million people in 2030.

According to data from the International Diabetes Federation (IDF) 2021, more than 537 million adults in the world live with diabetes mellitus. This figure is predicted to increase to 643 million in 2030. In 2021, Indonesia will be ranked third in the prevalence of diabetes in the Asia Pacific region after China and India, and fifth in the world after China, India, Pakistan, the United States, and Brazil. with an estimated number of diabetics of approximately 537 million adults or 1 in 10 people living with diabetes worldwide (Ogurtsova et al., 2022)

The results of Riskesdas (2018) show that the prevalence of diabetes mellitus in Indonesia based on a doctor's diagnosis at the age of ≥ 15 years is 2%. This figure shows an increase compared to the prevalence of diabetes mellitus in residents > 15 years in the 2013 Riskesdas results of 1.5%. However, the prevalence of diabetes mellitus according to the results of blood sugar examinations increased from 6.9% in 2013 to 8.5% in 2018. This figure shows that only about 25% of diabetics know that they have diabetes (Kemenkes RI, 2018).

Almost all provinces showed an increase in prevalence in 2013-2018, except for the province of East Nusa Tenggara. There are four provinces with the highest prevalence in 2013 and 2018, namely DI Yogyakarta, DKI Jakarta, North Sulawesi, and East Kalimantan (RI Ministry of Health, 2018). This increase in numbers is of course followed by the risks of complications that accompany it.

West Kalimantan is ranked 14th out of 33 provinces. The five cities/regencies with the highest ranking for Diabetes Mellitus cases in West Kalimantan based on a doctor's diagnosis sequentially are Singkawang City (2.52%), Pontianak City (2.01), Sambas Regency (1.39%),

Mempawah Regency (1, 21%) and Kapuas Hulu District (1.13) (Kemenkes RI, 2018). This increase in numbers is of course followed by the risks of accompanying complications, one of which is diabetic foot ulcers.

Handling DFU has a very high challenge, considering the many factors that cause it (Bakker et al., 2012). Even though DFU can be cured, the risk of recurrence has a very high chance, as it has been reported that around 30-40% of DM sufferers have recurrent UKD (Amrullah et al., 2022; Pradika et al., 2022). Therefore there is a need for continuity in educating and disseminating information about danger, early detection, and prevention of complications, especially DFU (Pratama et al., 2021, 2022).

Based on the cases that occurred and the high risk of complications that will be experienced by DM sufferers, for this, the researcher seeks to provide education in the form of an Assessment Workshop on Complications of Diabetes Mellitus in the Sungai Bangkong Village Community, Pontianak City. This activity is a form of implementation of research results that comprehensively provide health education about DM and the prevention of complications.

METHOD

The method consisted of four steps, namely: 1) Target group survey: In the first stage, to obtain information about locations and destinations, similar assistance has never been held, 2) Preparation of Facilities and Infrastructure: This stage is the stage that prepares the facilities and infrastructure that will support this activity. The preparation is about the place and location that we will use for the activity. Other facilities will be prepared in stages taking into account the level of need. 3) Implementation of action activities: The most important program content in this program is providing knowledge related to the Assessment of Complications of Diabetes Mellitus in the Sungai Bangkong Village Community, Pontianak City, checking blood sugar, examining feet using monofilament to determine whether there an occurrence of neuropathy, which is one of the predictors of diabetic foot ulcers. 4) Evaluation: At the evaluation stage, the community will be given feedback about the assistance that has been implemented. This will be a consideration for our activities to benefit the community again.

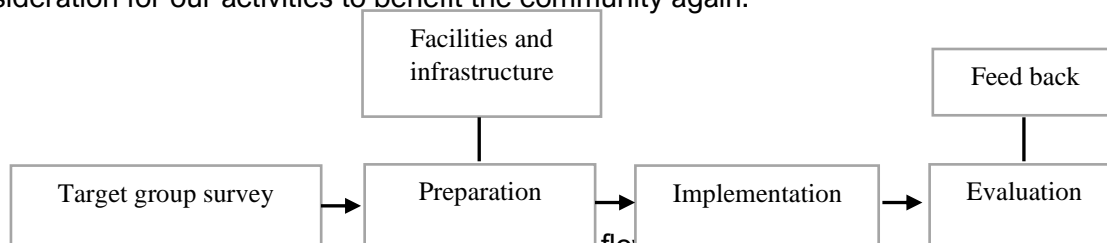


Figure 1. Activity flowchart

RESULTS

Characteristics of participants

Frequency distribution of characteristics of participants based on age, sex, job, Duration of DM, and Monofilament test results (n=30)

variabel	n	%
Age		
46 – 55 years old	5	16,67
56 – 65 years old	15	50,00
> 65 years old	10	33,33
Sex:		
Male	19	63,33
Female	11	36,67
Education:		
Elementary	3	10,00
Junior High School	5	16,67
Senior High School	15	50,00
High Education	7	23,33

Job		
Civil service	10	33,33
Private sector	7	23,33
Housewife	13	43,33
Duration of DM		
< 5 Years	23	76,67
> 5 Years	7	23,33
Tes monofilamen		
Loss sensation	7	23,33
Normal	23	76,67
Total		100

Competency in Assessing risk of DFU

Table 2. Frequency distribution of Competency in Assessing risk of DFU (n=30)

Level of Competency	n	%
Good	10	33,33
Satisfaction	15	50,00
Poor	5	16,67
Total	30	100

DISCUSSION

Out of 30 participants involved in the program. The program held on 12 March 2023. The program consisted of health education related assessment and prevention of DFU, then followed by examining sensation on plantar by using monofilament. All participants took part in the activity from start to finish. The majority participants who involved in the program were in the age range of 56-65 years, female sex was 19 (63%), last education was high school 15 (50%), housewife work was 13 (43.33%), majority participants had DM <10 years was 23 (76.67%), had normal sensation was 23 (76.67%), and majority had good skills in assessing risk of DFU.

CONCLUSIONS AND RECOMMENDATIONS

All participants took part in the activity from start to finish. The Most of the participants who attended were in the age range of 56-65 years, female sex, last high school education, housewife work 13, majority had DM <10 years 23 (76.67%), and had normal sensations. All participants can apply the guidelines of assessment and prevention risk of DM. We hope all participants will continue the program to carry out preventive measures for DFU. The hope for the future is to evaluate the project have been given periodically following the risks that arise.

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REFERENCES

- Amrullah, S., Pratama, K., & Pradika, J. (2022). Risk Prevention Training Of Diabetic Foot Ulcus (Buerger Allen Exercis) In Family And DM Patients. *ABDIMAS: Jurnal Pengabdian Masyarakat*, 5(2), 2869–2870.
- Bakker, K., Apelqvist, J., Schaper, N. C., & Board, I. W. G. on the D. F. E. (2012). Practical guidelines on the management and prevention of the diabetic foot 2011. *Diabetes/Metabolism Research and Reviews*, 28, 225–231.
- Kemendes RI. (2018). Hasil Riset Kesehatan Dasar Tahun 2018. *Kemendrian Kesehatan RI*, 53(9),

1689–1699.

- Ogurtsova, K., Guariguata, L., Barengo, N. C., Ruiz, P. L.-D., Sacre, J. W., Karuranga, S., Sun, H., Boyko, E. J., & Magliano, D. J. (2022). IDF diabetes Atlas: Global estimates of undiagnosed diabetes in adults for 2021. *Diabetes Research and Clinical Practice*, 183, 109118.
- Perkeni. (2015). Pengelolaan dan pencegahan diabetes melitus tipe 2 di Indonesia. *Pb. Perkeni*.
- Pradika, J., Pratama, K., Jiu, C. K., Wuriani, W., Usman, U., Lukita, Y., & Amrullah, S. (2022). Health Education Related Nutrition Pattern to Increase Quality of Life of Type 2 DM Patients. *ABDIMAS: Jurnal Pengabdian Masyarakat*, 5(1), 1917–1921.
- Pratama, K., Amrullah, S., Pradika, J., Jiu, C. K., Wuriani, W., Usman, U., Lukita, Y., & Putra, G. J. (2022). Utilization of Herbs as Therapy in the Treatment of Diabetic Foot Ulcers. *ABDIMAS: Jurnal Pengabdian Masyarakat*, 5(1), 2055–2058.
- Pratama, K., Pradika, J., Jiu, C. K., Putra, G. J., Wuriani, W., Usman, U., Gusmiah, T., & Lukita, Y. (2021). Care Giver Competency in Prevention Risk of Diabetic Foot Ulcer in Diabetes Mellitus Patients. *ABDIMAS: Jurnal Pengabdian Masyarakat*, 4(2), 1140–1144.