Diabetic Foot Exercise Education to Improve Patient Understanding and Independence in Diabetic Foot Care

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Abstract

Diabetes Mellitus (DM) is a chronic metabolic disorder that triggers various serious complications, including peripheral neuropathy and diabetic foot ulcers. Prevention of these complications is a priority in DM management, one of which is through non-pharmacological interventions such as diabetic foot exercises. This educational activity on diabetic foot exercises at Raden Mattaher Regional General Hospital in Jambi aims to improve the understanding and skills of patients' families in caring for the feet of DM sufferers. Through lectures, discussions, and demonstrations, participants are expected to recognize the benefits of foot exercises, such as improved blood circulation, foot sensitivity, reduced blood glucose levels, and wound prevention. Evaluation of the activity showed that diabetic foot exercises are effective in reducing the risk of foot complications and improving the quality of life of sufferers. This education also emphasized the innovative use of simple tools such as newspaper and the empowerment of health cadres as part of the program's sustainability strategy. Thus, this outreach is a strategic step in strengthening the educational role of health services for families of diabetes patients in hospitals.

Keywords: Diabetes Mellitus, Foot Exercises, Health Education

Abstrak

Diabetes melitus (DM) dapat memicu berbagai komplikasi serius, termasuk neuropati perifer dan ulkus kaki diabetik. Pencegahan komplikasi ini merupakan prioritas dalam manajemen DM, salah satunya melalui intervensi non-farmakologis seperti latihan kaki diabetik. Kegiatan edukasi tentang latihan kaki diabetik di Rumah Sakit Umum Daerah Raden Mattaher di Jambi ini bertujuan untuk meningkatkan pemahaman dan keterampilan keluarga pasien dalam merawat kaki penderita DM. Melalui ceramah, diskusi, dan demonstrasi, peserta diharapkan dapat mengenali manfaat latihan kaki, seperti peningkatan sirkulasi darah, sensitivitas kaki, penurunan kadar glukosa darah, dan pencegahan luka. Evaluasi kegiatan menunjukkan bahwa latihan kaki diabetik efektif dalam mengurangi risiko komplikasi kaki dan meningkatkan kualitas hidup penderita. Edukasi ini juga menekankan penggunaan inovatif alat-alat sederhana seperti koran dan pemberdayaan kader kesehatan sebagai bagian dari strategi keberlanjutan program. Dengan demikian, kegiatan penyuluhan ini merupakan langkah strategis dalam memperkuat peran edukasi layanan kesehatan bagi keluarga pasien diabetes di rumah sakit.

Kata kunci: Diabetes Melitus, Latihan Kaki, Pendidikan Kesehatan

A. INTRODUCTION

Diabetes Mellitus (DM) is a chronic metabolic disease characterized by elevated blood glucose levels due to impaired insulin production and function. According to data from the International Diabetes Federation (IDF), Indonesia has the fifth-highest number of diabetes sufferers worldwide, with an estimated 19.5 million in 2021 and projected to continue rising to 28.6 million by 2045 (IDF, 2021). Jambi Province also shows a trend of increasing DM prevalence, with many cases identified in referral hospitals, such as Raden Mattaher

Regional General Hospital. One of the most severe manifestations is the diabetic foot, which often leads to non-healing ulcers and, in extreme cases, lower-limb amputation. In the clinical setting of Raden Mattaher Regional General Hospital, many patients present with a lack of fundamental knowledge regarding preventative foot care. This real-world problem is compounded by a high dependency on hospital intervention rather than proactive home management, leading to poor clinical outcomes and increased healthcare costs for the local community.

Long-term complications of diabetes, such as peripheral neuropathy and diabetic foot ulcers, are often the leading cause of repeated hospitalizations, amputations, and reduced quality of life. According to Widiawati et al. (2020), most cases of diabetic foot ulcers occur due to a lack of education and self-care skills. Therefore, community-based educational interventions such as counseling and training on diabetic foot exercises are crucial in reducing the incidence of these complications.

Diabetic foot exercises are a form of non-pharmacological intervention designed to improve blood circulation, foot sensitivity, and strengthen lower extremity muscles. Research by Tarigan et al. (2022) showed that foot exercises significantly improved foot sensitivity and reduced the risk of wounds. Furthermore, this activity can also gradually lower blood glucose levels (Hardika, 2018). Another study by Prihatin and Dwi (2019) showed that foot exercises can improve the Ankle Brachial Index (ABI), an important indicator for assessing peripheral blood flow.

The role of the family is pivotal in bridging this gap. Since diabetes is a chronic condition managed largely within the domestic sphere, family members serve as the primary support system and "first line of defense." They are essential in monitoring the patient's foot condition, encouraging adherence to exercise routines, and providing the emotional and physical assistance required for daily care. (Friedman et al., 2010; Smeltzer & Bare, 2018). By involving families in health education, the burden of care is shared, and the likelihood of consistent, long-term preventative behavior is significantly increased.

Based on initial observations, most families of diabetes patients at Raden Mattaher Regional General Hospital lack basic knowledge and skills regarding preventing foot complications. Yet, family involvement in self-care significantly impacts adherence and the success of diabetes management. The Jambi region, particularly Jambi City, has the potential for adequate social support and healthcare infrastructure, but these have not been fully utilized for preventive and promotive education.

Based on these conditions, this community service activity was designed to address the lack of understanding and practice of diabetic foot exercises among patients' families. The research question was how to improve the knowledge and skills of patients' families in performing diabetic foot exercises independently as an effort to prevent diabetic foot complications. The goal of this activity was to increase patients' families' understanding of diabetic foot exercises and encourage their regular implementation at home.

B. METHODS

This community outreach activity used a group-based participatory educational approach through lectures, interactive discussions, demonstrations, and hands-on practice. This method was chosen because it was considered effective in improving the understanding and skills of patients' families through active involvement in the learning process. The target group was 10 families of patients with diabetes mellitus undergoing treatment at Raden Mattaher Regional General Hospital in Jambi Province. The target group was selected purposively, considering their involvement in the daily care of the DM patients.

The activity, held for 45 minutes in one session in May 2025, began with an opening by the moderator explaining the objectives and flow of the activity. Next, the instructor delivered educational materials using PowerPoint presentations and leaflets compiled based on current references. The facilitator demonstrated the foot exercise movements and participants participated directly. During the practical session, participants were guided through all stages of the diabetic foot exercise independently. This was followed by a question-and-answer session and a final evaluation by the observer.

The tools and media used included a laptop, projector (infocus), sound system, educational leaflets, and video tutorials on diabetic foot exercises. Practical materials, such as sheets of newspaper, were prepared as a motor training medium, following the simple equipment-based foot exercise approach. The leaflets included information on the definition, purpose, benefits, and stages of diabetic foot exercises and were distributed to all participants as follow-up reading material at home.

C. RESULTS

A 45-minute diabetic foot exercise workshop was held at Raden Mattaher Regional General Hospital in Jambi, attended by 10 families of diabetes mellitus patients. The delivery method used lectures, movement demonstrations, interactive discussions, and hands-on

practice. Achievement was evaluated through a question-and-answer session and an opportunity for participants to verbally relay the information.

Throughout the counseling session, all participants demonstrated active participation. During the demonstration, 90% were able to follow the movements correctly and effectively. During the question-and-answer session, 80% were able to answer questions about the benefits and objectives of diabetic foot exercises. Meanwhile, during the review session, 8 out of 10 participants were able to articulate the meaning, benefits, and most of the movement steps fluently.

Table 1. Recapitulation of Participant Participation and Understanding

Evaluation Aspects	**Number of participants**	**Percentage**
Able to follow all movements	9 people	90%
Answer the questions correctly	8 people	80%
Restate the extension material	8 people	80%
Asking questions actively	7 people	70%

Figure 1.Participants take part in a live demonstration of diabetic foot exercises (source: activity documentation)

Based on the implementation results and evaluation during the Q&A session, the outreach program was deemed successful in achieving its objectives. Most participants understood basic information about diabetic foot exercises, such as their benefits in preventing foot ulcers, improving blood circulation, and increasing foot mobility in people with diabetes. Participants' ability to reiterate the material demonstrated that the lecture and demonstration methods were quite effective in transferring knowledge.

Active participation in asking and answering questions is also an indicator that the counseling program stimulates cognitive and affective participant engagement. This aligns with the findings of Dafriani and Dewi (2019) that interactive educational models such as demonstrations and discussions can improve information retention and foster positive attitudes toward self-care for people with diabetes.

This activity also demonstrated the potential for empowering patients' families as strategic partners in preventing diabetes complications. Therefore, this type of outreach can be replicated in other healthcare facilities with the support of simple yet effective materials and media.

D. CONCLUSION

The results of the activity showed that participatory diabetes foot exercise counseling improved participants' knowledge and skills. The increase in knowledge and skills indicated that the interactive delivery method was well-received by participants. This aligns with the findings of Dafriani and Dewi (2019), who found that demonstration-based counseling positively impacted patients' understanding of independent foot care. These exercises improve peripheral circulation and prevent nerve damage (neuropathy), acting as a powerful motivator for long-term adherence. As noted by the American Diabetes Association (ADA, 2023), patient education is the cornerstone of preventing lower extremity complications, which remain a leading cause of hospitalization in the diabetic population.

From a psychomotor perspective, almost all participants successfully practiced the movements independently, demonstrating the effectiveness of hands-on practice in developing skills. These results are supported by research by Tarigan et al. (2022), which found that regular foot exercises can improve muscle strength and foot sensitivity in people with type 2 diabetes.

From a socio-cultural perspective, participants' attitudes toward the importance of foot care have changed. Several participants stated they would continue foot exercises at home with family members with diabetes. This reflects the growing awareness of prevention and a healthy lifestyle at the family level, which are crucial foundations for managing chronic disease in the community.

Overall, the target achievement of this activity met the established success indicators, namely, at least 75% of participants experiencing improved understanding and skills in performing diabetic foot exercises. This activity was deemed successful in creating an

applicable promotive intervention with the potential for replication in other healthcare settings.

Counseling on diabetic foot exercises conducted for families of diabetes mellitus patients at Raden Mattaher Regional General Hospital in Jambi has proven effective in improving participants' understanding and skills related to preventing diabetic foot complications. Through lectures, demonstrations, and interactive discussions, participants were able to understand the meaning, benefits, and stages of foot exercises well. Evaluation through questions and answers and participants' ability to reiterate the material indicated that the community service objectives were optimally achieved.

This activity also encourages active family participation in supporting self-care for DM sufferers at home, as well as strengthening collective awareness of the importance of preventing complications through simple, non-pharmacological interventions. As a follow-up, similar outreach programs are recommended to be conducted regularly and reach a wider community, including the elderly and other high-risk groups. Furthermore, involving health cadres or health promotion officers at community health centers can be an effective replication strategy to expand the program's impact.

For subsequent service, it is recommended that long-term monitoring of participants' behavior in implementing foot exercises regularly at home be carried out, and that it be supplemented with more systematic evaluation instruments to objectively assess changes in health outcomes.

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We hope that this activity will provide lasting benefits for the counseling participants and become a real contribution to efforts to improve the quality of life of Diabetes Mellitus sufferers through simple and applicable self-care.

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