



RELATIONSHIP BETWEEN KNOWLEDGE AND PATIENT ATTITUDE IN PREVENTING COMPLICATIONS OF DIABETES MELLITUS FOOT WOUNDS

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ABSTRACT

Diabetes mellitus is a disease that can cause serious complications, including foot wounds which can lead to diabetes mellitus and amputation. Therefore, the aim of this research is to determine the relationship between knowledge and patient attitudes in preventing complications of diabetes mellitus at the Kartasura Community Health Center, Sukoharjo Regency. The instrument used in this research was a structural questionnaire to measure the patient's level of knowledge and attitudes with validity and reliability values of 0.621-0.633. Respondents in the study involving patients diagnosed with diabetes mellitus and currently undergoing treatment at the Kartasura Health Center, totaling 70 respondents, used a purposive sampling technique. This research shows that there is a relationship between the level of knowledge and attitudes of patients in preventing complications of foot wounds due to diabetes mellitus, with a significant parameter value (p -value) = (0.04) which shows a fairly strong correlation with an r value of 0.342. By using the Spearman Rho test, the results of research conducted by researchers show that there is a relationship between knowledge and patient attitudes in preventing complications of diabetes mellitus foot wounds. In conclusion, the higher the patient's knowledge, the more positive the patient's attitude is in implementing preventive measures against complications of foot wounds due to diabetes mellitus.

Keywords: attitude; diabetes mellitus; diabetic foot wounds; knowledge; prevention of complications

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INTRODUCTION

Degenerative diseases have been a long-standing health issue in various countries in the world, both in developed and developing countries. This problem is generally triggered by changes in lifestyle habits. One of the most common examples of degenerative diseases is diabetes mellitus, a chronic condition that occurs because the pancreas continues to produce insulin without decreasing or not allowing the body to use insulin optimally. Diabetes mellitus is a serious concern because it is one of the four main non-communicable diseases with increasing cases every year, this condition is a serious threat to global health. (Sun et al., 2022).

Diabetes mellitus is grouped into two main categories, namely Type 1 and Type 2 (T2DM), with about 90% of all cases of diabetes mellitus being type II. Initially, type II diabetes was only found in adults, but now it is starting to appear at a young age (World Health Organization, 2016). Type II diabetes mellitus has reached a critical stage due to complications. According to the International Diabetes Federation, diabetes mellitus affects around 425 million people aged 20 to 79 years worldwide, and the number continues to increase. In 2019, the number of sufferers reached 463 million globally, and it is predicted that this number will increase to 578 million in 2030 and reach 700 million in 2045 (IDF, 2021).

In Indonesia, the prevalence of diabetes-related risks is increasing, which is around 55.4%. According to (Ningrum et al., 2021) the prevalence of diabetes mellitus among Indonesian patients has reached 25%. This condition is experienced by around 15-25% of DM patients with an annual incidence of >2%, and occurs in 5-7.5% of patients who experience neuropathy. Diabetes can be caused by various major risk factors, the most common of which is an unhealthy lifestyle, for example, consuming foods high in fat or sugar, low in fiber and carbohydrates, and lack of physical activity. Type II diabetes can cause several complications, the most common of which is diabetic foot disease. However, these complications can be prevented through proper foot care (Utomo et al., 2011). Foot care is one of the simple and effective preventive measures to avoid disability and even death due to diabetic foot complications. However, this action is still often ignored. Foot care behavior includes efforts to maintain foot hygiene in people with diabetes mellitus and prevent early wounds and wounds on the feet are not treated properly, the risk of infection will increase until it can eventually lead to amputation (V. W. Damayanti et al., 2023).

Lack of patient knowledge about diabetic foot wounds often makes them come to health facilities in a state of severe tissue death (gangrene), so that amputation is the only option. The knowledge of type II DM patients in preventing complications of foot wounds plays an important role in preventing the occurrence of this condition. Good knowledge allows patients to manage their disease more effectively throughout their lives. The broader the patient's knowledge about the disease and its treatment, the greater the opportunity to prevent complications and routine foot care can reduce the risk of diabetic foot disease by 50-60% (Marbun et al., 2021).

Based on data from the Sukoharjo Regency Health Office regarding cases of diabetes mellitus in 2023, there were 17,694 cases (97.17%). This number includes patients who visit health centers or other health facilities as well as visits to health posts. At the Kartasura Health Center, there are 2,154 diabetes mellitus patients with an age range of over 30 years, consisting of 819 men and 1,335 women. Prevention of diabetic ulcers can be done through early detection and proper treatment can reduce the risk of amputation, while the role of nurses in preventing diabetic ulcers is very important, especially through education on foot examination and care techniques, as well as providing proper health services and screening for high-risk patients (Suriani et al., 2023).

Prevention of diabetic ulcers can be done in DM patients through counseling given since the early management stage of diabetes mellitus (Sukartini et al., 2020). The occurrence of diabetes mellitus is influenced by various risk factors. Risk factors are divided into two categories, namely those that cannot be changed and those that can be changed. Risk factors that cannot be changed are genetic factors and aging, while risk factors that can be changed are unhealthy diet, excessive physical activity, excess weight, stress, etc (Heryana, 2018). Behavior in the field of attitudes, knowledge and habits towards risk factors and prevention of a disease can influence a person to suffer from the disease (Isnaini & Ratnasari, 2018). Therefore, understanding the relationship between patient knowledge and attitude in preventing diabetic ulcers is very important. By increasing patient knowledge, it is expected that their attitude towards prevention will be more positive, thereby reducing the incidence of diabetic ulcers and related complications. This study aims to explore the extent to which knowledge influences patient attitudes in the context of diabetic ulcer prevention and to identify effective strategies in improving such knowledge and attitudes.

METHOD

This type of research uses a quantitative approach, where the data measured in the study is based on numerical data from a valid and reliable measuring instrument (questionnaire) to draw conclusions about the phenomena or relationships between observed phenomena. The instrument in this study is a structured questionnaire that measures the level of knowledge and attitudes of patients with validity and reliability values of 0.621-0.633. Respondents in this study were patients who had been diagnosed with diabetes mellitus and were currently being treated at the Kartasura Health Center, totaling 70 respondents selected using the purposive sampling technique. The methods applied in this study are univariate analysis and bivariate analysis and using the Spearman-Rho correlation test. The ethical principles applied in this study are confidentiality, anonymity, balance between harm and benefit and justice. Data analysis was carried out if all research data had been successfully collected from respondents.

RESULT

The results of this study are in the form of respondent characteristic data and the results of univariate analysis and bivariat analysis.

Table 1.
Respondent characteristics (n=70)

Respondent characteristics		f	%
Gender	Man	16	22.9
	Woman	54	77.1
Age	50-60	20	28.7
	61-70	33	47.2
	71-80	16	22.8
	81-90	1	1.4
Education	No. school	5	7.1
	Elementary School	27	38.6
	Junior High School	16	22.9
	Senior High School	18	25.7
	College	4	5.7
Work	civil servant	4	5.7
	Self-employed	10	14.3
	laborer	19	27.1
	Farmer	4	5.7
	housewife	31	44.3
	Doesn't work	2	2.9
Long time suffering from DM	1-5 tahun	57	81.4
	6-10 tahun	11	15.8
	11-15 tahun	2	2.8

Table 1 Based on the results of the study, as many as 70 respondents from the Kartasura Health Center participated in this study. The majority of respondents were female (77.1%), with an age preference of 61-70 years (47.2%), the level of education of respondents was elementary school (38.6%), the majority of respondents worked as housewives (44.3%), and the prevalence of diabetes mellitus was 1-5 years (81.4%).

Table 2.
Analisis Univariat (n=70)

Analisis Univariat		f	%
Level of Knowledge	Good	21	30.0
	Enough	36	51.4
	Not enough	13	18.6
Attitude	Good	58	82.9
	Not good	12	17.1

Table 2 Based on the research results, most diabetes sufferers have a sufficient level of knowledge (51.4%), while diabetes sufferers have a good and positive attitude (82.9%).

Table 3.
Analisis Bivariat (n=70)

Analisis Bivariat	Asymp.Sig. (2 tailed)	Correlation Coefficient	Test Decision
Level of Knowledge Attitude	0.004	0.342	Ho was rejected

Table 3 obtained the Asymp. value. signature. (2-tailed) of 0.004 with a correlation coefficient of 0.342. The Asymp. value lower than 0.05 ($0.004 < 0.05$) indicates that there is a significant relationship between the level of knowledge and attitude. A positive correlation coefficient of 0.342 indicates a weak to moderate relationship heading in a positive direction. This means that the higher the level of individual knowledge, the better the attitude shown. The test decision obtained is to reject H_0 , which means that there is a real correlation between the level of knowledge and attitude. These results emphasize the importance of increasing knowledge as one of the causes that can influence positive individual attitudes.

DISCUSSION

The majority of respondents in this study were women, consistent with the finding that diabetes mellitus has a higher prevalence in women than men. Research by (Tiorma & Syahrizal, 2021) revealed the relationship between risk factors such as gender, obesity, and hypertension with diabetes mellitus, where women are more dominant. Riskesdas data (2018) also supports that the prevalence of diabetes mellitus increases due to risk factors such as overweight, physical activity, age, and diabetes mellitus during pregnancy. The highest distribution of respondents was aged 61-70 years. As age increases, the risk of developing diabetes mellitus increases compared to people under the age of 45 years, individuals over the age of 45 years have an 18-fold higher risk of developing cases, due to decreased physiological functions of the body such as insulin resistance and decreased insulin secretion (Gunawan & Rahmawati, 2021). Research by (Mirna et al., 2020) it was proven that increasing age affects carbohydrate metabolism, insulin release, and glucose absorption, so that the risk of diabetes mellitus increases

The highest distribution of respondents based on education is elementary school level. Education plays an important role in increasing a person's knowledge, understanding, and ability to maintain health and make the right decisions regarding health problems (M. Damayanti & Sofyan, 2022). In a study (Cahyati, 2021) showed that low levels of education limit access to information, resulting in low knowledge about managing diabetes mellitus. This has an impact on poor lifestyle choices, such as lack of physical activity and preferences for bad. The majority of respondents were housewives (44.3%). The type of work affects knowledge and attitudes in preventing diabetic foot ulcer complications, due to differences in activities, access to information, and life experiences (van Netten et al., 2024). In the stud (Utami Cahyaningtyas & Rini Werdiningsih, 2022) showed that work affects the level of knowledge, with those who work outside the home tending to have more information. These findings can be the basis for designing more effective interventions according to job characteristics, in order to optimally prevent diabetic foot ulcer complications. Most respondents (81.4%) had diabetes for 1-5 years, while 18.6% had suffered for more than 5 years. Research (Paris et al., 2023) showed that patients with diabetes duration ≥ 3 years had varying quality of life, with 37.9% experiencing poor quality of life. Patients who had diabetes for longer tended to have a better understanding of preventing complications, but faced challenges in managing the disease.

Most respondents had sufficient knowledge (51.4%), followed by good (30.0%) and poor (18.6%). The level of knowledge about foot care is influenced by internal factors such as social status, education, and economy, as well as external factors such as health education, access to information, and available facilities (Fadriyanti, 2019). As many as 18.6% of

respondents had poor knowledge about foot care, especially those with low education or no schooling. Low levels of education hinder their understanding of health information so that knowledge about foot care is limited (Hermansyah et al., 2018). Research by (Utomo et al., 2011) shows that good knowledge about diabetes treatment has a significant relationship with the success of type 2 diabetes management. Individuals with good knowledge are four times more likely to successfully manage diabetes. This study assumes that the level of respondent knowledge is limited due to the lack of information received (Al-Qazaz et al., 2011).

The majority of respondents (82.9%) had a good attitude in preventing complications of diabetes mellitus (DM), while 17.1% had a less good attitude. This shows that patients' understanding and knowledge about preventing complications have a major influence on their attitudes (Aryani et al., 2022). Research (Angelina & Herwanto, 2022) shows that 76.5% of respondents have a positive attitude towards preventing diabetes mellitus (DM). Good knowledge about diabetes greatly influences attitudes and preventive behavior, where individuals who are more knowledgeable tend to adopt a healthy lifestyle and follow the advice of health workers (Fitriani & Sanghati, 2021).

The results of the study at the Kartasura Health Center showed that most respondents had good knowledge and attitudes, with a significant relationship between the two ($p = 0.004$, correlation 0.342). The better the respondents' knowledge, the more positive their attitudes in preventing diabetes mellitus. According to (Notoatmodjo, 2012), good knowledge has a positive effect on attitudes and behavior. Research (Angelina & Herwanto, 2022) showed significant results of the relationship between knowledge and attitudes in preventing type 2 diabetes mellitus. The results of the analysis showed a p -value of 0.000 for the relationship between knowledge and attitudes, and a p -value of 0.011 for the relationship between knowledge and prevention. Research (Sofyanti et al., 2022) also found a p -value of 0.013 for the relationship between knowledge and 0.005 for attitudes in preventing diabetic ulcers, which shows the contribution of both to prevention efforts. This study revealed a significant relationship between the level of knowledge and the attitude of preventing diabetic foot ulcers. This is evidenced by the p -value of 0.004 (<0.05), which indicates a strong relationship between the two variables and there are other factors outside the level of knowledge that can also affect the respondents' prevention attitudes, such as personal experience, access to health information, and social support.

CONCLUSION

The results of the study conducted by researchers through univariate and bivariate statistical tests to determine the relationship between knowledge and attitudes of patients in preventing complications of diabetic foot ulcers at the Kartasura Health Center, Sukoharjo Regency resulted that most diabetes mellitus patients have a sufficient level of knowledge (51.4%) and diabetes mellitus patients have good prevention attitudes (82.9%) and for the results of the Spearman 's Rho test showed a value (p -value) of 0.05 ($0.004 < 0.05$) indicating a positive correlation coefficient of 0.342 indicating that the relationship that occurs is weak to moderate, with a positive relationship direction. So it can be concluded that the higher the patient's knowledge, the more positive the patient's attitude in implementing preventive measures for complications of diabetic foot ulcers.

REFERENCES

- Al-Qazaz, H. K., Sulaiman, S. A., Hassali, M. A., Shafie, A. A., Sundram, S., Al-Nuri, R., & Saleem, F. (2011). Diabetes knowledge, medication adherence and glycemic control among patients with type 2 diabetes. *International Journal of Clinical Pharmacy*, 33, 1028–1035.

- Angelina, F., & Herwanto, V. (2022). Hubungan Antara Pengetahuan Dengan Sikap Dan Perilaku Pencegahan Diabetes Mellitus Tipe-2 Pada Kelompok Usia Produktif. *Jurnal Muara Medika Dan Psikologi Klinis*, 2(2), 120–126. <https://doi.org/10.24912/jmmpk.v2i2.23689>
- Aryani, M., Hisni, D., & Lubis, R. (2022). Hubungan Tingkat Pengetahuan Dan Sikap Terhadap Pencegahan Ulkus Kaki Diabetik Pada Pasien Dm Tipe 2 Di Puskesmas Kecamatan Pasar Minggu. *Jurnal Keperawatan Dan Kesehatan Masyarakat Cendekia Utama*, 11(3), 184. <https://doi.org/10.31596/jcu.v11i3.1205>
- Cahyati, N. A. D. P. (2021). *Hubungan tingkat pengetahuan terhadap kepatuhan pengobatan pada pasien Hipertensi di Desa Dalisodo Kecamatan Wagir Kabupaten Malang*. Universitas Islam Negeri Maulana Malik Ibrahim.
- Damayanti, M., & Sofyan, O. (2022). Hubungan Tingkat Pendidikan Terhadap Tingkat Pengetahuan Masyarakat di Dusun Sumberan Sedayu Bantul Tentang Pencegahan Covid-19 Bulan Januari 2021. *Majalah Farmaseutik*, 18(2), 220–226. <https://doi.org/10.22146/farmaseutik.v18i2.70171>
- Damayanti, V. W., Yonata, A., Kurniawaty, E., Kedokteran, F., Lampung, U., Dalam, B. P., Kedokteran, F., Lampung, U., Biokimia, B., Kedokteran, F., & Lampung, U. (2023). *Hipertensi pada Diabetes Melitus : Patofisiologi dan Faktor Risiko Hypertension in Diabetes Melitus : Pathophysiology and Risk Factor*. 14(November), 1253–1257.
- Fadriyanti, Y. (2019). Perawatan Kaki pada Penyandang Diabetes Melitus di Wilayah Kerja Puskesmas Lubuk Buaya Padang. *Menara Ilmu*, 13(9), 117–126. <http://www.jurnal.umsb.ac.id/index.php/menarailmu/article/download/1560/1359>
- Fitriani, F., & Sanghati, S. (2021). Intervensi Gaya Hidup Terhadap Pencegahan Diabetes Melitus Tipe 2 Pada Pasien Pra Diabetes. *Jurnal Ilmiah Kesehatan Sandi Husada*, 10(2), 704–714.
- Gunawan, S., & Rahmawati, R. (2021). Hubungan Usia, Jenis Kelamin dan Hipertensi dengan Kejadian Diabetes Mellitus Tipe 2 di Puskesmas Tugu Kecamatan Cimanggis Kota Depok Tahun 2019. *ARKESMAS (Arsip Kesehatan Masyarakat)*, 6(1), 15–22. <https://doi.org/10.22236/arkesmas.v6i1.5829>
- Hermansyah, H., Setiawan, A., & Hendriana, Y. (2018). Efektifitas Foot Care Education Terhadap Praktik Perawatan Kaki Dalam Upaya Pencegahan Risiko Ulkus Kaki Diabetik Pada Penderita Diabetes di Wilayah Kabupaten Kuningan. *Jurnal Ilmu Kesehatan Bhakti Husada: Health Sciences Journal*, 9(2), 1–7. <https://doi.org/10.34305/jikbh.v9i2.61>
- Heryana, A. (2018). Faktor Risiko Diabetes Mellitus Tipe 2 Prodi Kesehatan Masyarakat. *Journal Keperawatan*, 1–18.
- IDF, 2021. (2021). *IDF Diabetes Atlas 10th edition*. www.diabetesatlas.org
- Isnaini, N., & Ratnasari, R. (2018). Faktor risiko mempengaruhi kejadian Diabetes mellitus tipe dua. *Jurnal Kebidanan Dan Keperawatan Aisyiyah*, 14(1), 59–68. <https://doi.org/10.31101/jkk.550>
- Marbun, A. S., Aryani, N., & Sinurat, L. R. E. (2021). Hubungan Pengetahuan Tentang Ulkus Diabetikum Dengan Tindakan Pencegahan Pada Penderita Diabetes Melitus. *Jurnal Health Reproductive*, 6(2), 78–86.
- Mirna, E., Agus, S., Asbiran, N., & Studi Magister Kesehatan Masyarakat Universitas Fort De Kock Bukittinggi, P. (2020). Analisis Determinan Diabetes Melitus Tipe Ii Pada Usia Produktif Di Kecamatan Lengayang Pesisir Selatan. *Jurnal Public Health*, 7(1), 30–42.

- Ningrum, T. P., Al Fatih, H., & Yuliyanti, N. T. (2021). Hubungan Tingkat Pengetahuan Dengan Perilaku Perawatan Kaki Pada Pasien Diabetes Melitus Tipe Ii. *Jurnal Keperawatan BSI*, 9(2), 166–177.
- Notoatmodjo, S. (2012). Promosi kesehatan dan perilaku kesehatan. *Jakarta: Rineka Cipta*, 193.
- Paris, S., Nurlinda R, Novarina Kasim, V. A., Sulistiani Basir, I., & Rahim, N. K. (2023). Hubungan Lama Menderita Dengan Kualitas Hidup Pada Pasien Diabetes Melitus The Relationship of Long Suffering With Quality of Life in Diabetes Mellitus Patients 1. *An Idea Nursing Journal ISSN*, 2(01), 1.
- Sukartini, T., Theresia Dee, T. M., Probowati, R., & Arifin, H. (2020). Behaviour model for diabetic ulcer prevention. *Journal of Diabetes & Metabolic Disorders*, 19, 135–143.
- Sun, H., Saeedi, P., Karuranga, S., Pinkepank, M., Ogurtsova, K., Duncan, B. B., Stein, C., Basit, A., Chan, J. C. N., & Mbanya, J. C. (2022). IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. *Diabetes Research and Clinical Practice*, 183, 109119.
- Suriani, S., Alhuda, A., & Roslaini, R. (2023). Pemberian Pendidikan Kesehatan tentang Pencegahan Luka Kaki Diabetikum pada Penderita Diabetes Melitus di Desa Meunasah Pantan. *Jurnal Pengabdian Kepada Masyarakat Wahana Usada*, 5(1), 20–25. <https://doi.org/10.47859/wuj.v5i1.321>
- Tiurma, R. J., & Syahrizal. (2021). Obesitas Sentral dengan Kejadian Hiperglikemia pada Pegawai Satuan Kerja Perangkat Daerah. *Higeia Journal of Public Health Research and Development*, 5(3), 227–238.
- 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>
- Utomo, A. Y. S., Julianti, H. P., & Pramono, D. (2011). *Hubungan antara 4 pilar pengelolaan diabetes melitus dengan keberhasilan pengelolaan diabetes melitus tipe 2*. Faculty of Medicine.
- Van Netten, J. J., Raspovic, A., Lavery, L. A., Monteiro-Soares, M., Paton, J., Rasmussen, A., Sacco, I. C. N., & Bus, S. A. (2024). Prevention of foot ulcers in persons with diabetes at risk of ulceration: A systematic review and meta-analysis. *Diabetes/Metabolism Research and Reviews*, 40(3). <https://doi.org/10.1002/dmrr.3652>

