


Literature Review: Characteristics Of Diabetic Foot Ulcer Patients

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Article Info	ABSTRACT
Keywords: Characteristics, Diabetes Mellitus Type 2, Diabetic Foot Ulcer	Diabetic foot begins with the presence of hyperglycemia in diabetic mellitus patients, causing neuropathy and vascular system disorders. There are several risk factors for the occurrence of diabetic foot ulcers, including gender, age and history of DM. This research method was carried out by literature review through the collection of various research journals and 11 samples of related research literature were obtained. The results of the study showed that the characteristics of diabetic foot ulcer patients were predominantly men with the highest age >60 years, the longest duration of suffering from DM was <10 years, and the highest degree of ulcers was degree 4. Age can be associated with the risk of developing diabetic foot ulcers
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INTRODUCTION

Diabetes mellitus is series disturbance condition medical metabolism Where marked exists hyperglycemia chronic consequence disturbance function and secretion of insulin or a combination thereof¹. The International Diabetes Federation (IDF) was quoted by Atlas as confirming that diabetes is part disease terrible global emergency cause develop significant during 21st century. There are 530 million humans will suffer from diabetes in 2021 and it is predicted increase up to a total of 643 million in 2030 and in 2045 to 783 million . Diabetic patients with range ages 20 to 779 years in Indonesia reach total 19 465 100 patients or around 10.6% of the total community aged 20-79 years with 179 720 500 humans².

There is various factor risk happen diabetic foot ulcers for example type gender , age and history of DM. 3 Pathomechanism diabetic foot ulcers based on three condition . Third condition This is neuropathy , vascular insufficiency, and trauma ⁴. Diabetic foot started symptom hyperglycemia DM patients so give rise to disturbance neuropathy as well as system vascular . Neither neuropathy autonomy and motor skills as well as sensory transform muscles and skin man so that give rise to shift spread of compressive force soles of the feet so accelerate the ulcer process ⁵ . Wagner's classification helps classify level severity diabetic foot ulcers to in levels 1 to 5⁴. Expected this *literature review* Can presenting information beneficial related characteristics sufferer diabetic foot ulcers .

METHOD

Researcher choose method review literature or literature review. Literature obtained through journal scientific or downloaded articles from the PubMed-MEDLINE and Google Scholar databases. Researcher next do screening article with refers specified criteria that is year publication between 2019-2024 and has relevance to characteristics sufferer diabetic foot ulcers . Researcher use some keywords For look for article that is characteristics , diabetes mellitus type 2, diabetic foot ulcer. Successful data collected will analyzed in a way narrative in parts results and data analysis so that you can look for know relatedness between characteristics sufferer diabetic foot ulcers .

RESULTS

There are 11 articles research carried out sample , with details :

1. Gender
11 Research Articles Variable Type Gender And 8 Articles Research That States Characteristics Patient Diabetic Foot Ulcers Are Appropriate Type Her Gender Most That Is Man Compared Woman
2. Age
10 Research Articles Variable Age And 8 Articles Research That States Characteristics Sufferer Diabetic Foot Ulcers Based On Age Most I.E. >60 Years .
3. Suffering From DM For A Long Time
11 Research Articles Variable Length Of Suffering From DM And 9 Articles Research That States Characteristics Sufferer Diabetic Foot Ulcers Based On The Longest Duration Of Suffering From DM I.E. <10 Years .
4. Degrees Ulcers (Wagner Classification)
5 Research Articles Variable Degrees Ulcer And 2 Articles Research That States Characteristics Sufferer diabetic foot ulcers based on degrees ulcer most that is 4th degree .

Table 1. Characteristics of Literature Review Articles

No	Researcher	Title study	Year publication	Research methods	Amount sample	Place study
1.	Ramadani, Amalia Putri, <i>et al.</i>	Characteristics Type 2 Diabetes Mellitus Patients with Ulcer Diabetic and Non -Ulcer Diabetics at Ibnu Sina Hospital Makassar 20192021	2024	<i>Cross-sectional</i>	33	Makassar, Indonesia
2.	Zalianty , Inspiration .	Characteristics Ulcer Diabetes at Cut Meutia	2024	<i>Cross-sectional</i>	45	Aceh, Indonesia

		Regional Hospital District North Aceh				
3.	Princess, Agung Ayu Kade Erika.	Characteristic Overview Ulcer Diabetes in Diabetes Mellitus Patients in District Hospitals Klungkung Year 2023	2023	<i>Retrospective Study</i>	54	Bali, Indonesia
4.	electrician , Martini., et al .	Analysis Characteristics Wound Diabetes Mellitus in Patients DM Type 2 at Karangayar Regional Hospital	2023	<i>Cross-sectional</i>	40	Karanganyar , Indonesia
5.	Buddha , Heri., et al .	Connection Characteristics Patient Diabetes mellitus Type 2 with Incident Ulcer Foot Diabetic	2024	<i>Cross-sectional</i>	98	Tasikmalaya , Indonesia
6.	Umboh , Melanthone Junaedi , et al .	Factors that Relate with Incident Diabetic Foot Ulcers in the Region Work Health Center Manganitu Sangihe	2022	<i>Cross-sectional</i>	41	Archipelago Sangihe , Indonesia
7.	Trisnawati ., et al .	Related Factors with It happened Ulcer Diabetes Sufferers Mellitus	2023	<i>Cross-sectional</i>	53	Bangka Belitung, Indonesia
8.	Ugwu, Ejiofor., et al .	<i>Burden of Diabetic Foot Ulcers in Nigeria: Current Evidence from The Multicenter Evaluation of Diabetic Foot Ulcer in Nigeria</i>	2019	<i>Observational studies</i>	336	Nigeria
9.	Abdissa, Daba., et al .	<i>Prevalence of Diabetic Foot Ulcer and Associated Factors among Adult Diabetic Patients on Follow-Up Clinic at Jimma Medical Center , Southwest</i>	2020	<i>Cross-sectional</i>	277	Ethiopia

*Ethiopia, 2019: An
Institutional-
Based on Cross-Sectional
Study*

10	Alrub , Ahmad Abu., et al .	<i>Factors Associated with HealthRelated Quality of Life among Jordanian Patients with Diabetic Foot Ulcer</i>	2019	<i>Cross- sectional</i>	144	Jordan
11	Reis, Jose Maciel	<i>Demographics and Socioeconomic Profiles of Patients Admitted with Diabetic Foot Complications in a Tertiary Hospital in Belem – Para</i>	2020	<i>Cross- sectional</i>	57	Portuguese
	Caldas Dos., et al .					

Table 2. Literature Review Results

Researcher	Title study	Results
Ramadani, Amalia Putri., et al. (2024)	Characteristics Type 2 Diabetes Mellitus Patients with Ulcer Diabetic and Non -Ulcer Diabetics at Ibnu Sina Hospital Makassar 20192021	█ The most common gender is female █ namely 58% █ The most common age in the group > 60 years 42% █ Duration of suffering from DM in the <10 years group 70%
Zalianty , Inspiration . (2024)	Characteristics Ulcer Diabetes at RSUD Cut Meutia District North Aceh	█ Ulcer diabetes mostly in men (58 %) █ Group Most ages are 49 -59 years (66%) █ Duration of suffering from DM in the <5 years group (50%) █ Degrees ulcer most that is Degree 1 (34%)
Daughter, Agung Ayu Kade Erika. (2023)	Characteristic Overview Ulcer Diabetes in Diabetes Mellitus Patients in District Hospitals Klungkung 2023	█ Gender majority that is men (54%) █ Age majority that is elderly late (56- 65 years) 41% █ DM duration with incident ulcer that is 5-10 year group (63%) █ Ulcer level diabetes level 3 DM patients , namely 24 respondents or 44%
Electricity , Martini, et al. (2023)	Analysis Characteristics of Diabetes Mellitus Wounds in Type 2 DM Patients in Karangayar Regional Hospital	█ Gender men 60% █ age majority in the 56-65 year group █ 50% █ Time to suffer from DM in the 5-10 year group (70%)

Buddha , Heri., <i>et al.</i> (2024)	Connection Characteristics Diabetes Mellitus Patients Type 2 with Incident Diabetic Foot Ulcers	<ul style="list-style-type: none"> █ Gender female 73.8% █ Group age most that is adults (25-65 years) 90.5% █ Duration of suffering from DM < 10 years as much as 85.7% █ Variable type sex ; score $\rho = 1,000 > \alpha$ (0.05) or No There is correlation type sex to diabetic foot ulcers
		<ul style="list-style-type: none"> █ Intermediate OR value type sex with ulcer diabetes that is 1,125 means women suffering from diabetes mellitus type 2 has 1,125 times chance for experience diabetic foot ulcers .
		<ul style="list-style-type: none"> █ Variable age ; mark $\rho = 0.608 > \alpha$ (0.05) shows that No there is correlation age and frequency diabetic foot ulcers
		<ul style="list-style-type: none"> █ OR value (0.333) Meaning aged group 2 DM sufferers in category elderly (>65 years) have opportunity 0.0608 times For experience diabetic foot ulcers .
		<ul style="list-style-type: none"> █ Value $\rho = 0.87 > \alpha$ (0.05) Or not There is correlation forever experiencing type 2 DM with diabetic foot ulcers
		<ul style="list-style-type: none"> █ OR value (7,000), meaning type 2 DM sufferers with have had type 2 DM ≥ 10 years have 7,000 times chance for experience diabetic foot ulcers .
Umboh , Melanthoné Junaedi , <i>et al.</i> (2022)	Related Factors with Incident Ulcer Foot Diabetes in the Work Area Health Center Manganitu Sangihe	<ul style="list-style-type: none"> █ Amount type sex women 54.4% (<i>p value</i> 0.139) █ Group age experience ulcer start from age 25 to >55 years (<i>p value</i> 0.552) █ maximum duration of suffering from DM is <5 years (<i>p value</i> 0.595)
Trisnawati ., <i>et al.</i> (2023)	Related Factors with It happened Ulcer Diabetes in Diabetes Sufferers Mellitus	<ul style="list-style-type: none"> █ Gender male 58.9 % █ longest duration of suffering from DM was in the ≥ 11 years group 50.9% █ Chi square test results were obtained results p score (0.009) < α (0.05), or exists correlation long time suffering from DM (>10 years).

Ugwu, Ejoifor., et al. (2019)	<i>Burden of Diabetic Foot Ulcers in Nigeria: Current Evidence from The Multicenter Evaluation of Diabetic Foot Ulcer in Nigeria</i>	<ul style="list-style-type: none"> Gender male 55.1% Group most ages are 45-64 years old 59.5 % Maximum duration of suffering from DM < 10 years 74.4% Ulcer grade according to Wagner the most is at <i>Grade 4</i> 36.9%
Abdissa, Daba., et al. (2020)	<i>Prevalence of Diabetic Foot Ulcer and Associated Factors among Adult Diabetic Patients on Follow-Up Clinic at Jimma Medical Center, Southwest Ethiopia, 2019: An Institutional-Based Cross-Sectional Study</i>	<ul style="list-style-type: none"> Gender male 59.6% Group Most ages in the group > 50 years 53.8% longest duration of suffering from DM was in the < 5 years group 56.3% Analysis results bivariate connection age with incident ulcer mark <i>P</i> value 0.133 (<i>p</i> value >0.05)
Alrub , Ahmed Abu., et al. (2019)	<i>Factors Associated with Health-Related Quality of Life among Jordanian Patients with Diabetic Foot Ulcer</i>	<ul style="list-style-type: none"> Gender male 70.8% Group most age 50-60 years 44.4 % Maximum duration of suffering from DM > 10 years 70.1% Ulcer grade according to Wagner the most is in <i>Grade 2</i> 39.6%
Reis, Jose Maciel	<i>Demographics and Socioeconomic Profiles of Patients Admitted with Diabetic Foot Complications in a Tertiary Hospital in Belem – Para</i>	<ul style="list-style-type: none"> Gender men 66.7% with mark <i>P</i> value 0.0171
Caldas Dos., et al. (2020)	<i>Patients Admitted with Diabetic Foot Complications in a Tertiary Hospital in Belem – Para</i>	<ul style="list-style-type: none"> Group the most common age group is 60-69 years old , 35.1% with mark <i>P</i> value 0.0002 maximum duration of suffering from DM is 7-9 years 29.8% after diagnosed with mark <i>P</i> value 0.0001 <i>Grades</i> ulcer according to Wagner the most is at <i>G grade 4</i> 43.9%

Discussion

From several literature characteristics patient diabetic foot ulcers in accordance type her gender most that is man compared woman . This matter linked that the man who has habit smoke will increase risk complications diabetic ulcer⁶. Nicotine cigarette capable damage endothelium so that Sticking and aggregating platelets smoker so that give rise to causing leaks enzyme lpl hinder processing triglycerides and speed up atherosclerosis. Atherosclerosis give rise to lack supply blood causes decline circulation blood going to dorsalis pedis, tibial and popliteal arteries⁷. That matter supported studies from Jose (2020) which explains that risk.⁸

As it increases age so more difficult cure wound Because decline performance Vessels related blood with age as well as increase risk of infection⁹. A number of literature state that characteristics patient diabetic foot ulcers majority >60 years old . A study from Amalia

et al (2024) also explains this that frequency sufferer ulcer diabetes majority over 60 years old with amount sample namely 14 respondents or 42%. Increase age cause function of human organs weakened . Increase age also makes a difference modification processing carbs and check insulin resistance due to glucose blood as well as secretion Inhibited glucose going to cell because affected presence of insulin. Improvement age aligned with risk experiencing diabetes and ulcers. ¹⁰

Research conducted by Heri Budiawan (2024) obtained OR value (0.333) which means Group 2 DM sufferers enter category elderly (>65 years) have odds 0.0608 times for experience diabetic foot ulcers ³ , so can linked age own opportunity risk to happen diabetic foot ulcers. There is increase risk DM complications are in line to time individual suffering from DM. DM duration incl as factor significant exists diabetic ulcer ⁶ . There is a number of literature state that characteristics sufferer diabetic foot ulcers based on the longest duration of suffering from DM i.e. <10 years .

Based on Lots DM's old reference is over 5 years is aspect risk exists ulcer diabetes because neuropathy often appear after somebody had DM for 5 years or more . Someone's time suffering from DM can give rise to condition hyperglycemia sustainable initiating hyperglycolia ie excess glucose in cells. Hypoglossia chronic the can altering biochemical homeostasis cell so that give rise to transformation fundamental cause complications chronic DM. ¹¹

Purpose of doing classification ulcer diabetes is look for know circumstances wound as well as set method treatment effective . Diagnosis early especially in ulcer status matters are very useful For DM patients so they can know action next through help from power medical on circumstances ulcer suffered⁹. There are some criteria For determine level severity diabetic ulcers . Diabetic foot ulcers are the most common classified the level based on criteria from Wagner who composed scheme classification as well as stages treatment of each level of ulcer. ¹² Based on the Wagner parameters then majority ulcer the beauticum There is in state 4.

Based on Wagner level parameters ulcer own range zero up to 5. Increased ulcer level tall indicated damage very severe diabetic wounds⁶ . Ulcer level 4 can known through localized his gangrene and present wound on the patient's leg⁹. Management rate glucose Blood is very influential ulcer diabetes . Improvement glucose blood capable make decreased vascular function especially in matter do relaxation and contraction that make circulation blood for the distal area it decreases . That matter enlarge risk caught ulcer diabetes and enlarge the level of severity. ⁹

CONCLUSION

Based on results data review literature study that characteristics sufferer diabetic foot ulcers based on type sex most that is male , based on age most namely >60 years , based on the longest duration of suffering from DM i.e. <10 years , and based on degrees ulcer most that is 4th degree . Age can linked own opportunity risk to happen diabetic foot ulcers.

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