The Relationship Between the Duration of Diabetes Mellitus and Foot Self-Care

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ARTICLE INFO	ABSTRACT/ ABSTRAK

ABSTRACT. *Diabetes mellitus is a chronic metabolic disease that poses a high risk of foot complications; therefore, foot self-care is an essential component of disease management. The duration of diabetes mellitus is presumed to be associated with foot self-care behavior; however, empirical evidence remains inconsistent. This study aimed to analyze the relationship between the duration of diabetes mellitus and foot self-care among patients with diabetes mellitus. A correlational analytic study with a cross-sectional approach was conducted, involving 136 outpatient diabetes mellitus patients selected using an accidental sampling technique. The duration of diabetes mellitus was obtained from medical records and confirmed through self-reported data, then categorized into less than six months and more than six months, while foot self-care was measured using a questionnaire that had been tested for validity and reliability. Data were analyzed using univariate and bivariate analyses with the Chi-square test at a significance level of 0.05. The results showed that most respondents had been living with diabetes mellitus for more than six months and demonstrated good foot self-care behavior. A significant relationship was found between the duration of diabetes mellitus and foot self-care (p = 0.049). These findings indicate that disease duration is associated with foot self-care behavior; therefore, the duration of diabetes mellitus should be considered in planning foot care education for patients with diabetes mellitus.*

ABSTRAK. Diabetes melitus merupakan penyakit metabolik kronis yang berisiko menimbulkan komplikasi kaki, sehingga perawatan kaki mandiri menjadi bagian penting dalam pengelolaan penyakit. Lama menderita diabetes melitus diduga berhubungan dengan perilaku perawatan kaki mandiri, namun bukti empiris masih bervariasi. Penelitian ini bertujuan untuk menganalisis hubungan antara lama menderita diabetes melitus dengan perawatan kaki mandiri pada pasien diabetes melitus. Penelitian menggunakan desain analitik korelasional dengan pendekatan cross sectional, melibatkan 136 pasien diabetes melitus rawat jalan yang dipilih menggunakan teknik accidental sampling. Lama menderita diabetes melitus diperoleh dari data rekam medis yang dikonfirmasi melalui laporan diri responden dan dikategorikan menjadi kurang dari enam bulan dan lebih dari enam bulan, sedangkan perawatan kaki mandiri diukur menggunakan kuesioner yang telah diuji validitas dan reliabilitasnya. Analisis data dilakukan secara univariat dan bivariat menggunakan uji Chi-Square dengan tingkat signifikansi 0,05. Hasil penelitian menunjukkan bahwa sebagian besar responden telah menderita diabetes melitus lebih dari enam bulan dan memiliki perilaku perawatan kaki mandiri yang baik, serta terdapat hubungan yang signifikan antara lama menderita diabetes melitus dengan perawatan kaki mandiri (p = 0,049). Temuan ini menunjukkan bahwa durasi penyakit berhubungan dengan perilaku perawatan kaki mandiri, sehingga lama menderita diabetes melitus perlu dipertimbangkan dalam perencanaan edukasi perawatan kaki pada pasien diabetes melitus.

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INTRODUCTION

Diabetes mellitus is a chronic metabolic disease characterized by hyperglycemia resulting from impaired insulin secretion or action. This condition has become a global health problem due to its continuously increasing prevalence and the high risk of chronic complications, one of which is diabetic foot complications. These complications may progress to diabetic foot ulcers, severe infections, and even lower extremity amputation if not managed optimally. Diabetic neuropathy and impaired peripheral perfusion lead to reduced pain sensation and delayed wound healing, causing minor foot injuries to often go unnoticed by patients (Hermagita, 2023).

Diabetic foot ulcers are largely associated with inadequate foot care behavior. Foot self-care is an essential component of diabetes management, encompassing daily foot inspection, maintenance of foot hygiene, nail care, and the use of appropriate footwear. However, numerous studies have shown that adherence to foot self-care among patients with diabetes mellitus remains low and is influenced by factors such as knowledge, attitudes, and patients' experiences in managing their disease (Utami Cahyaningtyas et al., 2022; Ramadhani & Situmorang, 2022).

Data from the South Kalimantan Provincial Health Office in 2023 indicated that the number of individuals with diabetes mellitus reached 26,667. In line with this increasing prevalence, RSUD dr. H. Moch. Ansari Saleh Banjarmasin recorded a significant rise in diabetic foot ulcer cases during the 2022 to 2024 period. The number of cases increased from 452 patients in 2022 to 781 patients in 2023 and rose sharply to 3,521 patients in 2024. This surge is presumed to be associated with an increased number of referral visits, improvements in case recording and reporting systems, enhanced early detection, and low patient adherence to consistent foot self-care practices. These conditions indicate that diabetic foot ulcers remain a significant clinical problem requiring special attention in healthcare services.

Although the incidence of amputation at RSUD dr. H. Moch. Ansari Saleh Banjarmasin showed relative fluctuations with 9 cases in 2022, 11 cases in 2023, and 7 cases in 2024, the high number of patients with diabetic foot ulcers continues to reflect a substantial risk of severe complications that may adversely affect patients' quality of life. This situation underscores the importance of preventive efforts through the early implementation of foot self-care behavior.

One factor presumed to influence foot self-care behavior is the duration of diabetes mellitus. Patients with a longer duration of the disease tend to have greater experience, knowledge, and exposure to health education, which may contribute to better foot self-care behavior. However, previous studies have reported inconsistent findings, indicating that not all patients with a longer duration of diabetes demonstrate optimal foot self-care behavior (Efriliana et al., 2021). Moreover, studies specifically examining the relationship between the duration of diabetes mellitus and foot self-care in the Banjarmasin region remain limited, despite potential differences in social, cultural, and health behavior characteristics compared to other regions in Indonesia.

Based on these conditions, this study is important to address the research gap regarding the relationship between the duration of diabetes mellitus and foot self-care among patients with diabetes mellitus at RSUD dr. H. Moch. Ansari Saleh Banjarmasin. This study is expected to provide contextual empirical evidence and enrich the scientific literature on

behavioral factors in the prevention of diabetic foot complications, particularly in referral healthcare facilities in South Kalimantan.

RESEARCH METHOD

This study employed a correlational analytic design with a cross-sectional approach to analyze the relationship between the duration of diabetes mellitus and foot self-care. The study was conducted at the Internal Medicine Outpatient Clinic of RSUD dr. H. Moch. Ansari Saleh from March to June 2025, with a population consisting of all outpatient diabetes mellitus patients totaling 205 individuals. The study sample comprised 136 respondents selected using non-probability sampling with an accidental sampling method, namely patients who met the inclusion criteria and were present at the time of data collection. The duration of diabetes mellitus was obtained from medical records and confirmed through respondents' self-reports, calculated from the initial diagnosis by healthcare professionals until the time of the study, and subsequently categorized into less than six months and more than six months according to the study data distribution. Foot self-care was measured using a questionnaire based on the concept of foot care in patients with diabetes mellitus, which included foot inspection, hygiene practices, nail care, and footwear use. The measurement results were classified as good and poor. The research instrument underwent validity testing, with calculated r values exceeding the r table values, and reliability testing using Cronbach's Alpha with a value greater than 0.70. Data were analyzed using univariate and bivariate analyses with the Chi-square test at a significance level of alpha equals 0.05. This study obtained ethical approval, and all respondents provided informed consent prior to data collection, with confidentiality of respondent identities ensured.

RESULTS

Respondent Characteristics

Respondent characteristics included age, sex, education level, occupation, and marital status, as presented in Tables 1 through 5.

Table 1. Frequency Distribution of Respondents by Age

No	Age (years)	Frequency	Percentage (%)
1	35-44	62	45.59
2	45-54	43	31.62
3	55-64	28	20.59
4	65-74	3	2.21
	Total	136	100

Table 1 shows that respondents aged 35 to 44 years accounted for 45.59 percent of the total sample. Respondents aged 45 to 54 years comprised 31.62 percent, followed by those aged 55 to 64 years at 20.59 percent. The smallest proportion of respondents was found in the age group of 65 to 74 years, representing 2.21 percent of the sample.

Table 2. Frequency Distribution of Respondents by Sex

No	Sex	Frequency	Percentage (%)
1	Female	83	61.03
2	Male	53	38.97
	Total	136	100

As presented in Table 2, female respondents accounted for 61.03 percent of the sample, while male respondents represented 38.97 percent.

Table 3. Frequency Distribution of Respondents by Education Level

No	Education Level	Frequency	Percentage (%)
1	Elementary school	20	14.71
2	Junior high school	27	19.85
3	Senior high school	43	31.62
4	Diploma (D3)	17	12.50
5	Bachelor degree (S1)	29	21.32
	Total	136	100

Table 3 indicates that respondents with senior high school education constituted 31.62 percent of the sample. Respondents with a bachelor's degree accounted for 21.32 percent, followed by junior high school education at 19.85 percent and elementary school education at 14.71 percent. The smallest proportion was observed among respondents with a diploma degree, comprising 12.50 percent.

Table 4. Frequency Distribution of Respondents by Occupation

No	Occupation	Frequency	Percentage (%)
1	Housewife	64	47.06
2	Farmer	11	8.09
3	Laborer	10	7.35
4	Self-employed	31	22.79
5	Civil servant	20	14.71
	Total	136	100

According to Table 4, housewives comprised 47.06 percent of respondents. Self-employed respondents accounted for 22.79 percent, civil servants 14.71 percent, farmers 8.09 percent, and laborers 7.35 percent.

Table 5. Frequency Distribution of Respondents by Marital Status

No	Marital Status	Frequency	Percentage (%)
1	Married	127	93.38
2	Unmarried	9	6.62
	Total	136	100

Table 5 shows that married respondents accounted for 93.38 percent of the total sample, while unmarried respondents comprised 6.62 percent.

Univariate Analysis

Univariate analysis included the duration of diabetes mellitus and foot self-care, as presented in Tables 6 and 7.

Table 6. Frequency Distribution of Duration of Diabetes Mellitus

No	Duration of Diabetes Mellitus	Frequency	Percentage (%)
1	More than 6 months	109	80.15
2	Less than 6 months	27	19.85
	Total	136	100

As shown in Table 6, respondents with a duration of diabetes mellitus of more than six months accounted for 80.15 percent of the sample, whereas those with a duration of less than six months comprised 19.85 percent.

Table 7. Frequency Distribution of Foot Self-Care

No	Foot Self-Care	Frequency	Percentage (%)
1	Good	107	78.68
2	Poor	29	21.32
	Total	136	100

Table 7 shows that 78.68 percent of respondents were categorized as having good foot self-care, while 21.32 percent were categorized as having poor foot self-care.

Analisis Bivariat

Hubungan antara lama menderita diabetes melitus dan perawatan kaki mandiri disajikan pada Tabel 8.

Table 8. Cross-Tabulation of Duration of Diabetes Mellitus and Foot Self-Care

Duration of Diabetes Mellitus	Foot Self-Care				Total	
	Good		Poor			
	F	%	F	%	Σ	%
More than 6 months	82	60.3	27	19.9	109	80.1
Less than 6 months	25	18.4	2	1.5	27	19.9
Total	107	78.7	29	21.3	136	100

Pearson Chi-square value: 0.049
Alpha less than 0.05

Table 8 presents the distribution of foot self-care according to the duration of diabetes mellitus. Among respondents with a duration of diabetes mellitus of more than six months, 60.3 percent demonstrated good foot self-care and 19.9 percent demonstrated poor foot self-care. Among respondents with a duration of less than six months, 18.4 percent demonstrated good foot self-care and 1.5 percent demonstrated poor foot self-care.

The Pearson Chi-square test yielded a p value of 0.049, which is lower than the significance level of 0.05. This result indicates a statistically significant association between the duration of diabetes mellitus and foot self-care.

DISCUSSION

The results of this study indicate that respondent characteristics were predominantly within the productive age group, particularly 35 to 44 years. Individuals within this age range are generally physically and socially active and possess adequate cognitive capacity to receive and understand health-related information. However, this productive age group is also

faced with various occupational and daily activity demands that may influence the consistency of self-care behaviors, including foot self-care. The increasing incidence of diabetes mellitus after the age of 30 is associated with declining insulin sensitivity and progressive alterations in glucose metabolism. After the age of 30, blood glucose levels tend to increase annually, both in fasting and postprandial conditions, resulting in a significantly higher risk of diabetes mellitus, especially among individuals over 40 years of age (Rohmatulloh Rizky Vanda et al., 2024). Furthermore, the transitional aging phase between 35 and 45 years is characterized by reduced cellular regeneration and diminished physiological responses to insulin, contributing to insulin resistance and an increased risk of chronic complications, including lower extremity disorders (Nora et al., 2025).

In terms of sex distribution, the majority of respondents were female. Women are known to have a higher risk of developing diabetes mellitus compared to men, which is associated with hormonal factors, a tendency toward higher body mass index, and metabolic changes during reproductive and postmenopausal phases. Hormonal fluctuations during menstruation, pregnancy, and the postmenopausal period may affect fat distribution and insulin sensitivity, thereby increasing the risk of hyperglycemia and insulin resistance (Yulianti et al., 2023; Susilawati et al., 2021; Saherna & Rezkiawan, 2020). In addition to biological factors, lifestyle patterns such as low physical activity levels and frequent consumption of foods high in sugar and fat also contribute to the increased risk of diabetes mellitus among women (Harefa Martalinda Evi & Lingga Togianur Rugun, 2023).

Most respondents had a secondary education level, particularly senior high school. From a theoretical perspective, this level of education facilitates the reception and comprehension of health information. Education plays a crucial role in shaping individual knowledge and skills in managing chronic diseases. Individuals with higher educational attainment are generally better able to access, understand, and apply health information, thereby increasing the likelihood of adopting optimal self-care behaviors (Wahyudi Tri Joko et al., 2024). Education is also closely related to health literacy, whereby easier access to information accelerates learning processes and enhances awareness of disease management, including foot self-care (Ningrum Puspita Tita et al., 2021).

Regarding occupation, most respondents were housewives. This type of occupation is commonly associated with relatively low physical activity levels and routines primarily conducted within the household environment. Low physical activity may lead to an imbalance between energy intake and expenditure, thereby increasing the risk of obesity, which is a known predisposing factor for diabetes mellitus (Ma'ruf Alan Muhamad & Palupi Mukti Lestari Dwi, 2021; Naba Salome Oktaviana et al., 2021). Nevertheless, the flexibility of time available to housewives may provide opportunities for more regular self-care practices, including foot self-care, when supported by adequate knowledge and motivation.

The majority of respondents in this study were married. Marital status plays an important role in diabetes mellitus management through family support, particularly support from spouses. Emotional, informational, and instrumental support from partners has been shown to improve adherence to self-care practices and assist patients in coping with the psychosocial impacts of chronic illness (Ulfa Siti & Muflihatin Khoiroh Siti, 2022). Married individuals tend to report better quality of life than unmarried individuals due to companionship and sustained motivation in managing long-term treatment (Darmadeta Arjuna Tata et al., 2025; Dewi Rosliana et al., 2023).

Univariate analysis revealed that most respondents had been living with diabetes mellitus for more than six months. A longer disease duration provides patients with greater opportunities to adapt to chronic illness and to acquire broader experience and knowledge regarding diabetes management. Patients with longer diabetes duration tend to have better psychological readiness and greater ability to adjust their lifestyle behaviors to their health condition (Fajriansi & Yusnaeni, 2025; Ternulf Nyhlin et al., 1987). Long-term treatment experiences also contribute to improved self-care skills through repeated learning processes, both from personal experience and from health professional education (Silalahi Erida Lenny et al., 2021).

In addition, patients with long-standing chronic diseases generally exhibit higher self-efficacy, enabling them to feel more confident and capable of managing their condition, including performing consistent foot self-care behaviors (Roifah Ifa, 2021). This finding is consistent with the study results showing that most respondents demonstrated good foot self-care practices. Foot self-care is a crucial preventive measure to reduce the risk of injury, infection, and diabetic foot ulcers that may ultimately lead to lower limb amputation if inadequately managed.

Foot self-care behavior among respondents is influenced by multiple factors, including the duration of diabetes mellitus, level of knowledge, and intensity of health education received. Saprianto et al. (2022) reported that respondents with a longer duration of diabetes mellitus tend to exhibit better foot self-care behaviors. Foot self-care includes maintaining foot hygiene, proper nail trimming, wearing appropriate footwear, and performing routine foot inspections either independently or with family assistance (Ningrum Puspita Tita et al., 2021). Experience and knowledge acquired throughout the course of treatment play a vital role in shaping sustainable foot self-care behaviors (Susanti Novia et al., 2023).

The results of bivariate analysis using the Chi-square test demonstrated a statistically significant association between the duration of diabetes mellitus and foot self-care (p = 0.049; p < 0.05). This finding indicates that the duration of diabetes mellitus is related to foot self-care behavior, whereby respondents who had lived with diabetes mellitus for more than six months were more likely to demonstrate better foot self-care compared to those with a shorter disease duration. This result is consistent with previous studies by Ginting Juniarti Elsa et al. (2024) and supported by other findings indicating that patients with longer diabetes duration have higher awareness of complication risks and greater adherence to preventive practices, including foot self-care (Susilawati et al., 2024; Efriliana et al., 2021). Overall, this association may be understood as the cumulative effect of experience, increased knowledge, self-efficacy, as well as social support and health education received by patients throughout the course of diabetes mellitus management.

CONCLUSION

This study demonstrates an association between the duration of diabetes mellitus and foot self-care among patients with diabetes mellitus at RSUD dr. H. Moch. Ansari Saleh Banjarmasin. Patients with a longer duration of diabetes mellitus tend to exhibit better foot self-care behaviors compared to those with a shorter disease duration. These findings are consistent with the objective of the study, which was to identify the relationship between the

duration of diabetes mellitus and foot self-care behavior, without inferring a causal relationship.

Based on these findings, the results of this study may serve as a reference for healthcare professionals, particularly nurses, to consider the duration of diabetes mellitus as one of the factors in planning foot self-care education. Foot care education may be tailored according to patients' experience levels, for example by emphasizing the reinforcement of foot self-care practices among patients with a shorter duration of disease. Future studies are recommended to include additional variables that may be associated with foot self-care and to employ research designs that allow for more in-depth analysis of these relationships.

REFERENCES

Darmadeta Arjuna Tata, Supadmi Woro, & Mutmainah Isti. (2025). Kualitas hidup pasien diabetes melitus di Rumah Sakit PKU Muhammadiyah Gamping. *Pharmasipha, 9*(1). https://doi.org/10.21111/pharmasipha.v9i1

Dewi Rosliana, Fatimah Respani, Waluya Ady, Budhiana Johan, & Yulianti Maria. (2023). Hubungan mekanisme koping dengan kecemasan pasien diabetes melitus tipe 2 di wilayah kerja Puskesmas Karang Tengah Kota Sukabumi. *Media Informasi, 19*(1), 2023–2089. https://ejurnal2.poltekkestasikmalaya.ac.id/index.php/bmi

Efriliana, Diani Noor, & Setiawan Herry. (2021). Karakteristik pasien diabetes melitus dengan pengetahuan tentang perawatan kaki diabetes melitus. *Dinamika Kesehatan, 9*(1). https://ojs.dinamikakesehatan.unism.ac.id/index.php/dksm/article/view/314

Fajriansi, A., & Yusnaeni, Y. (2025). Hubungan durasi menderita diabetes mellitus dengan self-efficacy pada penderita diabetes mellitus tipe II di Puskesmas Tamalanrea Jaya Kota Makassar. *Jurnal Kesehatan Jompa, 4*(1), 550–556. https://doi.org/10.57218/jkj.vol4.iss1.1819

Ginting, E. J., Prabawati, D., & Novita, R. V. (2024). Hubungan tingkat pengetahuan dan lama menderita DM dengan perilaku perawatan kaki di Puskesmas Aren Jaya Bekasi Timur. *Jurnal Keperawatan Cikini, 5*(2), 180–191. https://doi.org/10.55644/jkc.v6i02.170

Harefa Martalinda Evi, & Lingga Togianur Rugun. (2023). Analisis faktor risiko kejadian diabetes melitus tipe II pada penderita DM di Kelurahan Ilir, wilayah kerja UPTD Puskesmas Kecamatan Gunungsitoli. 7. http://journal.universitaspahlawan.ac.id/index.php/ners

Ma'ruf Alan Muhamad, & Palupi Mukti Lestari Dwi. (2021). Hubungan antara tingkat stres dengan kualitas hidup penderita diabetes melitus di wilayah kerja Rumah Sakit Umum Surakarta. https://doi.org/10.47701/sikenas.v0i0.1279

Ningrum Puspa Tita, Alfatih Hudzaifah, & Yuliyanti Tri Nindi. (2021). Hubungan tingkat pengetahuan dengan perilaku perawatan kaki pada pasien diabetes mellitus tipe II. *Jurnal Keperawatan BSI, 9*(2). http://ejurnal.ars.ac.id/index.php/keperawatan/index

Nora, P., Gultom, N., Harahap, F., Edi, S., & Sipahutar, H. (2025). Hubungan antara jenis kelamin dan usia pada penyakit diabetes melitus di Puskesmas Kota Medan Tahun 2024–2025. *Jurnal Bioshell, 14*(1), 142–150. https://doi.org/10.56013/bio.v14i1.3960

Provinsi Kalimantan Selatan. (2023). *Satu Data Banua*. https://data.kalselprov.go.id/dataset/data/1321

Ramadhani, Y., & Situmorang, H. (2022). Pengetahuan perawatan kaki dengan kejadian ulkus diabetikum pada penderita DM tipe II di Puskesmas Darusalam, Medan. *Jurnal Mutiara Ners, 5*(2), 127–132. https://doi.org/10.51544/jmn.v5i2.2226

Roifah Ifa, S. Kep., Ns., M.K. (2021). Analisis hubungan lama menderita diabetes mellitus dengan kualitas hidup penderita diabetes mellitus. *Jurnal Ilmu Kesehatan, 4*(2). https://doi.org/10.32831/jik.v4i2.84

RR. Amanda Ivanindya Hermagita. (2023). Hubungan lama menderita diabetes mellitus dan. https://repository.unissula.ac.id/33609/2/30902000194_fullpdf.pdf

Saprianto, Sujati Ketut Ni, Supangat, & Akbar Agung M. (2022). Efektivitas edukasi perawatan kaki melalui edu home care terhadap kemampuan perawatan kaki klien diabetes melitus. *Jurnal Keperawatan Merdeka (JKM)*, 2. https://doi.org/10.36086/jkm.v2i2.1378

Silalahi Erida Lenny, Prabawati Dewi, & Hastono Priyo Sutanto. (2021). Efektivitas edukasi self-care terhadap perilaku manajemen diri pada pasien diabetes melitus di wilayah Puskesmas Sukapura Jakarta. 4(1). https://doi.org/10.31934/mppki.v2i3

Susanti, N., Nursalam, N., & Nadatien, I. (2023). Pengaruh education and support group berbasis teori self-care terhadap kepatuhan, kemandirian perawatan kaki, dan kadar glukosa darah pada pasien diabetes melitus tipe 2. *Jurnal Keperawatan Suaka Insan (JKSI), 8*(1), 21–29. https://doi.org/10.51143/jksi.v8i1.413

Susilawati, E., Lestari, Y. P., Nurrika, D., Puspitasari, D., Program, E., Keperawatan, S., Tinggi, S., & Kesehatan Banten, I. (2024). Pengaruh edukasi digital tentang perawatan kaki terhadap niat perilaku pencegahan luka kaki pasien diabetes melitus. *Jurnal Untuk Masyarakat Sehat (JUKMAS), 8*(1). http://ejournal.urindo.ac.id/index.php/jukmas

Susilawati, E., Prananing, R., Hesi, P., Soerawidjaja, R. A., Tinggi, S., Kesehatan Banten, I., & Selatan, T. (2021). Hubungan efikasi diri terhadap kepatuhan perawatan kaki diabetes melitus pada masa pandemi. *Faletehan Health Journal, 8*(3), 152–159. http://www.journal.lppm-stikesfa.ac.id/ojs/index.php/fhj

Ternulf Nyhlin, K., Lithner, F., & Norberg, A. (1987). Experience of being diabetic: "It is up to oneself to manage." *Scandinavian Journal of Caring Sciences, 1*(2), 59–67. https://doi.org/10.1111/j.1471-6712.1987.tb00601.x

Ulfa Siti, & Muflihatin Khoiroh Siti. (2022). Hubungan pengetahuan dengan kualitas hidup penderita diabetes melitus tipe 2 di wilayah kerja Puskesmas Pasundan Kota Samarinda. *Borneo Student Research, 4*(1). https://journals.umkt.ac.id/index.php/bsr/article/view/3431

Utami Cahyaningtyas, & Rini Werdiningsih. (2022). Analisis faktor lama penyembuhan kaki diabetes/ulkus diabetikum pada pasien DM tipe 2. *Jurnal Media Administrasi, 7*(1), 28–39. https://doi.org/10.56444/jma.v7i1.61

Wahyudi Tri Joko, Ramadhani Ritaj Dhia, & Utama Novrian Redy. (2024). Self-care management of type II diabetes mellitus patients at Siti Fatimah Az-Zahra Hospital, South Sumatra Province. *Masker Medika, 12*(1), 209–225. https://doi.org/10.52523/maskermedika.v12i1.627

Yulianti, F., Priasmoro, D. P., & Zakaria, A. (2023). Gambaran pengetahuan tentang perawatan kaki pada pasien diabetes melitus. *Nursing Information Journal, 3*(1), 39–47. https://doi.org/10.54832/nij.v3i1.376