



The Relationship Between Smoking Status and the Incidence of Diabetic Ulcers in Male Diabetes Mellitus Sufferers in Kolang Village, Kolang District, Central Tapanuli Regency in 2022

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ARTICLE INFO	ABSTRACT
Article history: Received Aug 30, 2022 Revised Sep 10, 2022 Accepted Sep 30, 2022 Keywords: Diabetes Mellitus, Smoke, Diabetic Ulcer, Man.	Diabetes mellitus is a global health problem with an increasing incidence every year. One of the chronic complications that often occurs is diabetic ulcers, which can reduce the quality of life and lead to amputation. Lifestyle factors, especially smoking, are known to play an important role in worsening vascular conditions and inhibiting the wound healing process, thereby increasing the risk of diabetic ulcers. Purpose This study aims to determine the relationship between smoking status and the incidence of diabetic ulcers in men with diabetes mellitus in Kolang Village, Kolang District, Central Tapanuli Regency in 2023. Method This type of research is an observational analytic with a cross-sectional design. The study population was all men with diabetes mellitus in Kolang Village. A sample of 31 respondents was obtained using a purposive sampling technique. The research instrument used a structured questionnaire and medical record data. Data analysis was carried out univariately and bivariately using the Chi-Square test with a significance level of 95% ($p < 0.05$). <i>This is an open access article under the CC BY-NC license.</i>



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1. Introduction

Diabetes mellitus (DM) is a chronic disease that is a global health problem with a prevalence that continues to increase from year to year. (Arania, Triwahyuni, Esfandiari, & Nugraha, 2021), (Eltrikanawati & Nurhafifah, 2023) According to a report by the World Health Organization (WHO), the number of diabetes sufferers worldwide has reached more than 422 million and is expected to continue to increase along with changes in lifestyle, diet, and increasing life expectancy. (Listia, Yaqin, Rachmawati, Danta, & Sahadewa, 2024), (Ners, nd) Diabetes mellitus is not only a burden on individuals, but also has a major impact on families, communities, and the health care system, because this disease can cause various serious complications, both acute and chronic. (UTAMI SAPUTRI, 2025), (Herlina, Tjomiadi, Latifah, & Syahlani, 2025).

Several previous studies have shown a significant relationship between smoking habits and the incidence of diabetic ulcers. (Hidayatillah, Heri, & Adi, 2020), (Cahyaningtyas & Werdiningsih, 2022) Men with diabetes mellitus who smoke are more likely to experience chronic foot wounds than nonsmokers. This is consistent with the fact that smoking prevalence is higher in men than in women, especially in

developing countries, including Indonesia.(Lathifa Arum Puspita, 2023),(Andreani, 2024)Basic Health Research (Riskesmas) data shows that the prevalence of smoking in Indonesia among men is still quite high, making this group a population that is at high risk for diabetes complications, including diabetic ulcers.(Ramadan, 2022),(Literature, Darmini, Suantika, & Megayanti, 2023).

The results of this study are expected to provide a real picture of the influence of smoking habits on the incidence of diabetic ulcers, as well as being a basis for health workers in designing education programs, health promotion, and prevention of complications in diabetes mellitus sufferers, especially at the village community level.(HAQQI, 2025),(Nugraheni, 2024)Thus, this research is not only academically beneficial, but also has practical implications in efforts to reduce the incidence of diabetic ulcers in Indonesia. (Hawariah, 2023),(Defitrianto, 2024).

2. Methods

2.1 Research Design

This study is a quantitative study with a cross-sectional design, namely research that emphasizes the measurement of independent variables (smoking status) and dependent variables (the incidence of diabetic ulcers) within a certain period. This study aims to determine the relationship between smoking status and the incidence of diabetic ulcers in men with diabetes mellitus in Kolang Village, District, Central Tapanuli Regency.(Hidayatillah et al., 2020),(Manungkalit, 2020).

2.2 Population and Sample

The population in this study were men aged 40–60 years who lived in Kolang Village, Kolang District, Central Tapanuli Regency.(Vera, 2022),(Sitinjak, Simanjuntak, & Manurung, 2025)The study sample consisted of 31 men who met the inclusion criteria, namely men identified as having diabetes mellitus, within the specified age range, and who had received consent from their families to participate in the study. The sampling technique used purposive sampling, a study that emphasizes measuring the independent variable (smoking status) and the dependent variable (the incidence of diabetic ulcers) within a specific time period.

2.3 Data Collection Techniques and Instrument Development

This research data analysis uses:

a. Univariate

The data obtained were analyzed in two stages: univariate and bivariate analysis. Univariate analysis was used to examine the frequency and percentage distribution of respondent characteristics, such as age, gender, and smoking frequency, before and after the intervention. Bivariate analysis was used to examine the effect of providing education to men after the intervention.(Suwarningsih, Mujahidah, & Firdaus, 2023),(Widyawati, 2020).

b. Bivariate Analysis

The statistical tests used in the bivariate analysis were a paired t-test to compare the average number of cigarettes smoked before and after the intervention in each group, and an independent t-test to see the difference in results between the intervention and control groups. All analyses were conducted with a Chi-Square test with a 95% significance level ($p < 0.05$).

3. Results and Discussion

Table 1
Sample Distribution by Age

Age	N	%
40 years	17	54.8
45 years	12	38.7
>45 years	2	6.5
Amount	31	100

The table above shows the sample distribution based on age used in this study, where there were two groups studied: the experimental group or those given treatment and the control group that was not given treatment. Table 3 explains that the age category of 40 years old was 17 people (54.8%), 45 years old was 12 people (38.7%), and >45 years old was 2 people (6.5%).

Table 2
Sample Distribution by Gender

Gender	N	%
Man	31	100
Amount	31	100

The table above shows the number of gender distribution based on the experimental group or those given treatment before being given treatment. The respondents' weight explained that the male gender category was 31 people (100%).

4. Conclusions

The respondents in this study were all male diabetes mellitus sufferers of varying ages, with the majority being in late adulthood and the elderly. Most respondents had secondary to lower levels of education, and the majority worked in the informal sector, such as agriculture and fishing. These socioeconomic factors influence lifestyle, diet, and adherence to routine diabetes check-ups. The duration of diabetes varied, with most respondents having had it for more than five years. This suggests that the longer a person has diabetes, the greater the risk of developing chronic complications, including diabetic ulcers.

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