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Impact of the Community Health Worker Intervention Program on the Self-efficacy and Family Support for Foot Care in Patients with Diabetes Mellitus

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ABSTRACT

Aims Diabetes foot is a complication of diabetes mellitus that can be avoided by practicing proper foot care. This behavior is influenced by factors such as self-efficacy and family support. The presence of communication and language barriers between healthcare providers and patients with diabetes mellitus leads to difficulties in understanding diabetes education, which ultimately hinders self-care. This study aimed to evaluate the impact of a community health worker intervention program on the self-efficacy and family support of patients with diabetes regarding foot care.

Materials & Methods This quasi-experimental study with pre-test and post-test design with a control group was conducted on 72 diabetes mellitus patients who were in the working area of the Lempake Primary Health Care Center, Samarinda City. The respondents were selected by purposive sampling method and divided into two groups, including the intervention group (n=36) and the control group (n=36). Data were collected using Foot Care Confident Scale and Family Support Questionnaire and were analyzed by Statistical tests.

Findings There was a significant difference in the mean score of family support in the intervention group compared to the control group (p=0.01). Meanwhile, for self-efficacy, there was no significant difference between the two groups (p=0.48). However, significant differences were observed in self-efficacy and family support before and after the intervention (p<0.05). Whereas in the control group, there was no significant difference in self-efficacy and family support (p>0.05).

Conclusion Community health worker intervention programs can increase family support and self-efficacy of diabetes mellitus patients in foot care.

Keywords Diabetes Mellitus; Family Support; Self-Efficacy; Community health workers; Diabetic Foot; Prevention

CITATION LINKS

[1] IDF Diabetes ... [2] Hasil ... [3] Prevalence ... [4] The impact ... [5] Care-giving ... [6] Faktor Risiko ... [7] Mengurangi ... [8] Adherence to ... [9] The impact ... [10] Relationship ... [11] The relationship ... [12] Foot Self ... [13] Health behaviour ... [14] Pencegahan ... [15] Barriers to ... [16] Barriers and ... [17] Who is a community ... [18] Roles, responsibilities ... [19] Role of community ... [20] International ... [21] Community ... [22] Developing ... [23] Development of efficacy ... [24] Pengaruh Program ... [25] Efektivitas Modul ...

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Introduction

Diabetes mellitus is currently a major global concern due to its increasing prevalence and the risk of causing disability and death. Indonesia has the sixth-highest number of diabetics in the world [1]. Meanwhile, East Kalimantan Province has the highest number of diabetes mellitus patients [2]. This disease can cause complications in a variety of organs, one of which is diabetic foot. The prevalence of diabetic foot wounds in Indonesia is 12%, which is higher than in China and the global prevalence [3]. This disease not only contributes to diabetes mellitus patients' mortality and morbidity, but also to the burden on family caregivers [4, 5].

Foot care is not routinely considered one of the factors that cause diabetic foot in diabetes mellitus patients [6, 7]. Diabetes patients are often unaware that they are predisposed to diabetic foot complications. This was confirmed by Neta *et al.* [8], who discovered that only 38.7% of respondents checked their feet 5-7 days per week. Psychosocial factors such as self-efficacy and family support influence this behavior. According to Huda's research [9], there is a link between self-efficacy and foot care behavior. According to this relationship, the higher the patient's self-efficacy, the lower the risk of destructive foot care behavior. Other studies, however, have found no significant relationship between self-efficacy and diabetes mellitus patients' foot care behavior [10, 11]. As a result, more research is required.

Salam *et al.* [12] discovered that diabetic patients' foot care efficacy is still very low, particularly in terms of checking and protecting their feet. Bandura (1994) asserts that self-efficacy can be affected by a variety of factors, including environmental influences such as expectations and social support. In this instance, social support is familial support, which is a source of knowledge for enhancing self-efficacy [13]. The incentive supplied by empathetic family members might help patients with diabetes mellitus develop self-assurance. Al-Kahfi *et al.* [14] discovered a relationship between self-efficacy and family support and the prevention of diabetic foot.

There are still difficulties in the prevention of diabetic foot in underdeveloped countries, including the tendency of patients and healthcare providers to focus primarily on glucose management [15] and a mismatch in communication and language between healthcare providers and patients. This led to patients having trouble comprehending diabetes instruction, which hindered their ability to engage in self-care [16]. An alternate approach is needed to overcome difficulties in health care for patients with diabetes mellitus.

The community health worker is one of the partners and liaisons between primary health care providers and the community. Community health workers are community people who are entrusted to serve as frontline public health workers able to positively impact the surrounding community. A systematic review by Olaniran *et al.* [17] defines community health workers as laypeople with a profound awareness of the community's culture and language. The primary purpose of community health workers is to provide health services that are consistent with the culture of the community. Additionally, systematic review Hill *et al.* [18] added the role of community health workers as instructors, supporting the delivery of care, coordination of care, and social support. Egbujie *et al.* [19] found that community health workers have a crucial role as educators, support givers, and advocates, in addition to being potential agents of change. Local laypeople are involved in illness prevention in developing nations as a result of current healthcare concerns and innovations. In addition, the paucity of resources in health services for providing fundamental interventions and prevention reinforces the need for community health workers [20]. Alaofè *et al.* [21] demonstrated that community health workers can increase knowledge, health habits, and health outcomes regarding the prevention and management of type 2 diabetes mellitus in low- and middle-income countries. However, the role of community health workers in the domain of non-communicable diseases and associated problems in society has not received sufficient attention at present. This study aimed to evaluate the impact of a community health worker intervention program on the self-efficacy and family support of patients with diabetes regarding foot care.

Materials and Methods

This quasi-experimental study with pre-test and post-test design with a control group was conducted on 72 diabetes mellitus patients who were in the working area of the Lempake Primary Health Care Center, Samarinda City, for six months from February to August 2022. The number of samples was obtained through the sample calculation formula with a mean difference of 4.06, a standard deviation of 8.16, a significance level (CI) of 95% (α=0.05), and a power test of 80% (β=0.2). Furthermore, the respondents were selected by purposive sampling method and divided into two groups, including the intervention group (n=36) and the control group (n=36).

Intervention

The intervention program was designed to provide group education on diabetic foot and its prevention, including foot care and blood sugar management. Through talks and demonstrations, diabetic foot prevention modules were disseminated. Each group consisted of patients with diabetes mellitus and their families, headed by three community health workers. A month later, the community health worker conducted a follow-up home visit.

24 community health workers from the operating region of the Lempake Health Center in Samarinda City joined this program. The community health workers had previously received instruction on the prevention of diabetic foot. Diabetes mellitus and diabetic foot, foot care, and training community health workers to become trainers and motivators were included in the offered materials. Local primary health care center personnel participated in the training activity. In addition, a pilot study of the community health worker intervention program was conducted as an early test of the apparatus and intervention.

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Study tools

The instrument used to measure self-efficacy was the Foot Care Confident Scale (FCCS), which has 12 questions. The lowest score is 1, and the highest is 4, so the total score is in the range of 12-48. The reliability of the FCCS questionnaire during development was approved with Cronbach alpha of 0.92 [22]. While the questionnaire that has been translated into Indonesian obtained a Cronbach α value of 0.76 [12].

Furthermore, family support was measured using a questionnaire of 20 questions in the form of Likert questions. Each question item has the lowest score of 1 and the highest score of 4. Cronbach's α value in this study was obtained 0.72.

Statistical analysis

Data on respondent characteristics for age and length of illness were described using the mean and standard deviation and for other data in the form of frequency distribution. The normality of the data was tested using the Shapiro-Wilk test, which indicated the normal distribution of the data. The variables of family support and self-efficacy in each group before and after the intervention were compared using the paired t-test, and if the data were not normally distributed, Wilcoxon and Mann-Whitney U tests were used instead.

Findings

Respondents in this study were 72 diabetes mellitus patients, who were divided into 36 people in each group. The mean age in the intervention group was 52.3±11.4 years, and in the control group was 55.4±8.8 years. Most of the respondents in both groups were unemployed (55.6%) and had basic to advanced education. Table 1 shows the characteristics of respondents in two groups.

Table 1) Characteristics of respondents in two groups (n=34 in each group)

Characteristics	Intervention group	Control group
Age, years (Mean±SD)	52.3±11.4	55.4±8.8
Years of illness (Mean±SD)	4.4±4.0	4.6±4.5
Gender, No. (%)		
Man	11 (30.6)	14 (38.9)
Woman	25 (69.4)	22 (61.1)
Occupation, No. (%)		
Civil servant	2 (5.6)	1 (2.8)
Private employees	7 (19.4)	5 (13.9)
Self-employed	7 (19.4)	10 (27.8)
Not working	20 (55.6)	20 (55.6)
Education, No. (%)		
Basic education	15 (41.7)	19 (52.8)
Further education	17 (47.3)	16 (44.4)
Higher education	4 (11.1)	1 (2.8)

There was a significant difference in the mean score of family support in the intervention group compared to the control group (p=0.01). Meanwhile, for self-efficacy, there was no significant difference between the two groups (p=0.48). However, significant differences were observed in self-efficacy and family support before and after the intervention by community health workers (p<0.05). Whereas in the control group, there was no significant difference in self-efficacy and family support (p>0.05; Table 2).

Table 2) Analysis of differences in average values of self-efficacy and family support in the intervention and control groups

Variable	Intervention group		Control group		Intergroup comparison
	Pre-test	Post -test	Pre-test	Post -test	
Self-efficacy					
Mean±SD	35.39±4.3	37.08±3.9	32.69±9.9	36.19±6.2	z=-0.703; p=0.48[c]
Intragroup comparison	z=-2.232; p=0.02 [a]		z=-1.092; p=0.27 [a]		---
Family support					
Mean±SD	57.97±12.3	63.92±10.9	60.47±13.8	62.92±13.1	z=-2.458; p=0.01[c]
Intragroup comparison	t=-4.327; p=0.0001 [b]		z=-1.165; p=0.24 [a]		---

[a] Wilcoxon test; [b] Paired t-test; [c] Mann-Whitney U test

Discussion

This study demonstrated that community health worker intervention programs had an effect on family support for individuals with diabetes mellitus who require foot care (p=0.01). Family support is important in assisting diabetes mellitus patients to take care of themselves to prevent complications, such as diabetic foot [23]. The goal of the community health workers' intervention program is also to involve families in group education sessions. The purpose of this document is to provide information about diabetic foot and its prevention so that families can assist and support patients with foot care at home. The research of Sari *et al.* [24] demonstrates that family education can increase foot care behavior.

Although the community health worker's intervention had no significant effect on the self-efficacy of diabetes mellitus patients compared to the control group (p=0.48), there was a difference in self-efficacy before and after receiving the intervention program from community health workers (p=0.02). After receiving the program from community health workers, the intervention group had more self-efficacy than the control group. Patients with diabetes mellitus can develop self-efficacy as a result of external stimulation (in this example, from caring community health workers and family members) [14].

Classes facilitated by community health workers are meant to educate patients and their families about

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diabetic foot disease and its prevention. Foot care information is presented through lectures, debates, and demonstrations. Patients with diabetes and their families feel more comfortable speaking with community health workers since they are familiar with their environment. In addition, community health workers explained using terminology that was easily understood by the populace. This validates the findings of a comprehensive review by Olaniran *et al.* [17], which indicates that community health workers are laypeople with an in-depth awareness of the community's culture and language.

The instructional media utilized in this class is a module. The module is visually appealing and contains images so that the respondent and his or her family may easily comprehend the information supplied. In addition, the module is simple to store and read multiple times, and it can aid in recalling the message's contents [25]. In addition to providing educational programs, community health workers perform home visits. This intervention is intended as a follow-up to diabetes education sessions to monitor and evaluate the foot care behaviors of diabetes patients at home.

One of the limitations of the study was the implementation of the study during the Covid-19 pandemic so that home visits could only be carried out once. In addition, group educational activities were carried out repeatedly by community health workers in each managed group. This was due to social restrictions that did not allow the gathering of patients and families in the planned number. Therefore, in future research, it is recommended to carry out group educational activities and home visits with periodic and sustainable frequencies.

The results demonstrated that the community health worker intervention program increased the family support and self-efficacy of patients with diabetes mellitus in foot care. Self-efficacy and family support have been identified as factors that influence attempts to prevent diabetic foot, with self-efficacy being the most important component [14]. Therefore, the plan for this community health worker intervention action can be devised by implementing an education program on self-efficacy. Self-efficacy education programs are essential for improving diabetic patients' foot care practices. The program design in the form of educational classes and home visits conducted by community health workers can be a factor in this improvement. Therefore, there is a need for support and guidance for community health workers regarding the prevention of non-communicable disease complications, which can be used as part of the PTM Posbindu program activities at the Primary Health Care Center.

Conclusion

Community health worker intervention programs can increase family support and self-efficacy of diabetes mellitus patients in foot care.

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Ethical Permission: This study received ethical approval from the Health Research Ethics Committee of Health Polytechnic East Kalimantan with number: LB.01.01/7.1/002420/2021 on March 15, 2021.

Conflict of Interests: The authors declare no conflict of interests.

Authors' Contribution: Tini T (First Author), Introduction Writer/Methodologist/Main Researcher/Discussion Writer (50%); Andraini R (Second Author), Methodologist/Assistant Researcher/Statistical Analyst (20%); Rahman G (Third Author), Assistant Researcher/Statistical Analyst/Discussion Writer (20%); Parellangi A (Fourth Author), Assistant Researcher/Discussion Writer (10%)

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