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Prevalence of Systemic Diseases Among Libyan Adult Dental Patients: A Cross-Sectional Study

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ABSTRACT

Systemic diseases such as hypertension, cardiovascular diseases, diabetes, cancer, and chronic obstructive pulmonary diseases are strongly associated with several oral conditions, which can ultimately lead to tooth loss and significantly affect quality of life. This study aimed to determine the prevalence of systemic diseases among edentulous patients attending dental clinics in eastern Libyan cities. Data were collected from September 2024 to January 2025 using a structured questionnaire completed by dentists before clinical examinations, involving 500 participants. More than one-third of the patients (42%) reported having at least one systemic condition, with hypertension (16.60%) and diabetes mellitus (14.20%) being the most common. Dental caries was the leading cause of tooth loss (62.20%), followed by periodontitis (24.20%) and trauma (3.40%). Despite the high prevalence of tooth loss, only 28.38% of patients used any type of prosthesis, with removable partial dentures being the most common. These findings indicate that systemic diseases, especially hypertension and diabetes, are common among dental patients, while awareness of their impact on oral health remains low. The results highlight the importance of improving prevention, patient education, and integrating oral and general healthcare.

انتشار الأمراض الجهازية بين مجموعة من مرضى الأسنان البالغين في ليبيا: دراسة مقطعية

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الكلمات المفتاحية:
الأمراض الجهازية
المرضى عديمو الأسنان
ارتفاع ضغط الدم
داء السكري
فقدان الأسنان
تسوس الأسنان
أمراض اللثة
صحة الفم
شرق ليبي

الملخص

تُظهر الأمراض الجهازية مثل ارتفاع ضغط الدم وأمراض القلب والأوعية الدموية وداء السكري والسرطان والأمراض الرئوية المزمنة ارتباطًا وثيقًا بالعديد من أمراض الفم، مما يؤدي في النهاية إلى فقدان الأسنان ويؤثر بشكل كبير على جودة الحياة. يهدف هذا البحث إلى تحديد مدى انتشار الأمراض الجهازية بين المرضى الذين يعانون من فقدان الأسنان والمراجعين لعيادات الأسنان في مدن شرق ليبيا. تم جمع البيانات خلال الفترة من سبتمبر 2024 إلى يناير 2025 باستخدام استبيان مُهيكل قبل الفحص السريري، وشمل 500 مشارك. أبلغ أكثر من ثلث المرضى (42%) عن إصابتهم بمرض جهازي واحد على الأقل، وكان ارتفاع ضغط الدم (16.60%) وداء السكري (14.20%) الأكثر شيوعًا. كما كان تسوس الأسنان (62.20%) السبب الرئيسي لفقدان الأسنان، تلتها أمراض اللثة (24.20%) والرضوض (3.40%). ورغم انتشار فقدان الأسنان، لم يستخدم سوى 28.38% من المرضى أي نوع من التركيبات السنية، وكانت الأطقم الجزئية المتحركة هي الأكثر استخدامًا. تؤكد هذه النتائج على أن الأمراض الجهازية شائعة بين مرضى الأسنان، وأن الوعي بتأثيرها على صحة الفم لا يزال منخفضًا، مما يبرز أهمية تعزيز الوقاية والتوعية ودمج الرعاية الفموية مع الرعاية الصحية العامة.

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1.Introduction

Oral health is not just about teeth; it is closely linked to overall health [1]. Research has shown that systemic diseases such as heart disease, diabetes, cancer, and chronic lung disease can contribute to poor oral health, which in turn can lead to tooth loss [2, 3, 4]. For example, diabetes increases the risk of severe periodontal disease, which can lead to tooth loss if left untreated [5]. Edentulism is prevalent globally [6] and is usually accompanied by systemic diseases [7]. This relationship works both ways. Poor oral health can also make it difficult to manage certain health conditions [8]. Tooth loss can also affect eating habits, leading to nutritional deficiencies that may worsen overall health [9, 10]. There are several reasons why people lose their teeth, including dental caries (tooth decay), gum disease (periodontal disease), trauma, and infections in the tooth and surrounding tissues [11, 12]. Libya's oral healthcare system includes both public and private sectors; however, it faces many challenges. While public dental clinics offer basic services such as extractions and emergency care, more advanced treatments, such as dental implants or prosthetics, are mostly available in private clinics. This creates a gap in access to care, especially for those who cannot afford private treatments. Limited preventive care and a shortage of specialized dental professionals further contribute to the high rate of tooth loss [13, 14].

2. Methods

A cross-sectional survey was conducted to determine the prevalence of systemic diseases in dental patients in selected dental clinics in eastern Libya from September 2024 to January 2025. Three public clinics and one private dental clinic were included in the study after obtaining appropriate permissions from these practices. Dental patients aged 18-70 years were recruited for the study. A sample size of 384 was estimated to be sufficient to detect 50% of participants with systemic diseases at a 95% confidence level and 5% error margin. Convenience sampling was used for sample selection and to collect information using a preform designed for the current study. The information included sociodemographic characteristics, medical history, current medication, and dental history. The questionnaire was completed by dentists prior to the examination. Statistical Package for Social Sciences (SPSS) version 24 was used for the data analysis. Descriptive statistics were calculated and displayed using frequency distribution tables.

3.Results

Table1: Frequency distribution of the sex and self-reported systemic conditions of study population (n = 500)

Study Variables	Categories	Count	Percent
Sex	Male	254	50.80%
	Female	246	49.20%
Presence of self-reported systemic conditions	Yes	210	42.00%
	No	280	56.00%
Types of systemic conditions	Diabetes Mellitus	71	14.20%
	Cardiovascular disease	23	4.60%
	Respiratory disease	34	6.80%
	Gastrointestinal disease	47	9.40%
	Renal disorders	5	1.00%
	Joint disorders	5	1.00%
	Hypertension	83	16.60%

As shown in Table 1, the majority (50.80%) of the patients were males, and more than one-third (42%) of the patients reported to be suffering from a systemic condition. The most common systemic condition was hypertension (16.60%), followed by Diabetes Mellitus (14.20%), gastrointestinal disease (9.4%), respiratory diseases (6.80%), cardiovascular disease (4.60%), and joint and renal disorders (1.00%). Two of the study patients suffered from multiple systemic conditions, that is, both Diabetes Mellitus and Cardiovascular disease.

Table2: Frequency distribution of causes of tooth loss and different types of restorative care provided (500)

Variables	Categories	Count	Percent
Causes of tooth loss	Caries	311	62.20%
	Periodontitis	121	24.20%
	Trauma	17	3.40%
Types of Prosthesis	Complete Denture	13	2.60%
	Removable Partial Denture	54	10.80%
	Fixed prosthesis	34	6.80%
	Implants	8	1.60%
	Filled teeth	123	24.60%

The most common cause of tooth loss was caries (62.20%), followed by periodontitis (24.20%) and trauma (3.40%). A total of 126 patients used prostheses. The majority of patients had removable partial dentures, followed by fixed partial dentures, complete dentures, and implants (Table 2).

4.Discussion

The objective of the current study was to determine the prevalence of systemic diseases in the adult Libyan population using self-reported history. Among the study population, 42% of the individuals reported having a systemic disease. Of these, the majority (16.60%, n = 83) had hypertension. Additionally, 14.20% (n = 71) of the participants reported diabetes. This finding aligns with a study on health-related quality of life in edentulous patients, which also identified hypertension as the most prevalent condition, followed by diabetes and osteoporosis[15, 16].In Libya, the most common causes of tooth loss among adults are dental caries and periodontal diseases. Similar findings were reported in the present study population, with dental caries (62.20%) being the most commonly reported cause of tooth loss, followed by periodontitis (24.20%) and trauma (3.40%). These findings are also consistent with studies conducted in the western Nigerian population and research in Afghanistan investigating the patterns and reasons for tooth extractions [17].Unfortunately, " the rates of edentulism and loss of functional dentition are notably high, making them significant public health concerns. Over the past 30 years, the number of individuals affected by edentulism has doubled, and projections indicate that this trend will continue, with the global prevalence rate expected to reach 5,004 per 100,000 by 2040 [18, 19].. This growing burden highlights the urgent need for preventive strategies and improved access to dental care, particularly in regions with limited resources such as Libya [20]. A range of prosthetic solutions is available, including interim removable prostheses, definitive cast partial dentures, fixed partial dentures, and dental implants [21]. In the study population, 71.16% of the individuals had not replaced their missing teeth. Among those who had undergone tooth replacement, 10.80% used removable partial dentures, 6.80% had fixed partial dentures, 2.60% had complete dentures, and 1.6% had chosen dental implants for tooth replacement. In contrast, a study by Patil on patient awareness and attitudes toward tooth replacement found that fixed partial dentures were the most preferred option, followed by removable partial dentures and dental implants [22]. This preference may be attributed to the cost-effectiveness and lower maintenance requirements of fixed partial dentures. Patients visiting dental clinics often do not disclose their complete medical history, possibly because they do not perceive it as relevant to their dental concerns. However, obtaining a comprehensive medical history is crucial for ensuring safe and effective dental treatment.

5.Conclusion

Systemic diseases, particularly hypertension and diabetes, are common among dental patients in eastern Libya and contribute to poor oral health. Dental caries remain the leading cause of tooth loss, and prosthetic use is limited. These findings highlight the need for increased awareness, preventive care, and integration of dental and general health care. The study has limitations, including its cross-sectional design and reliance on self-reported systemic conditions, which may introduce information bias in the results. Therefore, the findings may have limited generalizability to the entire population studied.

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