

PREVALENCE OF ORAL MANIFESTATIONS OF SYSTEMIC DISEASES IN PATIENTS VISITING THE DENTAL OUTPATIENT DEPARTMENT OF SINDH, PAKISTAN

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ABSTRACT

OBJECTIVES

The purpose of the study was to evaluate the awareness of oral health workers in identifying the prevalence of oral manifestations of systemic diseases in patients visiting the Dental Out-Patient Department of Sindh, Pakistan.

METHODOLOGY

A descriptive, cross-sectional survey-based study was conducted in Karachi, Pakistan, from October to December 2021. The study was conducted in various institutes from all over Sindh, Pakistan. An online, well-structured questionnaire was designed using Google Forms and distributed to the participants through social media platforms in the dental community. Using the Open-Epi software regarding a parent article, the sample size of this study was calculated. Keeping the confidence interval at 95% and the desired percentile at 50, the total sample size was calculated to be 100. Around 175 questionnaires were given out to the candidates.

RESULTS

The results showed that 81% male and 19% female participated, including 45% postgraduate trainees, 30% house officers, and 25% general dentists. 80% detected 2-3 systemic diseases in a patient, with 75% observing oral manifestations preceding systemic illness diagnosis. The majority favoured treating underlying ailments (75%), and prevalent conditions included hypertension (90%), diabetes (80%), anaemia (75%), and lichen planus (40.7%).

CONCLUSION

Oral health workers play a vital role in the initial and early identification and multidisciplinary medical management of various systemic diseases. A coordinated approach between physicians and dentists in diagnosing and managing these conditions is necessary to achieve optimal clinical outcomes.

KEYWORDS: Oral Manifestation, Systemic Diseases, Prevalence

INTRODUCTION

The oral cavity serves as a window to systemic health, often reflecting various underlying health conditions and diseases. Dental professionals play a crucial role in identifying and diagnosing oral manifestations of systemic diseases, thereby contributing to early detection and prompt intervention.¹ Oral cavity diseases are associated with plaque and the action of microorganisms on it. However, there have been instances where changes in the oral cavity have been noticed, which are manifestations of diseases in other body parts. Such manifestations of systemic diseases in the oral cavity may vary in distribution and frequency, but they require a careful and thorough mouth examination.² The examination includes any change in the mucosa or periodontium, a vigilant history of bleeding, and an in-depth evaluation of the teeth. A

mindful inspection will lead to an early diagnosis, resulting in a satisfactory treatment plan for the patient.³ Unfortunately, in the clinical examination for systemic diseases, the inspection of the oral cavity is often overlooked and ignored. This area provides many clinical signs that may help the clinician establish a diagnosis.⁴ Making a correct and timely diagnosis is the key to a fruitful treatment plan. Systemic diseases may affect the oral tissues, such as the oral mucosa, salivary glands, teeth, or bone, and oral manifestations will frequently present early, associated with (non-fulminant) systemic disease. Thus, recognition and proper diagnosis are essential to initiate appropriate treatment schedules.⁵ In 2000, the US Surgeon General's report "Oral Health in America" highlighted numerous ways in which oral and general health are linked.⁶ Systemic autoimmune conditions are estimated to affect 5% to 8% of Americans.⁷ Oral manifestations

are encountered with high frequency and are often the first clinical signs or symptoms of the general disease. Oral examination can reveal signs and symptoms of immunologic diseases, endocrinopathies, hematologic conditions, systemic infections, and nutritional disorders. To further highlight the importance of thoroughly inspecting the oral cavity, multiple studies have shown a positive correlation between periodontal disease and uncontrolled diabetes, cardiac conditions, stroke, and pregnancy.⁸ Numerous systemic diseases can exhibit symptoms within the oral cavity, occasionally appearing before other clinical indications. Given the convenience of examination in this region, it becomes crucial for clinicians to recognize prevalent oral manifestations of diverse conditions, aiding in distinguishing between systemic issues and oral neoplastic changes.⁹ Although few systemic diseases have strictly pathognomonic lesions of the oral mucosa, a careful examination of the oral cavity can often lead important clues to making a diagnosis.¹⁰ Oral manifestations of systemic disease have many presentations with multiple causes. They may be due to certain diseases, treatments, or drugs for certain diseases. Disorders of any part of the body can manifest their effects in the oral cavity. Sometimes, these oral manifestations are the first sign of the disease, and a dental surgeon is the primary clinician from whom the patient seeks help.¹¹ According to the literature research, numerous studies and scrutiny have been done on this topic globally, but a clear deficit has been seen and noticed in the data available specifically for the Pakistani population. The region has distinctive features, and addressing this deficient knowledge gap is vital to cater to their specific needs. Therefore, This study aimed to assess the familiarity of oral health professionals with recognizing the occurrence of oral signs related to systemic diseases among patients attending the Dental Out-Patient Department of Sindh, Pakistan.

METHODOLOGY

A descriptive, cross-sectional survey-based study was conducted in Karachi, Pakistan, from October to December 2021. The ethical review committee of Altamash Institute of Dental Medicine, Pakistan, granted the ethical approval. This study was executed following the principles of the Declaration of Helsinki. The study was conducted in the various institutes from around Sindh, Pakistan. The participants were inducted into this study by using the non-probability convenience sampling method. Using the Open-Epi software regarding a parent article, the sample size of this study was calculated. Keeping the confidence interval at 95% and the desired percentile at 50, the

total sample size was calculated to be 100, $n = \frac{[DEFF * Np(1-p)]}{[(d2/Z21-\alpha/2*(N-1)+p*(1-p)]}$. Around 175 questionnaires were given out to the participants to ask about their names, ages and qualifications and practice details were recorded in the questionnaire along with the questions regarding the prevalence of oral manifestations in systemic diseases. Dental Practitioners in both private and public sectors were included in the study. The SPSS version 24.0 was used.

RESULTS

The study observed that a majority of respondents, 81%, were male, while 19% were female. In terms of participant distribution, 45% were postgraduate trainees, 30% were house officers, and 25% were general dentists. Nearly all of the respondents had encountered patients exhibiting oral symptoms of systemic illnesses. About 40% of the participants reported having observed fewer than five patients with such symptoms in the preceding 30 days, while 35% reported encountering between five and ten cases. In contrast, a quarter of the participants had come across more than ten patients presenting systemic-related symptoms within the same period. When dealing with challenging cases, 40% of the respondents had managed fewer than five refractory patients, while 35% had handled cases ranging from five to ten, and 25% had addressed more than ten patients. All respondents unanimously favoured diagnostic tools such as investigations, clinical examinations, medical histories, plain radiographs and lab tests, with an additional 40% suggesting specialized radiographic examinations. Regarding the typical frequency of detecting multiple systemic diseases within a single patient, 80% indicated encountering 2-3 cases, 15% acknowledged identifying 3-4 instances, and 5% acknowledged diagnosing more than 5 occurrences. Notably, 75% of participants affirmed observing patients presenting oral manifestations preceding the diagnosis of underlying systemic illnesses. In terms of managing oral lesions, 75% chose to treat the underlying systemic ailment, and 25% opted for symptomatic relief. For patients with anaemia, prevalent manifestations encompassed mucosal pallor and angular cheilitis, while lichen planus exhibited bullous and plaque-like features. Diabetic and hypertensive patients predominantly demonstrated periodontitis and xerostomia. Cobblestone buccal mucosa and swollen lips were indicative of Crohn's disease. Gastric reflux and anorexia patients commonly presented complaints of erosion and sensitivity. Leukaemia cases often exhibit gingival enlargement and bleeding.

Table 1: Commonly Encountered Systemic Diseases

Hypertension	90%
Diabetes	80%
Anemia	75%
Lichen planus	40.7%
Lupus erythematosus	02%
Benign pemphigoid and pemphigus vulgaris	01%

DISCUSSION

The oral cavity might be considered the window to the body as oral manifestations accompany many systemic diseases. However, according to a recent study, numerous systemic diseases now have access to the oral cavity.¹² Lichen planus is a common mucocutaneous disorder of unproven aetiology, although a few cases have an identifiable aetiology. Chronic liver disorders, graft vs. host disease, hepatitis C, reaction to dental amalgam and several drugs have been shown to cause oral lesions. Our data shows that 40.7% of patients exhibit signs of lichen planus as an oral manifestation of certain systemic diseases. The different types of lichen planus include reticular, erosive, plaque-like, papular, bullous and atrophic, of which plaque-like is the most widely found (10%) and bullous is the least common (2%), according to our data. Oral lesions are the initial manifestation in 50 to 80 per cent of patients with pemphigus vulgaris and may precede skin lesions by one year or more. This data is comparable to our study, which shows that 65% of patients with oral lesions.¹³ Evidence to support the negative impact of periodontal disease on diabetes was first postulated following studies of the Gila River Indian Community, a population of Native Americans with a high prevalence of diabetes. It was noted that severe periodontitis was associated with an increased risk of poor glycemic control (HbA1c >9.0%, 75 mmol/mol) at follow-up (minimum of two years later), suggesting that periodontitis may be compromising diabetes control.⁷ Consistent with this is the data of our study that further emphasises the negative impact of periodontal disease and diabetes (65 per cent).¹⁴ Our data states a high incidence of xerostomia (65 per cent) in patients with uncontrolled diabetes, which is also proven in a study of 33 patients, which found a significantly higher percentage of xerostomia in patients with DM than in the control group (76.4% and 18.7% respectively).⁹ According to our survey the incidence of dental caries in diabetic patients was significantly low (10 per cent) and this was also seen in another study with a sample of 600 patients (300 with diabetes and 300 healthy) showed that the prevalence of dental caries was higher in non-diabetics (32.3%) than in people with diabetes (13.6 %).¹⁵ Previous case reports have described submucosal haemorrhages, gingival swelling, herpetic lesions, spontaneous gingival bleeding, pallor,

and periodontal disease in patients with aplastic anemia. The data we found during our research showed a similar pattern except for periodontal diseases, which is in sync with a study conducted on patients with aplastic anemia where they found all these manifestations, except for periodontal disease, exclusively in patients with aplastic anemia.¹⁶ Crohn's disease is a type of inflammatory bowel disease (IBD). It causes digestive tract inflammation, leading to abdominal pain, severe diarrhoea, fatigue, weight loss and malnutrition. During our research, the data showed that about 16 per cent of patients suffering from this disease have oral lesions, mostly linear and diffuse mucosal thickening around the buccal mucosa. Another study by Dupuy et al. found that only 0.5% of their patients with Crohn's disease developed oral lesions, and these patients were more likely also to have anal and esophageal lesions.¹² There is a predilection for males and onset in youth. Occasionally, the oral manifestations may be the first indication that a patient has Crohn's disease, but the oral lesions usually develop in patients with known bowel disease. The oral lesions are multifocal, linear, nodular, polypoid or diffuse mucosal thickenings, with a predilection for occurring in the labial and buccal mucosa and the mucobuccal folds.¹⁷ New studies reveal an increased incidence of coronary heart disease and stroke linked to high incidence of periodontal bone loss. It is becoming increasingly clear that infections and chronic inflammatory conditions such as periodontitis may influence the atherosclerotic process.¹⁸

LIMITATIONS

This survey has some limitations because of limited resources like time and money. Due to time constraints, a sample of only 100 respondents was selected. Secondly, this survey is limited to only one dental institute in Karachi, as going to other institutes would take time and money. The results of this survey are only based on questionnaires as this data collection instrument is more time and cost-effective. Moreover, convenience sampling was used as we didn't have any incentive to provide to the respondents. Since this survey used convenience sampling, the number of respondents for each qualification group is not equally divided.

CONCLUSIONS

It is very important for dental practitioners at all levels to have good knowledge regarding oral manifestations of systemic diseases, their precautions, and treatments. Oral manifestations of systemic disease can be helpful in the diagnosis and management of the underlying disorder.

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