Prevalence of Gingivitis and Its Impact on Diabetic and Non-Diabetic Patients in Zliten: A Gender-Based Comparative Study

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انتشار التهاب اللثة وأثره على مرضى السكري وغير المصابين به في زليتن: دراسة مقارنة على أساس الجنس

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Abstract

The study involved conducting oral examinations for diabetic patients at the Diabetes and Endocrinology Center in Zliten. The collaboration included dentists from the center. Additionally, a questionnaire was randomly distributed to patients visiting the Faculty of Oral and Dental Surgery. At the Diabetes and Endocrinology Center in Zliten, 85.4 % of the patients examined were diagnosed with diabetes. The majority of cases were among women, accounting for 87.5%, while men constituted 12.5%. Non-diabetic patients at the Faculty of Dentistry, gingivitis was attributed to other factors such as Calcium deficiency, Vitamin C deficiency, Vitamin D deficiency, and other underlying health issues. The high prevalence of diabetic patients with gingivitis at the Diabetes and Endocrinology Center highlights the importance of regular oral health check-ups and targeted preventive measures for diabetic individuals. For non-diabetic patients, addressing nutritional deficiencies and other underlying health conditions is crucial for preventing gingivitis. the study recommendations, for diabetic patients, regular dental check-ups, good oral hygiene practices, monitoring blood sugar levels, for Non-diabetic patients, addressing nutritional deficiencies, educating, patients about the importance of vitamins and minerals for oral health

Keywords: *Gingivitis, Diabetes, Vitamin C, Calcium, Vitamin D, Oral hygiene.*

الملخص

شملت الدراسة إجراء فحوصات فموية لمرضى السكري بمركز السكري والغدد الصماء بزليتن، بالتعاون مع أطباء الاسنان بالمركز. بالإضافة إلى ذلك، تم توزيع استبيان عشوائيًا على المرضى المترددين لكلية طب وجراحة الفم والأسنان. بنسبة 85.4٪ من المرضى في مركز السكري والغدد الصماء بزليتن الذين تم تشخيصهم بمرض السكري. كانت غالبية الحالات من النساء، حيث بلغت نسبتهم 87.5٪، بينما شكل الرجال 12.5٪. بالنسبة للمرضى غير المصابين بالسكري بكلية طب الأسنان، نُسب التهاب اللثة إلى عوامل أخرى مثل نقص الكالسيوم ونقص فيتامين سي ونقص فيتامين د واسباب صحية أساسية أخرى. يسلط الانتشار العالي لمرضى السكري المصابين بالتهاب اللثة في مركز السكري والغدد الصماء الضوء على أهمية الفحوصات الصحية الفموية المنتظمة والتدابير الوقائية المستهدفة للأفراد المصابين بالسكري. بالنسبة للمرضى غير المصابين بالسكري، فإن معالجة نقص التغذية والحالات الصحية الأساسية الأخرى أمر بالغ الأهمية للوقاية من التهاب اللثة. توصي الدراسة لمرضى السكري، بالفحوصات الدورية للأسنان، وممارسات نظافة الفم الجيدة، ومراقبة مستويات السكر في الدم، اما المرضى غير المصابين بالسكري، معالجة نقص التغذية، تثقيف المرضى حول أهمية الفيتامينات والمعادن لصحة الفم.

الكلمات الدالة: إلتهاب اللثة، مرض السكري، فيتامين سي، الكالسيوم، فيتامين د، صحة الفم.

1. Introduction

Inflammation of the periodontal tissues, including the alveolar bone surrounding the teeth, is the hallmark of a group of common chronic disorders collectively referred to as periodontal disease (Paul et al., 2021). Usually, periodontal disease progresses from an early, reversible form called gingivitis, in which the gums may swell and bleed, to very severe periodontitis, which, if left untreated, is a major cause of tooth loss and gingival recession (Paul et al., 2021). It is believed that up to half of individuals globally suffer from irreversible periodontitis, with the age group of 60–64 having the highest frequency of severe disease (Janakiram et al., 2020). A number of chronic, inflammatory, non-communicable illnesses of aging, including type-2 diabetes, are independently linked to periodontitis (Marruganti et al., 2023). A common and mild kind of periodontal disease called gingivitis results in gingiva discomfort, redness, and swelling (inflammation) (Punj & Chaturvedi, 2020). Regarding age, it is generally accepted that marginal gingivitis starts in early childhood, rises in frequency and severity until the early adolescent years, then somewhat declines and levels out for the balance of the second decade of life (Amarjot Kaur, 2021). The lack of data makes it much more difficult to characterize gingivitis during the adult age (Huang et al., 2021). The overall adult pattern of gingivitis prevalence varies from about 50 to 100% for dentate subjects; the elderly with dentate gingivitis does not significantly differ from this pattern. Gingival disease seems to be declining when cohort effects are taken into account (Baelum & López, 2021). With the exception of adolescence, females are often less likely than males to develop gingivitis and to have severe cases of it (Doufexi & Nichols, 2022). A significant portion of women have gingivitis that is more severe (Gare et al., 2023). Gingivitis is an

inflammation of the gingiva, yet it's a reversible, non-destructive type of dental disease(Divyarasi & Desarda, 2021) . A complex microbial consortium that can gradually colonize the tooth surfaces in the gingival canals is the primary cause of periodontitis, a chronic illness of the periodontium (Sedghi et al., 2021). Periodontitis is an irreversible bacterial infection that surrounds the teeth and is characterized by inflammation of the gingiva and consequent loss of the supporting tissues, in contrast to gingivitis, which can be treated (Noor & Gasmi, 2022). Patients may experience swelling, redness, and bleeding of the gingivae, loss of surrounding bone, periodontal pockets due to the periodontium pulling away from the tooth, and eventual tooth loss (Salvi et al., 2023).

1.1. Problem of the study

- Gingivitis are more common in diabetic patients with poor dental hygiene than in healthy people.
- Movement of the teeth because of uncontrolled blood glucose-induced bone resorption.
- Inflammation of the gum cause bad smell

1.2. Objective of the study

1. To Determine the Prevalence of Gingivitis
2. To Evaluate the Effects of Gingivitis on Diabetic and Non-Diabetic Patients
3. To Examine the Role of Gender in Gingivitis Prevalence

2. Materials & Method

The approval was taken from the college and going to the endocrine and diabetic center and Dental outpatient clinics in Zliten, a statistic was using SPSS version 25 to find out the result of the study. Questioner has answered from the response, the oral examination for diabetic patients was conducted in the dental clinic of the Diabetes and Endocrinology Center in Zliten in collaboration with the center's dentists. For the Faculty of Oral and Dental Surgery, the questionnaire was randomly distributed to patients visiting the faculty. The percentage of diabetic patients in the Faculty of Dentistry was 12.2%, while the rest had other reasons for their gingivitis, such as calcium deficiency, vitamin C deficiency, vitamin D deficiency, and other reasons. The percentage of patients visiting the Diabetes and Endocrinology Center in Zliten was 85.4%, of whom were diagnosed with diabetes.

2.1. Research Design

The design of this study was a descriptive and comparative survey.

2.2. Study Population and Sampled

The respondent to the study was 40 adult diabetic patients or malnutrition from the endocrine and diabetic center and Dental outpatient clinics in ZLITEN and some of the college students (2023).

2.2.1. Side Title:

Prevalence of Gingivitis and its effects on Diabetic patients in Zliten

3. Results & Discussion

Q1/ Was the patient male or female?

Distribution of male and female patient that shown the female was more effected than male with rate of 85.4 % (Figure 1 & Table 1).

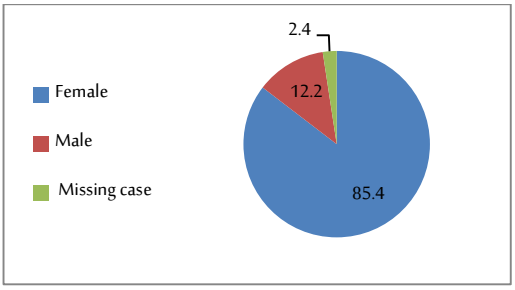

Figure 1. Distribution of male and female patient

Table 1. Distribution of male and female patient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	35	85.4	87.5	100.0
	Male	5	12.2	12.5	12.5
	Total	40	97.6	100.0	
Missing	System	1	2.4		

Q2/ Are you diabetic?

According to the study, 85.4% of people with gum disease also have diabetes, suggesting a connection between the two conditions (Figure 1 and Table 2). Wang et al. (2022) Current research on gum disease in people with type 2 diabetes was in agreement with the single-cell transcriptome atlas of gingival mucosa.

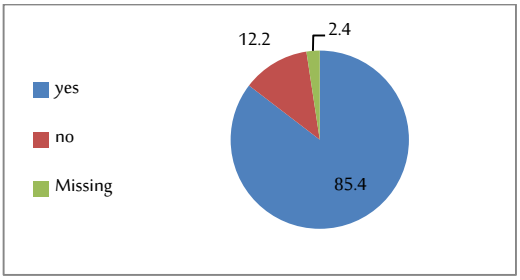

Figure 2. Are you diabetic?

Table 2. Are you diabetic?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	35	85.4	87.5	100.0
	no	5	12.2	12.5	12.5
	Total	40	97.6	100.0	
Missing	System	1	2.4		

Q 3/ Are you experiencing foul breath?

75.6 % of gum disease patients have bad smell breath. That led to the gum disease one of the reason of bad smell of mouth because of bleeding (Figure 3 and Table3). This result was agreed with Ahmad & Haque (2021) Oral health messiers: diabetes mellitus relevance. *Diabetes, Metabolic Syndrome and Obesity*. the gum disease one of the reason of bad smell

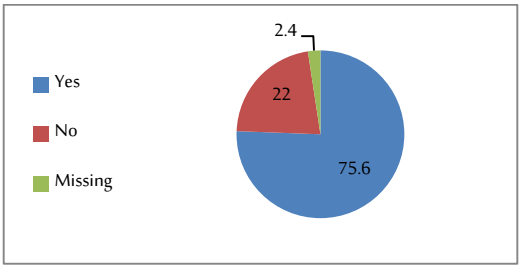

Figure 3. Are you experiencing foul breath?

Table3- Are you experiencing foul breath?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	31	75.6	45.0	67.5
	No	9	22.0	22.0	22.5
	Total	40	97.6	100.0	
Missing	System	1	2.4		
Total		41	100.0		

Q4/ Is there any blood during brushing or stroking the gums?

According to this study, 41.5% of gum disease patients occasionally have bleeding gums after brushing their teeth (Figure 4 and Table 4). Das (2024) disagreed with this study. Preserving your dental and general health in the face of gingivitis and its complications. In a clinical setting, gingivitis is characterized by symptoms such as redness, swelling, bleeding, halitosis, receding gums, and sensitivity.

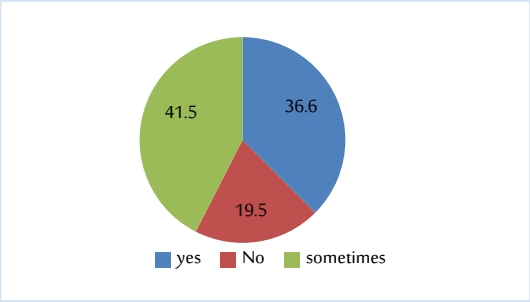

Figure 4. Is there any blood during brushing or stroking the gums?

Table 4 : Is there any blood during brushing or stroking the gums?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	15	36.6	37.5	37.5
	no	8	19.5	20.0	57.5
	"sometimes"	17	41.5	42.5	100.0
	Total	40	97.6	100.0	
Missing	System	1	2.4		
Total		41	100.0		

Q5/ Do you have a deficiency in vitamin C?

With 68.3% of respondents, this study demonstrated that vitamin C deficiency due to inadequate food consumption was linked to gingivitis instances (Figure 5 and Table 5). Murererehe et al. (2022), the current investigation supported the beneficial effects of vitamin C in preserving excellent dental health.

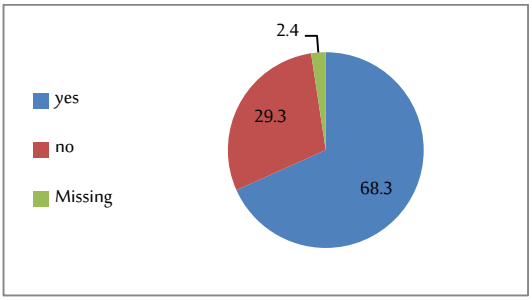

Figure 5. Do you have a deficiency in vitamin C?

Table 5. Do you have a deficiency in vitamin C?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	28	68.3	45.0	75.0
	no	12	29.3	30.0	30.0
	Total	40	97.6	100.0	
Missing	System	1	2.4		
Total		41	100.0		

4. Conclusion

According to this study, women are the most affected cases with diabetes accompanied by gingivitis. Diabetic patients are more prone to gingivitis. There is a significant effect of diabetes on the prevalence of gingivitis compared to non-diabetic individuals.

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