

## QUALITY OF LIFE WITH WOUND SEVERITY IN DIABETIC FOOT ULCER : SCOPING REVIEW

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### ABSTRACT

Globally, the increase in recurrent DFU cases is a significant factor that can impact patients' quality of life. DFUs can lead to leg amputations 10-30 times more frequently compared to the general population, reducing patients' quality of life and potentially threatening their lives. There is still little literature on quality of life and wound severity in patients with recurrent DFUs. DFU is one of the most common complications that diabetic patients face. This condition is one of the serious problems that causes disability, morbidity, and mortality in DM patients. This article aims to describe the quality of life with wound severity in patients with Diabetic Foot Ulcer (DFU). The researcher applied a scoping review approach and this study used the Arksey and O'Malley model in conducting the analysis. The literature analyzed consisted of science direct, Scopus, and Pubmed from the publication year 2018-2023. Identification and selection of literature using Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) Moher 2009. Based on an analysis of four articles, it was discovered that quality of life is closely related to wound severity in diabetic foot ulcer (DFU) patients, with both quality of life and wound severity influenced by a variety of socioeconomic factors, physical activity, geographical location, diabetes complications, particularly comorbidities, and self wound care. If patients can control these factors, their quality of life will improve even further, and motivation to recover is required from both the patient and him.

**Keywords:** Quality of life, Diabetic foot ulcer, Wound severity, Scoping review

### INTRODUCTION

Diabetic Foot Ulcer (DFU) is one of the most serious complications of diabetes, basically a chronic non-healing wound caused by diabetic neuropathy, vascular disease, and bacterial infection. Given its pathogenesis the microenvironment of DFU is rather complicated and characterized by hyperglycemia, ischemia, hypoxia, hyperinflammation and persistent infection. DFU is one of the frequent complications experienced by patient with

DM. This condition is one of the serious problems that cause disability, morbidity and mortality in DM patient (Kusumaningrum et al., 2020).

Diabetes is a major public health concern, as it is a leading cause of premature death and disability, as well as one of the four most serious noncommunicable diseases (Oktorina et al., 2021). Chronic wounds, including decubitus ulcers and diabetic ulcers, are associated with high morbidity and mortality. Chronic wounds are difficult to

manage because they contain fibrotic tissue, dead tissue slough, and multiple infections (Syah & Oktorina, 2021).

Complications in the feet due to diabetes make sufferers become hospitalized more often and cost a lot of money, according to IDF records, 12% of health costs will be consumed by sugar disease affairs and most of them can be lost because of the diabetic foot. Once affected by diabetes, the possibility of experiencing foot damage becomes greater, diabetic foot is a very serious problem that is *Common* (often encountered), *complex* (difficult to handle), *Costly* (costs a lot), *High mortality* (high mortality rate), *Reduced quality of life* (causing disability) (Anik, 2013)

*The International Diabetes Federation* (IDF) also explains the number of people with diabetes in the population aged 20-79 years in several countries in the world, which has identified the 10 countries with the highest number. China, India and the United States rank in the top three with 116.4 million, 77 million and 31 million respectively. Indonesia is the only Southeast Asian country on the list, so it can be estimated how much Indonesia contributes to the prevalence of diabetes cases in Southeast Asia (Kemenkes, 2020).

The population of suburban communities suffers from diabetes and is second at 11.1% in West Kalimantan province (Kawuryan, 2018) According to the results of the basic health research of West Kalimantan Province outlined that in 2018 the prevalence of people with diabetes mellitus was 28,343 cases (Riskesdas, 2018).

Factors that influence the occurrence of diabetic ulcers in patients with diabetes mellitus are age, residence, occupation, education, income, length of suffering, foot care, obesity, peripheral neuropathy, previous wound history, type II DM, and glycemic control, Research reports that DFU has an impact on psychosocial problems (Alosaimi et al., 2019) In addition to the physical problems associated with

DFU, DFU can also impact emotions and cause loss of work (Crocker et al., 2021) In other words, DFU has a negative impact on patients' quality of life. At a global level, DFUs are associated with social and economic problems, as well as psychological problems, mortality, and poor quality of life, implying that QoL and its domains are related to psychological distress and that the representation of DFUs has a greater impact on QoL than larger sized wounds, emphasizing the importance of psychological interventions in the care of patients with DFUs (Dias et al, 2022).

Quality of life is an individual's perception of his life in society in the context of existing culture and value systems related to goals, expectations, standards and concerns. Quality of life is a very broad concept influenced by individual physical conditions, psychology, level of independence, and individual relationships with the environment in general facing limitations and disabilities so that quality of life decreases (Rachmat, 2021).

The quality of life of people with diabetes mellitus is an important aspect because poor quality of life will reduce self-care which will make glycemic control worse, increase the risk of complications and make diabetes worse in the short and long term. Therefore, the issue of quality of life is very important and good for predicting how patients can manage their disease and maintain their health and well-being in the long term (Syatriani, 2023).

DFU treatment is not only a simple matter of alleviating physical problems, but is also influenced by patients' perceptions and experiences of the problems they face (Alfaqih dkk, 2022) Understanding patients' quality of life is important to achieve successful treatment and recovery rates for DFU patients.

Research conducted by (Haryanto et al., 2023) found that the quality of life of patients with recurrent DFU was low, there was no correlation between quality of life



or wound severity and recurrent DFU. Meanwhile, research by (Asharib Arshad et al., 2020) states that there is a relationship between the quality of life of patients with DFU. Research conducted by (Zhao et al., 2020) stated that patients with diabetic foot wound disease have a lower quality of life than those without diabetic foot wound disease.

Previous studies did not address comorbidities that may affect quality of life, so additional research is required to provide concrete evidence for the review of the utilization of research results by practitioners and wound nurses, as well as to supplement previous research. Based on the results of various studies and theories about quality of life and wound severity, there is a possibility of a link between patients and the incidence of recurrent DFUs. Diabetic foot ulcer (DFU) recurrence is influenced by a variety of factors; thus, this study should be conducted so that we can focus on high-risk groups and implement targeted interventions as soon as possible to reduce DFU recurrence rates. Furthermore, understanding the quality of life in DFU patients is critical for raising patient awareness in order to achieve a higher standard of living and motivate patients to participate in the DFU healing process. Given this problem, the researcher is interested in conducting research on the relationship between quality of life and wound severity in patients with Diabetic Foot Ulcer (DFU).

Research on quality of life with wound severity in *diabetic foot ulcer* (DFU) patients is still a little literature discussing this topic and there are inconsistencies in theory with practices carried out by nurses so further research is needed to explore this topic more broadly. The purpose of this

scoping review is to analyze the quality of life with wound severity in *diabetic foot ulcer* (DFU) patients.

## RESEARCH METHODS

The method used in writing this article is to use the methodological framework by Arksey and O'Malley in conducting a scoping review. The method used has five steps, including identifying research questions clearly and objectively; identifying relevant articles; selecting relevant literature from articles and extracting data; organizing, summarizing, and analyzing; reporting data results (Arksey et al., 2007).

Scoping review is one of the various reviews, as the name implies *scoping review* is a method that covers the scope of a particular topic and provides a clear indication of the topic. *Scoping reviews* can be used to map the main concepts that support a topic, clarify definitions, and conceptual boundaries of a topic (Arksey et al., 2007).

Scoping review, a search of national and international quality literature from the online databases Science Direct, Scopus and Pubmed. Using the PICO search strategy to identify key concepts and questions. PICO will inform the search strategy that can be used, detail the questions, and adjust to the inclusion and exclusion criteria. The author used boolean connectors AND and OR to link and focus the article search. The literature included in the search criteria was literature published in the last 10 years.

Research question "What is the picture of quality of life with wound severity in *diabetic foot ulcer* (DFU) patients?" (see Table 1).

**Table 1 Keywords**

<b>P</b>	<b>I</b>	<b>C</b>	<b>O</b>
Diabetic AND foot AND ulcer AND quality AND of AND life AND severity	Diabetic AND foot AND ulcer OR wound AND Serevity	-	-

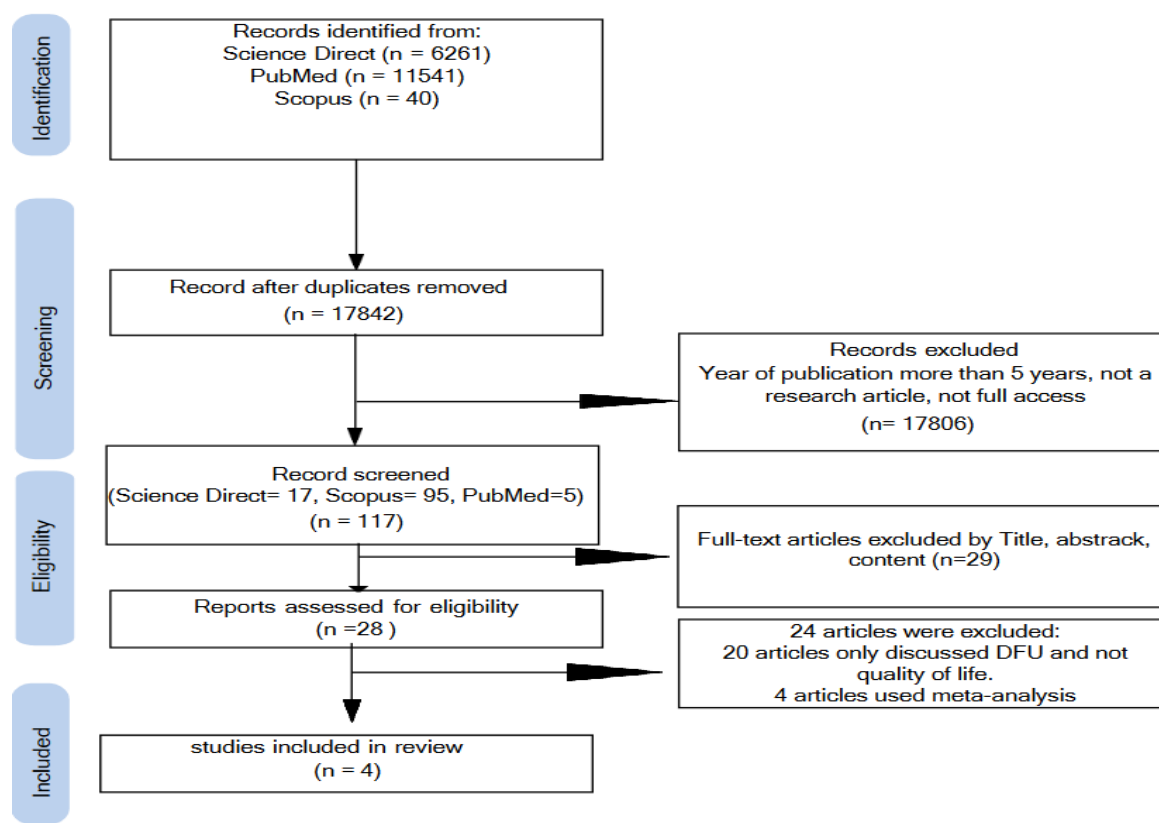
17,842 articles were obtained. The component of this study was quality of life with *diabetic foot ulcer* (DFU). Article 1 with a sample size of 94 patients using cross sectional, found that the study showed low levels of quality of life among Bahraini patients with DFUs. Article 2 with a sample size of 368 patients in seven randomized controlled trials, found that individual and group CBT interventions applied face-to-face, over the phone, and over the internet showed improvements in self-care in diabetes care.

Article 3 sampled patients with diabetic foot ulcers using an integrative review, finding Twenty-two studies reported amputation as an outcome and death was reported in 10 studies. It is

unclear whether these outcomes are directly related to foot ulcers.

Article 4 patients with diabetic foot syndrome (DFS), found that constant health education and promotion as well as care regarding psychological and socioeconomic issues should continue to be conducted for individuals with DFS to improve their quality of life.

The results of article selection are depicted in the PRISMA MOHER 2009 diagram in Figure 1. After the elimination process of duplicate articles, and excluding articles with exclusion criteria: article publication year more than 5 years, not full access, not a research article, national and international articles that are not related to the research problem studied. For more details, we can see in Figure 1 below:



**Figure 1: Prism Flow Diagram (Moher et al, 2009)**

Extraction of selected literature data articles that have been obtained are

extracted. The table of synthesized article results is as follows:

**Table 2. Synthesized Article Results**

No.	Author, Year,	Title	Research Methods	Findings
1.	(Mairghani et al., 2023)	The health-related quality of life in patients with diabetic foot ulcers in the Kingdom of Bahrain	D: Cross Sectional S: 94 patients V: independent: quality of life, dependent: diabetic foot ulcer patients in the Kingdom of Bahrain I: DFS-SF, CWIS and EQ-5D.	Findings from this study showed low levels of HRQoL among Bahraini patients with DFU. Longer duration of diabetes, in addition to ulcer severity and status statistically significantly affected HRQoL.
2.	(Fiqui, A. M., Sjattar, E. L., & Irwan, 2022)	Cognitive Behavioral Therapy for self-care behaviors with type 2 diabetes mellitus patients: A systematic review	D: Systematic review S: 368 patients in seven randomized controlled trials V:Independent: Cognitive Behavioral	Individual and group CBT interventions applied face-to-face, over the phone, and via the internet showed improvement in self-care behaviors in T2DM patients.

No.	Author, Year,	Title	Research Methods	Findings
			Therapy for self-care behavior .Dependent: Type 2 diabetes mellitus patients. I: Scopus Database, Cochrane Library, PubMed, EBSCO Host, Directory of Open Access Journals, GARUDA, Taylor & Francis, and Gray Literature.	Treatment duration had a significant effect at 3 months to 1 year with 12-21 sessions. CBT is conducted by CBT licensed nurses or psychiatrists, nutritionists, CBT psychologists who are experienced in diabetes care.
3.	(Abu-qamar et al., 2021)	Foot ulcers associated with external trauma among people with diabetes: An integrative review of the origin of trauma and outcomes	D: An integrative review. S: Patients with diabetes and foot ulcers. V: Foot ulcers associated with external trauma among diabetics. I: Different databases (CINAHL+, Medline, SCOPUS, Embase, ProQuest and WebofScience) were systematically searched.	The origins of external trauma were summarized into two domains and further broken down into 16 categories. The identified traumas were mostly minor and originated from the home environment. The most commonly reported origins of external trauma were puncture wounds, ill-fitting shoes and self-care practices leading to foot ulcers. Twenty-seven studies reported outcomes after ulcer development. Twenty-two studies reported amputation as an outcome and death was reported in 10 studies. It is unclear whether these outcomes were directly related to foot ulcers or related to other diabetes-related complications.
4.	(Navarro et al., 2021)	Quality of Life in Individuals with Diabetic Foot Syndrome	S: patient with diabetic foot syndrome (DFS) V: Quality of life of individuals with diabetic foot syndrome (DFS)	Various aspects associated with DFS such as physical changes, psychological complaints and even impairment, socioeconomic difficulties may affect the quality of life of such patients. However, QoL associated with low socio-economic factors gives mixed results and



No.	Author, Year,	Title	Research Methods	Findings
				physical activity, education and type of footwear may influence the outcome. In general, a higher prevalence of DFS is sex-dependent in men, although this is dependent on geographical region. DFS often occurs in conjunction with other complications caused by diabetes (retinopathy, nephropathy, and cardiovascular disorders) and comorbidities.

## RESULTS AND DISCUSSION

Based on the articles that have been obtained with a total of 4 articles that have been selected with different countries based on the steps that have been carried out including data extraction. The results of a study conducted by (Mairghani et al., 2023) found that the findings of this study showed low levels of HRQoL among Bahraini patients with DFU. Longer duration of diabetes, in addition to ulcer severity and status statistically significantly affected HRQoL. The severity of foot wounds is a factor that can hinder the healing process, this is stated in a study conducted by (Ezeani et al., 2020) that in patients who have wound severity below stage 3, the chances of having four times greater to heal than those with higher foot severity. It is also supported by research conducted by (Akbar, 2021) which states that the majority of the level of quality of life of patients with foot ulcers is in the poor category.

Diabetic foot ulcers are a complication of diabetes mellitus that can have the greatest negative effect on the quality of life of sufferers. Quality of life can be related to the duration of diabetic ulcers and diabetes mellitus experienced by the patient himself. This is because patients with long-term diabetes mellitus are more likely to develop recurrent ulcers and

impact the quality of life of patients with *diabetic foot ulcer* (DFU). It is therefore important to classify and monitor wound severity as clinical management, predicting the outcome of the *diabetic foot ulcer* (DFU) healing process.

Based on the results of research conducted by (Fiqri, A. M., Sjattar, E. L., & Irwan, 2022), it was found that the duration of treatment had a significant effect on 3 months to 1 year with 12-21 sessions. CBT is conducted by CBT licensed nurses or psychiatrists, nutritionists, CBT psychologists who are experienced in diabetes care. A person who is experiencing a chronic disease for a long time will affect the experience and knowledge of the individual in the treatment of DM, where the longer the DM suffers, the more it will decrease because of the boredom of the patient in undergoing the treatment, for example, the patient has felt hopeless with his current condition, therefore they have tried to do treatment but still have not succeeded and in DM sufferers who are still only 1 year undergoing this disease still have the enthusiasm to be able to recover from the disease they suffer (Roifah, 2017).

Based on the results of research conducted by (Abu-qamar et al., 2021) It was found that the origins of external



trauma were summarized into two domains and further detailed into 16 categories. The trauma identified was mostly minor and originated from the home environment.

The most commonly reported origins of external trauma were puncture wounds, ill-fitting shoes, and self-care practices leading to foot ulcers. Twenty-seven studies reported outcomes after ulcer development.

This is supported by research conducted by (Laili, 2022) stating that there is a relationship between self wound care and quality of life in DFU patients so that if the patient has better self wound care, the higher the level of quality of life. The condition of a person who experiences a decrease in physical health, one of which is with DFU complications, will affect the quality of life, self wound care is closely related to the ability of individuals to realize themselves in their sick condition, accept their condition and try to heal. From the research results, DFU can adversely affect quality of life and decline.

The results of research conducted by (Navarro et al., 2021), found that various aspects related to DFS such as physical changes, psychological complaints and even disorders, socioeconomic difficulties can affect the quality of life of these patients. However, QoL associated with low socio-economic factors gives mixed results and physical activity, education and type of footwear can affect the results. In general, a higher prevalence of DFS is sex-dependent in men, although this is dependent on geographical region.

DFS often occurs in conjunction with other complications caused by diabetes (retinopathy, nephropathy and cardiovascular disorders) and comorbid obesity generally exacerbates them. The physical impact experienced by patients with *diabetic foot ulcers* is an obstacle in carrying out daily activities or work so that there is a decrease in productivity which has an impact on reducing quality of life, even in its further stages it can cause infections

that lead to amputation, besides that the physical impact can also occur more severely if the patient is obese (Akbar, 2021).

## CONCLUSION

Based on the 4 articles of data extraction results that have been reviewed, it can be concluded that quality of life is closely related to wound severity in *diabetic foot ulcer* (DFU) patients, where both quality of life and wound severity are influenced by several socioeconomic factors, physical activity, geographical area, diabetes complications, especially comorbidities and *self wound care*. The authors recommend consistent blood sugar control, effective wound care, a healthy lifestyle, exercise, and medication adherence. If patients can control these factors, it can improve the quality of life of DFU patients to be even better and motivation to recover is needed from patients and for patients themselves.

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