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Original Article

Knowledge and Practicing Attitude for Diagnostic Approaches to Non-Healing Oral Ulcers Among Dental Practitioners in Pakistan: A Cross-Sectional Studies

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ABSTRACT

Background: Persistent oral ulcers may represent traumatic, inflammatory, infectious, potentially malignant, or malignant conditions and require timely assessment. Dental practitioners play an important role in early recognition, biopsy selection, and referral. Objective: To evaluate dental practitioners' knowledge, attitudes, self-reported confidence, diagnostic practices, referral behaviour, and perceived barriers regarding non-healing oral ulcers in Pakistan. Methods: A cross-sectional questionnaire-based survey was conducted among 227 dental practitioners recruited through professional and academic networks. Information was collected on professional characteristics, recognition of suspicious features, biopsy awareness, initial management, referral practices, and diagnostic barriers. Data were analysed descriptively using frequencies and percentages. Results: Fair or good knowledge was reported by 207 participants (91.2%). A 14-day persistence threshold was identified by 158 (69.6%), while 179 (78.9%) recognized induration and rolled margins as suspicious. Biopsy was considered the diagnostic gold standard by 211 (93.0%), but only 54 (23.8%) selected biopsy as their first approach. Removal of local irritants followed by review was selected by 105 (46.3%), and 114 (50.2%) deferred referral until initial treatment failed. Inadequate training was the leading barrier (36.1%). Conclusion: Respondents demonstrated favourable awareness but reported less consistent implementation of timely biopsy and referral. Practical training and standardized referral pathways may help reduce this knowledge–practice gap. Keywords: non-healing oral ulcer; oral cancer; biopsy; dental practitioners; diagnostic practice; Pakistan..

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INTRODUCTION

Oral ulceration is a common clinical presentation characterized by a localized loss of the oral epithelium, with or without involvement of the underlying connective tissue. Most uncomplicated traumatic ulcers heal after removal of the precipitating factor; however, an ulcer that persists for approximately two weeks despite appropriate initial management requires careful reassessment and further investigation (1). Persistent oral ulcers may result from chronic mechanical trauma, infection, immune-mediated disease, medication-related injury, systemic illness, or neoplasia. Their diverse aetiology and overlapping clinical appearances can make diagnosis challenging, particularly when benign traumatic lesions resemble oral potentially malignant disorders or oral squamous cell carcinoma (2).

Early recognition of suspicious oral ulceration is clinically important because diagnostic delay may permit progression of malignant disease and increase the extent and complexity of treatment. Persistent ulcers accompanied by induration, rolled or irregular margins, fixation, unexplained bleeding, cervical lymphadenopathy, or exposure to recognized carcinogenic substances warrant prompt investigation. Patients who are older or who use tobacco, smokeless tobacco, betel nut, gutka, or alcohol may require

particularly careful assessment because these exposures are associated with an increased risk of oral potentially malignant disorders and oral cancer (3–5). Persistent oral ulceration may also be associated with systemic and infectious conditions, including syphilis, reinforcing the need for a comprehensive history, clinical examination, and appropriate diagnostic testing rather than prolonged empirical treatment alone (6).

Dental practitioners frequently constitute the first point of professional contact for patients with oral lesions. Their ability to identify suspicious clinical features, examine regional lymph nodes, eliminate identifiable traumatic factors, determine the need for biopsy, and arrange timely referral can therefore influence the diagnostic pathway. Histopathological examination remains the definitive method for establishing the nature of a clinically suspicious persistent ulcer. Nevertheless, evidence indicates that general dental practitioners may be reluctant to perform biopsies or may defer specialist referral because of inadequate practical training, limited confidence, uncertainty regarding professional scope, lack of clear referral pathways, or concerns regarding indemnity and patient acceptance (3,7). Consequently, practitioners may demonstrate satisfactory theoretical awareness while continuing to rely on symptomatic treatment, observation, or removal of local irritants before initiating definitive investigation.

Previous studies have reported variable levels of knowledge and confidence among dental practitioners regarding the diagnosis and management of oral mucosal lesions. Dentists may recognize major oral cancer risk factors and suspicious clinical characteristics but remain uncertain about biopsy indications, procedural techniques, and the appropriate timing of referral (8). Studies conducted in Pakistan have similarly identified gaps between oral cancer awareness and routine screening or diagnostic practices among dental professionals (9). However, available local evidence remains limited, and comparatively little is known about how dental practitioners approach persistent oral ulcers, the barriers that influence biopsy and referral decisions, or the educational strategies they consider most useful for improving clinical competence.

Emerging adjunctive technologies, including artificial intelligence-assisted image assessment and salivary biomarkers, are being investigated for their possible role in identifying suspicious oral lesions (10). These approaches may eventually support clinical risk assessment, but they do not replace a structured oral examination, appropriate referral, or histopathological confirmation. Understanding practitioners' perceptions of such technologies is therefore relevant when considered alongside their knowledge of established diagnostic procedures.

The present study aimed to evaluate dental practitioners' knowledge, attitudes, self-reported confidence, diagnostic practices, referral behaviour, perceived barriers, and training preferences regarding the assessment of non-healing oral ulcers in Pakistan.

MATERIALS AND METHODS

A cross-sectional questionnaire-based study was conducted among dental practitioners working or undertaking clinical training in public and private dental settings in Pakistan. Participants were approached through professional dental networks, academic groups, institutional contacts, and social media platforms over a four-month data-collection period in 2026. Because participation depended on voluntary responses to an electronically circulated questionnaire rather than enrolment of every consecutively presenting eligible practitioner, a non-probability convenience sampling strategy was used.

The target population comprised dental professionals who were actively involved in clinical practice or supervised clinical training. Eligible participants included house officers, postgraduate trainees, general dental practitioners, academic faculty members, and consultants practising in cities across Pakistan. Dental students who had not entered supervised postgraduate clinical practice, dental hygienists, dental assistants, dental technicians, and other non-dentist oral healthcare personnel were excluded. Participation was voluntary, and respondents were required to provide electronic informed consent before accessing and completing the survey.

The initial sample-size target was 385 dental practitioners, based on an anticipated population proportion of 50%. During the available recruitment period, 227 submitted responses met the study eligibility requirements and were included in the analysis. The final analysis was therefore based on the achieved sample of 227 respondents.

Data were collected using a structured, self-administered questionnaire developed in Google Forms after reviewing relevant literature concerning persistent oral ulceration, oral cancer awareness, diagnostic behaviour, biopsy practices, and the management of oral mucosal lesions (8,9,11–13). The questionnaire was organized into six thematic domains. The first domain collected demographic and professional information, including age category, city, professional designation, duration of clinical experience, and principal practice setting. The second domain assessed respondents' knowledge of non-healing oral ulcers, including the duration used to define a persistent ulcer, commonly involved oral sites, age groups perceived to be at increased risk, suspicious clinical characteristics, the role of biopsy, and the importance of regional lymph-node examination.

The third domain examined attitudes toward recognized contributory factors, including tobacco, alcohol, betel nut, and stress, as well as respondents' perceptions of the importance of early diagnosis, timely biopsy, investigation of persistent lesions, and the possible role of artificial intelligence-assisted tools. The fourth domain assessed self-reported confidence in recognizing and diagnosing non-healing oral ulcers. The fifth domain evaluated clinical practice, including the initial diagnostic approach, removal of local irritants, use of symptomatic treatment, biopsy decisions, referral timing, and the type of specialist selected for referral. The sixth domain assessed barriers to diagnosis and biopsy, including inadequate training, absence of clear clinical guidance, patient refusal, and time limitations, together with respondents' preferred educational strategies for improving diagnostic competence.

For this study, a non-healing oral ulcer was operationally regarded as an oral ulcerative lesion persisting for approximately 14 days without satisfactory healing. Responses concerning knowledge and confidence were analysed according to the categories provided in the questionnaire. Because the study relied on participants' questionnaire responses, the reported practice variables represented self-reported clinical behaviour rather than independently observed performance.

Questionnaire responses were exported from Google Forms and reviewed for eligibility, consistency, and coding before analysis. Categorical variables were summarized using frequencies and percentages. Participant age was reported according to the questionnaire categories unless exact numerical age data were available. Percentages were calculated using the number of valid responses to the corresponding item as the denominator. Data were analysed using IBM SPSS Statistics version 26.0. The present analysis was primarily descriptive and was intended to characterize respondents' knowledge, attitudes, confidence, clinical approaches, referral practices, perceived barriers, and training preferences.

Ethical approval was obtained from the Research Ethics and Review Board of the PRIDE Center for Research and Learning under reference number PRIDE/ERB/2026/073. An electronic participant-information and consent statement preceded the questionnaire. No directly identifying patient information was collected, and responses were used only for the stated research purpose.

RESULTS

A total of 227 dental practitioners were included in the analysis. Most respondents were located in Karachi (n=173, 76.2%), whereas Hyderabad and Lahore each contributed seven participants (3.1%). The remaining 40 respondents (17.6%) were recruited from other cities. House officers constituted the largest professional group (n=98, 43.2%), followed by general dental practitioners (n=82, 36.1%) and postgraduate trainees (n=37, 16.3%). Academic faculty members and consultants represented relatively small proportions of the sample. Most respondents had limited clinical experience, with 106 (46.7%) reporting one year or less and 90 (39.6%) reporting one to three years of practice. Government hospitals were the most frequently reported practice setting (n=74, 32.6%).

Participants most commonly rated their knowledge of non-healing oral ulcers as fair (n=114, 50.2%) or good (n=93, 41.0%). Only eight respondents (3.5%) rated their knowledge as excellent, while 12 (5.3%) considered it poor. A persistence period of 14 days was correctly selected by 158 participants (69.6%) as the threshold at which an oral ulcer should be regarded as non-healing. Buccal mucosa (n=92, 40.5%) and the tongue (n=88, 38.8%) were the most frequently selected anatomical sites. Induration and rolled margins were identified by 179 participants (78.9%) as the clinical features most strongly indicating the need for further investigation.

Table 1. Demographic and Professional Characteristics of Participants

Characteristic	Category	n (%)
City	Karachi	173 (76.2)
	Hyderabad	7 (3.1)
	Lahore	7 (3.1)
	Other cities	40 (17.6)
Professional designation	House officer	98 (43.2)
	General dental practitioner	82 (36.1)
	Postgraduate trainee	37 (16.3)
	Academic faculty member	9 (4.0)
	Consultant	1 (0.4)
Clinical experience	≤1 year	106 (46.7)
	>1–3 years	90 (39.6)
	>3–5 years	17 (7.5)
	>5 years	14 (6.2)
Principal practice setting	Government hospital	74 (32.6)
	Academic institution	57 (25.1)
	Private hospital	51 (22.5)
	Private clinic	45 (19.8)

Percentages may differ slightly from the originally reported values because counts were standardized to the total sample of 227.

Table 2. Knowledge and Clinical Recognition of Non-Healing Oral Ulcers

Knowledge item	Response	n (%)
Self-rated level of knowledge	Excellent	8 (3.5)
	Good	93 (41.0)
	Fair	114 (50.2)
	Poor	12 (5.3)
Site most commonly associated with non-healing oral ulcers	Buccal mucosa	92 (40.5)
	Tongue	88 (38.8)
	Floor of the mouth	44 (19.4)
	Gingiva	3 (1.3)
Time threshold used to define a non-healing ulcer	7 days	21 (9.3)
	10 days	22 (9.7)
	14 days	158 (69.6)
	30 days	26 (11.5)
Age group perceived to be most commonly affected	<30 years	11 (4.8)
	30–50 years	110 (48.5)
	>50 years	70 (30.8)
	All age groups	36 (15.9)
Clinical feature prompting further investigation	Induration and rolled margins	179 (78.9)
	Pain and erythema	23 (10.1)
	Ulcer covered by a pseudomembrane	18 (7.9)
	History of pain	7 (3.1)

Most participants demonstrated awareness of recommended components of the diagnostic assessment. Biopsy was identified as the diagnostic gold standard by 211 respondents (93.0%), and 207 (91.2%) recognized the importance of regional lymph-node examination. A defined diagnostic protocol was reported by 170 participants (74.9%), while 218 (96.0%) indicated that they counselled patients regarding tobacco- and betel nut-related risks.

Attitudes toward early investigation were generally favourable. A combined 221 participants (97.4%) agreed or strongly agreed that tobacco, alcohol, and stress contributed to non-healing oral ulcers. Similarly, 219

(96.5%) agreed that early diagnosis improved patient outcomes, while 213 (93.8%) agreed that persistent oral ulcers required investigation rather than symptomatic treatment alone. A total of 207 respondents (91.2%) agreed or strongly agreed that an oral ulcer failing to heal within two weeks should undergo timely biopsy.

Table 3. Awareness of Recommended Diagnostic and Preventive Practices

Statement	Yes, n (%)	No, n (%)
Biopsy is the gold standard for diagnosing a suspicious non-healing oral ulcer	211 (93.0)	16 (7.0)
Regional lymph nodes should be examined	207 (91.2)	20 (8.8)
A diagnostic protocol is used for non-healing oral ulcers	170 (74.9)	57 (25.1)
Patients are counselled regarding tobacco and betel nut-related risks	218 (96.0)	9 (4.0)

Table 4. Attitudes Toward Risk Factors and Timely Investigation

Statement	Strongly agree, n (%)	Agree, n (%)	Disagree, n (%)	Strongly disagree, n (%)
Tobacco, alcohol, and stress contribute to non-healing oral ulcers	142 (62.6)	79 (34.8)	3 (1.3)	3 (1.3)
Early diagnosis improves patient outcomes	148 (65.2)	71 (31.3)	4 (1.8)	4 (1.8)
Persistent oral ulcers require investigation rather than symptomatic treatment alone	111 (48.9)	102 (44.9)	9 (4.0)	5 (2.2)
Biopsy should be performed when an oral ulcer has not healed within two weeks	107 (47.1)	100 (44.1)	16 (7.0)	4 (1.8)

Despite high awareness of biopsy, only 54 participants (23.8%) selected biopsy as their first diagnostic approach. Removal of local irritants followed by clinical review was the most frequently reported initial strategy (n=105, 46.3%). Specialist referral was selected initially by 44 respondents (19.4%), whereas 24 (10.6%) reported using symptomatic treatment alone. Most respondents described their confidence in diagnosing non-healing oral ulcers as moderate (approximately 51%).

Table 5. Initial Diagnostic Approach and Referral Behaviour

Clinical-practice variable	Response	n (%)
First diagnostic approach	Removal of local irritants followed by review	105 (46.3)
	Biopsy	54 (23.8)
	Referral to a specialist	44 (19.4)
	Symptomatic treatment only	24 (10.6)
Stage at which the patient is referred	After failure of initial treatment	114 (50.2)
	After biopsy confirmation	80 (35.2)
	At initial presentation	26 (11.5)
	Only if symptoms worsen	7 (3.1)
Preferred referral specialist	Oral and maxillofacial surgeon	153 (67.4)
	Oral medicine specialist	47 (20.7)
	Oral pathologist	22 (9.7)
	Ear, nose, and throat specialist	5 (2.2)

A pronounced discrepancy was observed between theoretical awareness and reported clinical practice. Although 211 participants (93.0%) identified biopsy as the diagnostic gold standard, only 54 (23.8%) selected it as their first diagnostic approach, representing an absolute difference of 69.2 percentage points. Similarly, although 207 participants (91.2%) agreed that an ulcer persisting beyond two weeks should undergo timely biopsy, only 26 (11.5%) reported referring a patient at initial presentation. Half of the respondents deferred referral until the initial treatment had failed. Recurrent aphthous ulceration was selected by 124 participants (54.6%) as the type of ulcerative condition most commonly encountered, followed by potentially malignant lesions in 76 (33.5%). Infective and drug-induced ulcers were reported less frequently.

Table 6. Ulcerative Conditions Most Commonly Encountered in Clinical Practice

Condition	n (%)
Recurrent aphthous ulceration	124 (54.6)
Potentially malignant lesion	76 (33.5)
Infective ulcer	15 (6.6)
Drug-induced ulcer	12 (5.3)

The most commonly reported barrier to effective diagnosis was inadequate training (n=82, 36.1%), followed by patient refusal (n=66, 29.1%) and the absence of clear clinical guidelines (n=56, 24.7%). Time limitations were reported by 23 participants (10.1%).

Table 7. Reported Barriers to the Diagnosis of Non-Healing Oral Ulcers

Barrier	n (%)
Inadequate training	82 (36.1)
Patient refusal	66 (29.1)
Lack of clear clinical guidelines	56 (24.7)
Time limitations	23 (10.1)

Overall, the findings demonstrated favourable self-reported awareness of suspicious features, biopsy, lymph-node examination, risk-factor counselling, and the importance of early investigation. However, this awareness was not consistently reflected in respondents' reported diagnostic behaviour. Conservative management followed by reassessment remained the most common initial approach, and referral was frequently delayed until initial treatment had failed. Inadequate training and lack of clear guidance were prominent perceived barriers to timely diagnostic management.

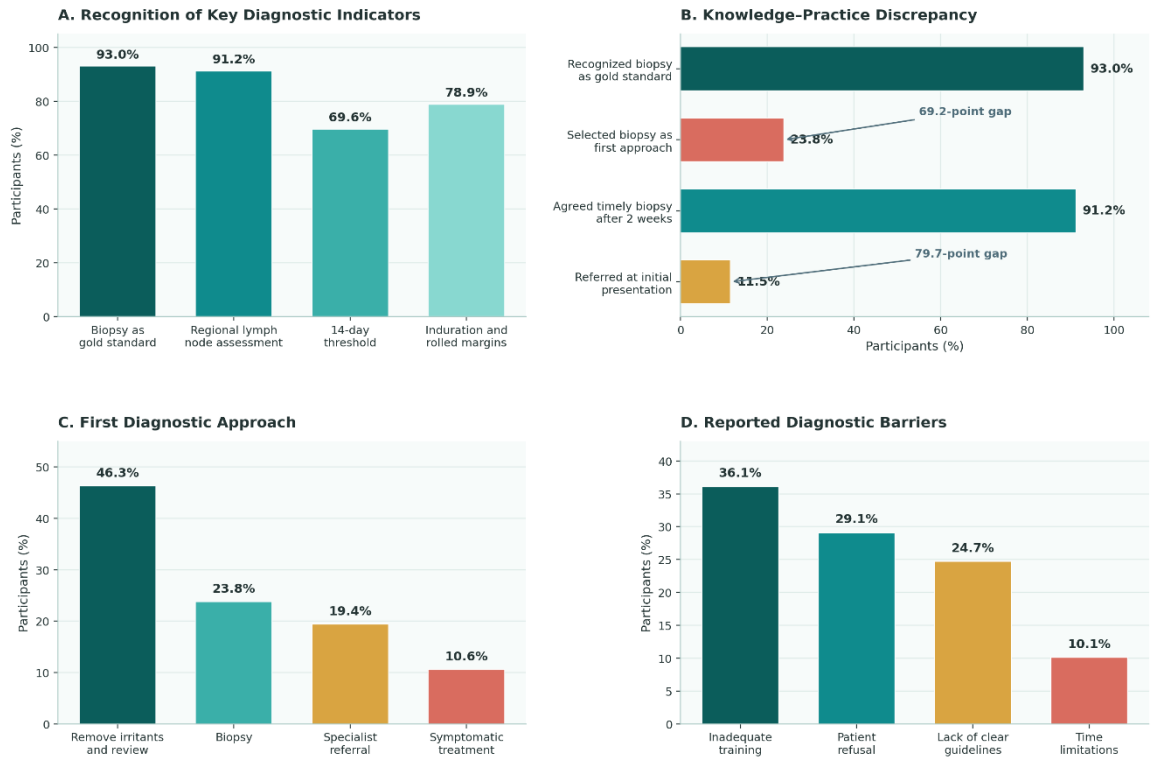

Figure 1: Panel A presents recognition of key diagnostic indicators, including biopsy as the diagnostic gold standard, regional lymph-node assessment, the 14-day persistence threshold, and induration with rolled margins. Panel B demonstrates the knowledge–practice discrepancy: although 93.0% identified biopsy as the gold standard and 91.2% supported timely biopsy for ulcers persisting beyond two weeks, only 23.8% selected biopsy as their first diagnostic approach and 11.5% referred patients at initial presentation. Panel C shows that removal of local irritants followed by review was the most common initial approach (46.3%), followed by biopsy (23.8%), specialist referral (19.4%), and symptomatic treatment alone (10.6%). Panel D shows that inadequate training was the leading reported barrier (36.1%), followed by patient refusal (29.1%), lack of clear clinical guidelines (24.7%), and time limitations (10.1%). Values represent percentages of 227 dental practitioners.

DISCUSSION

The principal finding of this study was a substantial discrepancy between dental practitioners' awareness of recommended diagnostic principles and their reported clinical management of non-healing oral ulcers. Most respondents recognized biopsy as the diagnostic gold standard, supported regional lymph-node examination, and agreed that an oral ulcer persisting beyond two weeks required timely investigation. Nevertheless, fewer than one-quarter selected biopsy as their first diagnostic approach, and only a small proportion reported referring patients at initial presentation. Removal of local irritants followed by reassessment was the most common initial strategy, while half of the respondents deferred referral until

initial treatment had failed. These findings suggest that awareness of recommended practice did not consistently translate into prompt diagnostic action.

Approximately 91% of respondents rated their knowledge as fair or good, while only a small proportion considered it excellent. This pattern indicates reasonable perceived familiarity with non-healing oral ulcers but limited confidence in advanced diagnostic decision-making. Comparable studies have shown that dental practitioners may recognize suspicious oral lesions and major risk factors while remaining uncertain about diagnosis, biopsy indications, and management pathways (8,9,11). Poelman et al. reported that dentists demonstrated variable knowledge regarding the diagnosis and management of oral mucosal lesions, with continuing education required to improve the recognition and management of clinically important conditions (8). Similar gaps between oral cancer awareness and screening practice have also been reported among dental professionals in Pakistan (9,11).

Most respondents correctly identified a 14-day persistence threshold as an indication for further assessment. Induration and rolled margins were also widely recognized as suspicious clinical features. These findings are clinically relevant because persistent ulceration, tissue induration, fixation, irregular margins, and regional lymphadenopathy may indicate oral potentially malignant disorders or oral squamous cell carcinoma (1,4). Studies conducted among dentists in Kuwait, Yemen, and the United Arab Emirates have similarly found that practitioners frequently recognize major warning signs and oral cancer risk factors, although the consistency of routine examination and referral practices varies substantially (14,15,17).

Buccal mucosa and the tongue were the sites most frequently associated by respondents with non-healing oral ulcers. Both sites are commonly affected by traumatic, inflammatory, potentially malignant, and malignant lesions, particularly in populations exposed to tobacco, smokeless tobacco, betel nut, and related products (2,5). However, the findings represent practitioners' perceptions rather than the anatomical distribution of clinically verified lesions. They should therefore be interpreted as an assessment of knowledge rather than epidemiological evidence regarding lesion prevalence.

Recognition of biopsy as the definitive diagnostic procedure was high, but biopsy was selected as the first diagnostic approach by only 23.8% of respondents. This 69.2-percentage-point difference represents the clearest knowledge–practice gap observed in the study. Conservative management through elimination of a possible traumatic factor and short-term review may be appropriate when a lesion has an identifiable local cause and lacks suspicious features. However, continued observation, repeated symptomatic treatment, or delayed referral may be inappropriate when an ulcer persists, displays induration or irregular margins, or occurs in a patient with substantial malignancy risk. Previous studies have identified lack of practical training, uncertainty regarding professional scope, insufficient exposure to biopsy procedures, and concerns regarding referral and indemnity as barriers affecting dentists' management of oral mucosal disease (3,7,8).

Referral behaviour showed a similar pattern. Only 11.5% of respondents reported referral at initial presentation, while 50.2% referred patients after failure of initial treatment and 35.2% after biopsy confirmation. Initial referral is not necessary for every oral ulcer, particularly when an obvious traumatic cause can be removed and the lesion reviewed promptly. Nevertheless, referral after prolonged or unsuccessful empirical treatment may delay definitive assessment when suspicious features are present. Oral and maxillofacial surgeons were the most commonly selected referral specialists, followed by oral medicine specialists and oral pathologists. This preference may reflect greater familiarity with surgical services and the perception that oral and maxillofacial surgeons are most directly involved in biopsy and definitive management.

Respondents showed strong awareness of modifiable risk factors. Almost all agreed that tobacco, alcohol, and related exposures contributed to clinically important oral ulceration, and 96.0% reported counselling patients regarding tobacco- and betel nut-related risks. Previous studies have similarly demonstrated relatively high recognition of tobacco and alcohol as oral cancer risk factors among dental practitioners (9,14,15). This finding is particularly important in Pakistan, where smokeless tobacco, betel nut, gutka, and

related products are widely used. Dental practitioners are therefore positioned not only to recognize suspicious lesions but also to provide risk-factor counselling and facilitate earlier assessment of high-risk patients.

Recurrent aphthous ulceration was the condition most frequently reported as being encountered in clinical practice. This result requires cautious interpretation because recurrent aphthous ulceration is characterized by repeated episodes in which individual lesions usually heal, whereas the present study focused on persistent or non-healing ulceration. The questionnaire wording may therefore have encouraged respondents to report the ulcerative condition they encountered most often rather than the most common cause of a continuously non-healing ulcer. Future surveys should distinguish clearly between recurrent ulcerative disorders, persistent solitary ulcers, and clinically suspicious lesions.

Inadequate training was the most frequently reported barrier, followed by patient refusal, absence of clear clinical guidelines, and time constraints. The predominance of house officers, general dental practitioners, and respondents with three years or less of experience may partly explain the reported lack of confidence and preference for conservative management. Early-career practitioners may possess theoretical knowledge but have limited supervised experience in biopsy selection, specimen handling, interpretation of suspicious clinical findings, and specialist referral. Structured undergraduate teaching, supervised clinical exposure, case-based learning, competency-based biopsy workshops, and clearly defined referral protocols may help reduce this gap. Previous studies have likewise emphasized continuing professional education as a means of improving the diagnosis and management of oral mucosal lesions (8,9).

Participants also expressed favourable views regarding the possible role of artificial intelligence in early diagnosis. Artificial intelligence-assisted image analysis is increasingly being studied in oral medicine and may eventually support lesion documentation, risk stratification, or referral decisions (18). However, such systems should be regarded as adjunctive tools. They cannot replace comprehensive history-taking, direct clinical examination, regional lymph-node assessment, appropriately selected biopsy, or histopathological diagnosis.

The study addressed several clinically relevant domains, including knowledge, attitudes, diagnostic confidence, initial management, referral timing, perceived barriers, and preferred educational approaches. It also included participants from different professional designations and practice settings. However, its findings should be interpreted in view of important limitations. The non-probability online recruitment strategy introduced volunteer and selection bias. More than three-quarters of respondents were based in Karachi, limiting geographical representativeness and preventing confident generalization to all dental practitioners in Pakistan. The sample was dominated by house officers, general practitioners, and practitioners with limited clinical experience, while consultants and senior specialists were underrepresented.

The survey assessed self-reported knowledge and practice rather than objectively observed clinical performance. Respondents may therefore have overreported guideline-consistent behaviours because of recall or social-desirability bias. The knowledge categories were primarily self-rated, and the manuscript did not report comprehensive psychometric validation or reliability testing of the questionnaire. The achieved sample of 227 was also lower than the initial target of 385, which may have reduced precision. In addition, the descriptive study design did not determine whether professional experience, designation, practice setting, or previous training independently influenced diagnostic behaviour.

Future multicentre studies should recruit geographically balanced samples and include greater representation of senior practitioners. Validated knowledge instruments, clinical vignettes, image-based diagnostic assessments, and objectively scored biopsy or referral decisions would provide stronger evidence than self-rating alone. Participant-level analysis could also determine whether experience, practice setting, professional designation, and previous training are associated with appropriate diagnostic action. Educational interventions should subsequently be evaluated to establish whether structured training improves diagnostic accuracy, biopsy confidence, referral timing, and adherence to clinical protocols.

Overall, the study demonstrated that respondents generally recognized important warning signs and accepted the need for biopsy and early investigation. However, conservative initial management and delayed referral remained common. The findings therefore support greater emphasis on practical diagnostic training, structured referral pathways, and competency-based education to help translate theoretical awareness into timely and appropriate clinical decision-making.

CONCLUSION

Dental practitioners participating in this study demonstrated favourable self-reported awareness of the persistence threshold, suspicious clinical features, risk factors, regional lymph-node assessment, and the diagnostic role of biopsy in non-healing oral ulcers. However, biopsy and immediate specialist referral were selected relatively infrequently as initial management strategies, while conservative treatment followed by reassessment or referral after treatment failure was more common. This discrepancy indicates that theoretical awareness was not consistently reflected in reported clinical practice. Strengthening practical training, biopsy-related competence, and standardized referral pathways may support more timely evaluation of clinically suspicious persistent oral ulcers.

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