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ORIGINAL ARTICALE

ORAL HEALTH CARE DELIVERY IN PATIENTS WITH SENSORY DISTURBANCES: EXPERIENCE FROM A TERTIARY DENTAL CENTRE - A CLINICAL RETROSPECTIVE STUDY.

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ABSTRACT

Background: Sensory disturbances, such as impairments in vision, hearing, touch, taste, or smell, significantly challenge patients in maintaining oral health and accessing dental care. These impairments can hinder oral hygiene practices, limit communication with dental professionals, and increase the risk of undetected oral issues or trauma.
Aim: The aim of this study was to explore the delivery of oral healthcare to patients with sensory disturbances in a tertiary dental center, focusing on the implementation of tailored care approaches, communication adaptations, and environmental modifications.
Materials and Methods: This retrospective study analyzed data from the institutional electronic database (2019–2023) on 57 patients (35 males, 22 females) with sensory impairments, aged 18 to 85 years. Inclusion was based on documented sensory impairments confirmed through clinical and diagnostic evaluations. Key data, including demographics, medical history, and sensory disturbances, were analyzed using SPSS version 2.0.
Results: The study included 57 participants (61.4% males, 38.6% females) aged 18–85 years (mean age: 44.72±18.11 years), with the majority (75.4%) having no medical comorbidities. Sensory impairments were categorized as visual (40.4%), hearing (31.6%), combined (14%), and other types (14%). Dental pain was the most common complaint (49.1%), followed by issues like missing teeth (12.3%), and fractured teeth (8.8%). Comprehensive data on age, gender, sensory impairments, dental complaints, and comorbidities were analyzed
Conclusion: The study highlights the diverse challenges faced by patients with sensory impairments in accessing and managing oral healthcare. The findings emphasize the importance of adopting inclusive practices and training dental professionals to improve care delivery for this vulnerable population.

Keywords: Sensory impairment, vision, hearing, speech, oral hygiene, special care

INTRODUCTION

Oral health care plays an essential role in general well-being, but patients with sensory disturbances encounter significant obstacles in accessing and receiving proper dental treatment. Sensory disturbances, which include impairments in vision, hearing, touch, taste, or smell, can severely affect a patient's ability to maintain oral hygiene, effectively communicate with dental professionals, and endure treatment procedures.[1] Consequently, individuals with sensory impairments are at an elevated risk of oral health issues such as dental caries, periodontal disease, and other complications, which may worsen due to delayed or insufficient care. Delivering oral health care to this group demands specialized knowledge, skills, and modifications to meet their needs.[2] Sensory disturbances may result from various various causes, including congenital conditions, aging, trauma, infections, or chronic diseases.[3] For example, patients with visual impairments may struggle with routine oral hygiene practices like brushing and flossing, while those with hearing impairments may face communication barriers that hinder their understanding of treatment instructions. Additionally, individuals with reduced touch sensation, such as those with peripheral neuropathy, may fail to detect early signs of oral discomfort or injury, leading to delays in seeking care. [4] Dental practitioners must adjust their approach to accommodate such patient's specific needs.[5] This requires not only an understanding of the sensory impairment but also the creation of individualized care plans that consider the physical, emotional, and social factors influencing the patients.

Successful delivery of oral health care for patients with sensory disturbances relies on effective communication, customized treatment strategies, and the use of assistive technologies.[6] Communication poses one of the most significant challenges in treating patients with sensory disturbances. Hearing-impaired patients may have difficulty understanding instructions or asking questions, leading to confusion and anxiety about dental procedures. Dentists may need to use alternative methods of communication, such as visual aids, written instructions, or sign language interpreters. For visually impaired patients, a tactile approach, using models or allowing them to feel the instruments, can be helpful in teaching oral hygiene techniques. [7]

This study explored the experience of delivering oral health care to patients with sensory disturbances at a tertiary dental center. It emphasizes the importance of tailored care approaches, communication adaptations, and environmental modifications to ensure high-quality care for this vulnerable population. The insights gained from these experiences highlight the need for ongoing education and training for dental professionals to better serve patients with sensory impairments and improve their oral health outcomes.

MATERIALS AND METHODS

The study setting involved a retrospective retrieval of data from the institutional electronic database from the period of 2019 to 2023. The present study population included 35 males and 22 females with sensory impairment. Ethical clearance was obtained from the institution, with details as; IHEC/SDC/OMED- 2204/24/240. The minimum age was 18 years and the maximum age was 85 years.

The inclusion criteria for these patients were based on documented cases of sensory impairments, which were evaluated through both clinical examination and diagnostic investigations. All pertinent data, including patient demographics, medical history, underlying conditions, and the nature of their sensory disturbances, were carefully extracted from the electronic database. Statistical analysis was performed using SPSS version 2.0.

RESULTS

The present study population included 35 males (61.4%) and 22 females (38.6%). The mean age of the participants was 44.72±18.11 years. The minimum age was 18 years and the maximum age was 85 years. A total of 17 participants including 13 males (22.8%) and 4 females (7%) were aged below 30 years. Nine participants belonging to the 31-40 years age group included 5 males (8.8%) and 4 females (7%). Twelve participants aged between 41-50 years included 9 males (15.8%) and 3 females (5.3%). Eight participants including 4 males (7%) and 4 females (7%) were aged between 51-60 years. A total of 5 participants including 3 males (5.3%) and 2 females (3.5%) belonged to the 61-70 years age group. Six participants including 1 male (1.8%) and 5 females (8.8%) were aged above 70 years. Figure 1 depicts the distribution of the study population based on age and gender.

Through the assessment of twenty osteotomies in ten patients, the Posnick (low) osteotomy allowed better visualization of the inferior alveolar nerve with decreased medial dissection. This, together with the decreased bad split incidence, resulted in increased postoperative neurosensory recovery in the study (Posnick) group compared to the control (standard) group at 6 month.

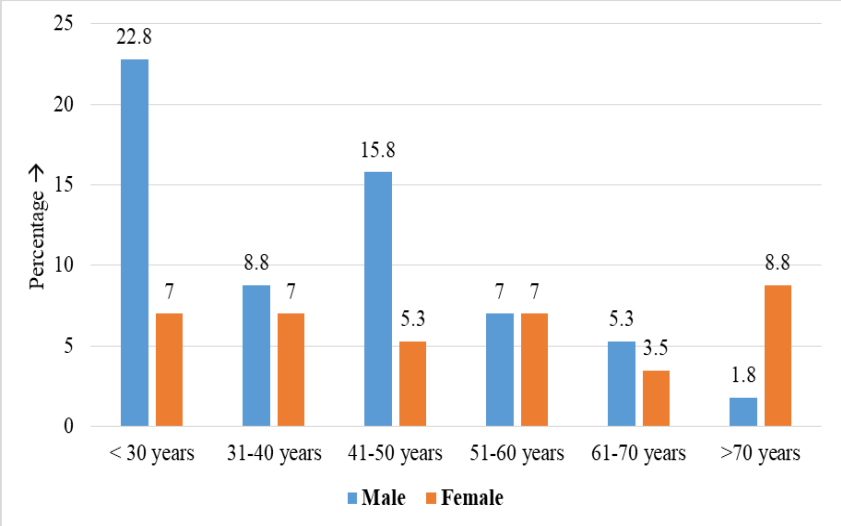
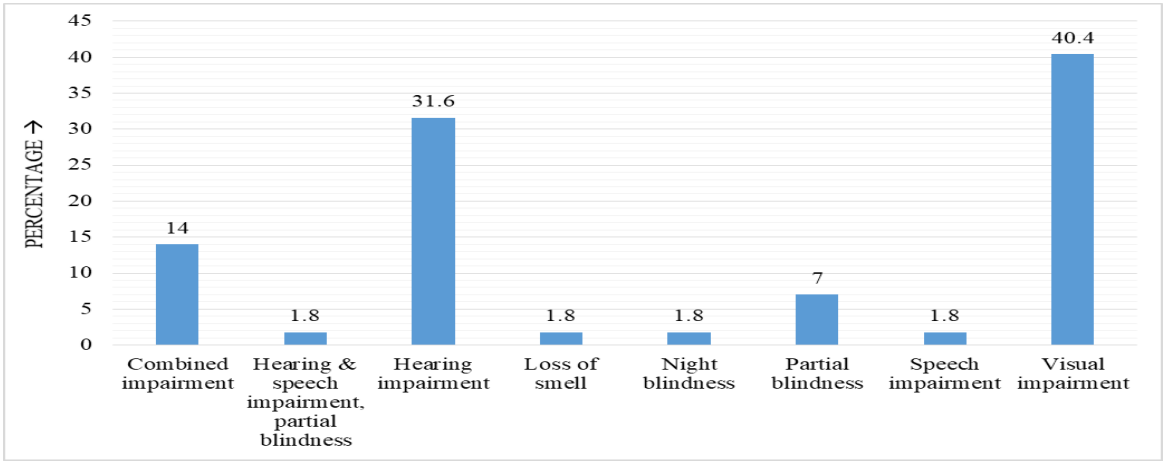


Figure 1. Distribution of study population based on age and gender.

A total of 23 study participants had visual impairment (40.4%) followed by 18 participants (31.6%) having hearing impairment, 8 participants (14%) having combined impairment, and 4 participants (7%) having partial blindness. The remaining population included 1 participant (1.8%) having hearing & speech impairment, loss of smell, night blindness, and speech impairment. Figure 2 depicts the distribution of the study population based on sensory impairment.



. **Figure 2.** Distribution of study population based on sensory impairment.

Dental pain was the common dental complaint experienced by 28 participants (49.1%). Missing teeth and broken (fractured) teeth were found in 7 (12.28%) and 4 (8.75%) participants, respectively. Stains were reported by 3 participants (5.26%). Other complaints like bad breath, burning sensation, crowding, dental caries, deposits, discolored teeth, dislodged filling, gum pain, mobility, pain & tooth mobility, and sensitivity were also reported by 1 (1.75%) or 2 participants (3.5%). Figure 3 shows the percentage of dental complaints as reported by the study population.

Table 1. Association between study population characteristics and sensory impairment

		Sensory impairment									
		Combined impairment n (%)	Hearing & speech impairment, partial blindness n (%)	Hearing impairment n (%)	Loss of smell n (%)	Night blindness n (%)	Partial blindness n (%)	Speech impairment n (%)	Visual impairment n (%)	Total n (%)	p-value
Gender	Male	5 (8.8)	0	8 (14)	1 (1.8)	1 (1.8)	2 (3.5)	1 (1.8)	17 (29.8)	35 (61.4)	
	Female	3 (5.3)	1 (1.8)	10 (17.5)	0	0	2 (3.5)	0	6 (10.5)	22 (38.6)	0.388
Age group	< 30 years	4 (7)	1 (1.8)	2 (3.5)	1 (1.8)	1 (1.8)	2 (3.5)	0	6 (10.5)	17 (29.8)	
	31-40 years	0	0	1 (1.8)	0	0	2 (3.5)	0	6 (10.5)	9 (15.8)	
	41-50 years	2 (3.5)	0	3 (5.3)	0	0	0	1(1.8)	6 (10.5)	12 (21.1)	
	51-60 years	2 (3.5)	0	3 (5.3)	0	0	0	0	3 (5.3)	8 (14)	
	61-70 years	0	0	4 (7)	0	0	0	0	1 (1.8)	5 (8.8)	
	>70 years	0	0	5 (8.8)	0	0	0	0	1 (1.8)	6 (10.5)	0.386
Previous dental visit	Yes	3 (5.3)	1 (1.8)	12 (21.1)	0	1 (1.8)	1 (1.8)	0	16 (28.1)	34 (59.6)	
	No	5 (8.8)	0	6 (10.5)	1 (1.8)	0	3 (5.3)	1 (1.8)	7 (12.3)	23 (40.6)	0.236
Adverse oral habits	Nil	6 (10.5)	1 (1.8)	16 (28.1)	1 (1.8)	1 (1.8)	4 (7)	1 (1.8)	23 (40.4)	53 (93)	
	Smoking	0	0	1 (1.8)	0	0	0	0	0	1 (1.8)	
	Smokeless tobacco	2 (3.5)	0	1 (1.8)	0	0	0	0	0	3 (5.3)	0.947
Oral hygiene aids	Toothbrush & toothpaste	6 (10.6)	1 (1.8)	14 (24.6)	1 (1.8)	1 (1.8)	4 (7)	1 (1.8)	21 (36.8)	49 (86)	
	Finger	2 (3.5)	0	4 (7)	0	0	0	0	2 (3.5)	8 (14)	0.918

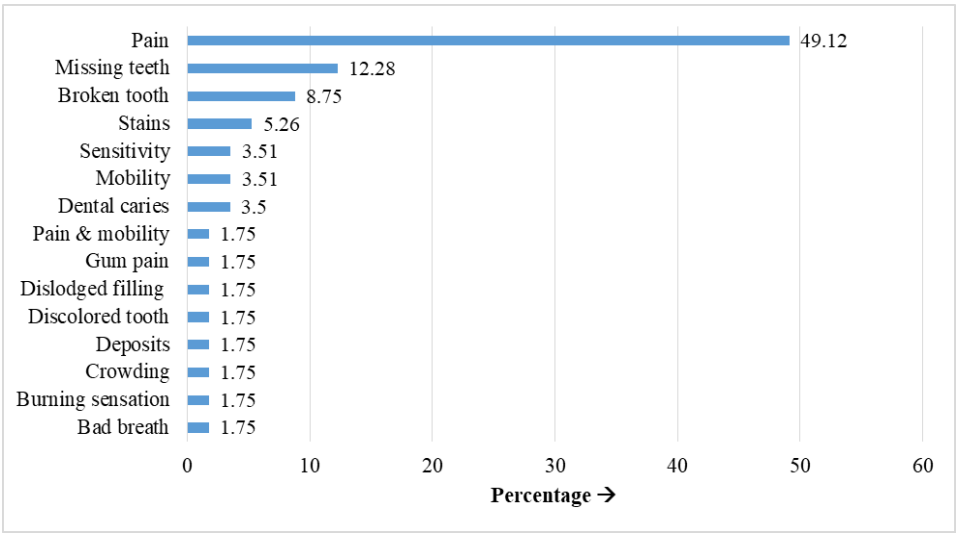


Figure 3. Distribution of study population based on dental complaints.

The majority of the study population including 43 participants (75.4%) did not have any medical comorbidity. Diabetes was reported by 2 participants (3.5%). The other comorbidities as depicted in Figure 4 were reported by 1 participant (1.8%) each in the relevant organ systems. Figure 4 shows the distribution of the study population based on medical comorbidities.

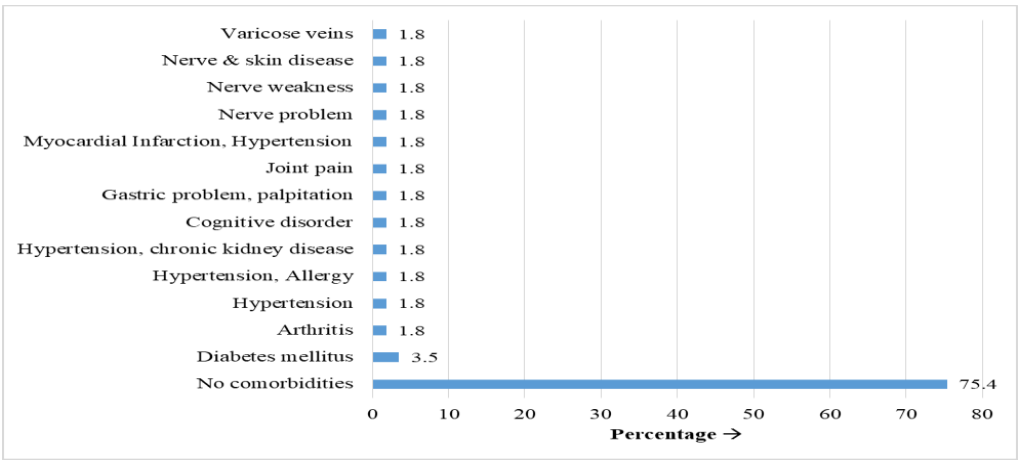


Figure 4. Distribution of study population based on medic al comorbidities.

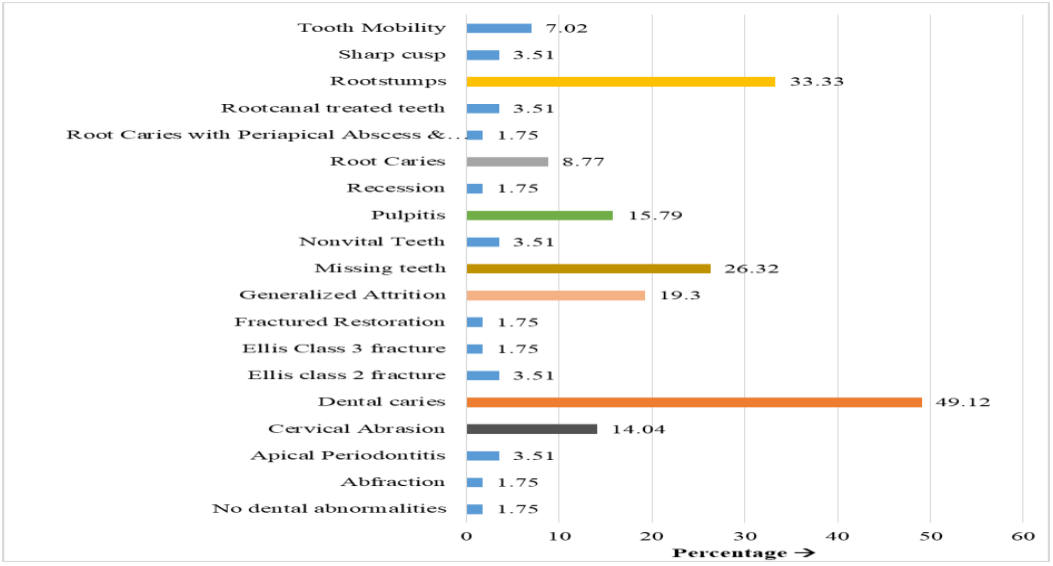


Figure 5. Distribution of study population based on oral health status

On oral examination, only one participant did not have dental abnormalities. All others had a minimum of one dental condition like dental caries, pulpitis, missing tooth, nonvital tooth, tooth mobility, root stumps, abfraction, fractured teeth, and apical periodontitis. Dental caries were commonly found in half of the study population (28 participants). Figure 5 Table 2 and depict the distribution of the study population based on oral health status.

Table 2. Distribution of study population based on oral health status

Oral health status	Number (n)	Percentage (%)
No dental abnormalities	1	1.75
Abfraction	1	1.75
Apical Periodontitis	2	3.51
Cervical Abrasion	8	14.04
Dental caries	28	49.12
Ellis class 2 fracture	2	3.51
Ellis Class 3 fracture	1	1.75
Fractured Restoration	1	1.75
Generalized Attrition	11	19.3
Missing teeth	15	26.32
Nonvital Teeth	2	3.51
Pulpitis	9	15.79
Recession	1	1.75
Root Caries	5	8.77
Root Caries with Periapical Abscess & Sinus Tract Opening	1	1.75
Root canal treated teeth	2	3.51
Rootstumps	19	33.33
Sharp cusp	2	3.51
Tooth Mobility	4	7.02

Periodontal diseases were not found in 1 participant (1.8%). Generalized chronic gingivitis and generalized chronic periodontitis were found in 28 participants (49.1%) and 18 participants (31.6%), respectively. Localized periodontitis was found in 10 participants (17.5%). Figure 6 depicts the distribution of the study population based on periodontal status.

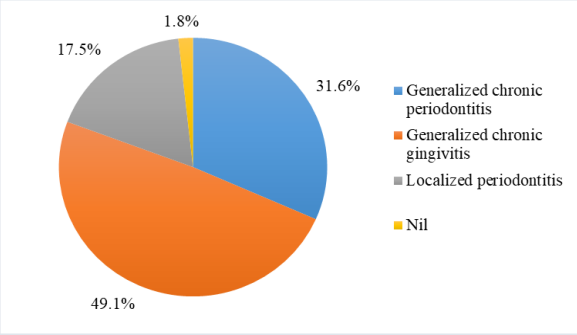


Figure 6. Distribution of study population based on periodontal status

DISCUSSION

The present retrospective study employed 35 males and 22 females, which constituted about 61.4% and 38.6% of the study population. The mean age of the participants was 44.72±18.11 years. The minimum age was 18 years and the maximum age was 85 years. The participants were categorized based on their age, gender, sensory impairment, dental complaints, medical comorbidities, oral health status, and periodontal status. Based on age group, the participants were grouped into, <30 years, 31-40 years, 41-50 years, 51-60 years, 61-70 years, and >70 years. Based on gender, they were categorized as males and females. Based on sensory impairment, the participants were categorized to have visual impairment, hearing impairment, combined impairment, partial blindness, hearing and speech impairment, loss of smell, night blindness, and speech impairment. The majority of the study participants had visual impairment (40.4%) and the least number of participants had hearing and speech impairment, loss of smell, night blindness, and speech impairment (1.8%). When the participants were questioned about their dental complaints, most of them had dental pain(49.12%) and the least complaints recorded were pain & mobility, gum pain, dislodged filling

discolored tooth, deposits, crowding, burning sensation, and bad breath (1.75%). When assessed for comorbidities, 75.4% of participants presented with no comorbidities, followed by Diabetes mellitus (3.5%). The study participants were examined for oral health status. Dental caries were the commonest (49.12%), followed by root stumps (33.33%), and the least observed were conditions such as abfraction, fractured restoration, etc, (1.75%). When examined for the periodontal health status of the participants, generalized chronic gingivitis (49.1%) was the most observed, followed by generalized chronic periodontitis (31.6%), localized periodontitis (17.5%), and no periodontal condition (1.8%). This retrospective study provides valuable insights into the oral health and sensory impairments of a diverse population. The mean age of participants was slightly younger cohort compared to other studies that often focus on older populations. A significant proportion of participants presented with visual impairment (40.4%), reflecting previous findings where visual impairment tends to be the most commonly reported sensory issue among adults. [8] In contrast, a minority (1.8%) had combined impairments or rarer conditions such as hearing and speech impairment, findings that align with national health data showing visual impairments are more common than auditory or olfactory issues in adult populations.

[9] Dental complaints were widespread, with nearly half of the participants (49.12%) experiencing dentalpain, consistent with research by White et al., [10] which identified dental pain as the most frequent dental complaint among adults. However, the lower incidence of other issues, such as gum pain or dislodged fillings (1.75%), contrasts with similar studies, where such complaints were more commonly observed in older patients with poor oral hygiene. [11]A notable 75.4% of the participants reported no comorbidities, which is lower compared to other studies where systemic conditions, particularly diabetes, are frequently observed in conjunction with oral health issues.[12] This discrepancy may be attributed to the younger average age of this cohort. Despite this, 49.1% had dental caries, and 49.1% exhibited generalized chronic gingivitis, in line with findings by Sheiham & Watt, who reported that these conditions are among the most prevalent oral health concerns worldwide.[13] The periodontal status of this population, with 31.6% showing generalized chronic periodontitis, suggests that despite the low comorbidity rates, oral health deterioration, especially in terms of periodontal conditions, remains a significant issue.

A study by Peltier et al,[14] found that dental professionals often lack training in managing such patients, resulting in suboptimal care. Research by Wilson et al.[15] showed that hearing-impaired individuals reported high levels of anxiety in dental settings, mainly due to difficulties in understanding treatment plans or asking questions. Cameron et al.[16] investigated the experiences of patients with sensory impairments regarding their access to dental care. The study found that numerous patients felt uneasy discussing their sensory limitations with dental practitioners, resulting in unmet needs and insufficient oral health maintenance. The authors highlighted the importance of promoting a more inclusive environment within dental clinics, enabling patients to feel confident in sharing their challenges and preferences. The authors advocated for improved training programs to equip dental practitioners with the skills necessary to identify and address the unique challenges these patients face, ultimately enhancing the quality of care offered. This study aimed to assess the oral health care delivery for patients with sensory disturbances at a tertiary dental center.

Beyond addressing the immediate challenges posed by sensory impairments, dental professionals should collaborate with caregivers, family members, and other health professionals to ensure comprehensive and continuous care.[17] Ensuring patient comfort and trust is another key aspect of providing effective oral health care. Patients with sensory impairments may feel anxious or overwhelmed in dental settings due to their altered perception of the environment.[18] Visually impaired patients might become disoriented in unfamiliar surroundings, while hearing-impaired patients may feel isolated if communication is inadequate. Dental professionals must be empathetic to these concerns, fostering a supportive and calming environment that eases patient anxiety and builds trust.[19] This teamwork approach supports the creation of holistic care plans that address both the dental needs and broader challenges faced by patients with sensory disturbances. [20]

CONCLUSIONS

This retrospective study sheds light on the significant burden of visual impairments, dental pain, and suboptimal oral health, with dental caries and chronic gingivitis being particularly prevalent among the population studied. While the comorbidity rates with systemic conditions were relatively low, the findings underscore the critical need for early dental interventions to mitigate the risk of worsening oral and overall health. The study also highlights the potential for neglected oral health to exacerbate discomfort, impair daily functioning, and diminish quality of life. By addressing these issues proactively, dental professionals can play a pivotal role in improving individual well-being and preventing long-term complications.

DECLARATIONS

Ethics approval and consent to participate
Not applicable.

Consent for publication Not applicable.

Competing interests
The authors declare no conflict of interest.

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