

Attitude and Practice of Dental Practitioners Towards the Oral Biopsy Procedure: A Questionnaire-based Cross-sectional Study

PRIYANKA H BHANUSHALI¹, MITULKUMAR RAMESHBHAI PRAJAPATI², NIRALI H BHANUSHALI³, MONALI SHAH⁴, AMENA RANGINWALA⁵, HETAL RANGPARIA⁶, DARSHAK SHAH⁷, SAURABH NAYAK⁸



ABSTRACT

Introduction: Dentists, the first medical professionals to be consulted for conditions involving the oral cavity, have the distinct advantage of being in a position to screen patients for oral cancer. To effectively manage patients, dentists must be familiar not only with where, when, how and why to perform biopsies, but also with when to refer them to specialised institutions.

Aim: To assess the attitude and practice of dental practitioners towards the oral biopsy procedure.

Materials and Methods: The present questionnaire-based cross-sectional study was conducted in the city of Jamnagar, Gujarat, India, from July 2023 to August 2023. Fifty dental practitioners with a minimum academic qualification of Bachelor of Dental Surgery (BDS) participated in the study, which was designed to collect information regarding the importance of oral biopsy, methods used to obtain biopsies, tissue preservation, diagnosis, referral to higher centers and the attitudes and practices of dental

practitioners in examining oral mucosal lesions. The questionnaire was prepared using the Google Forms app. The received responses were compiled and statistical data (percentage) was calculated using Microsoft Excel 2020.

Results: Out of total, 42 (84%) dentists encounter up to 10 oral mucosal lesions, such as potentially malignant disorders, in a month. Despite this, only 22% (n=11) of them performed biopsies themselves. Furthermore, 6 (12%) dentists did not know the proper medium for preserving biopsies. Of all, 24 (48%) dentists felt the need for proper training in biopsy techniques to be included in the undergraduate curriculum.

Conclusion: Despite being aware of the importance of biopsy as a crucial diagnostic procedure, not many dentists perform it routinely due to reasons such as lack of training, patient non compliance and medicolegal implications. Hence, dentists should be educated in performing the oral biopsy procedure, including handling of specimens and referral to specialists.

Keywords: Oral cancer, Oral pathology, Precancerous condition

INTRODUCTION

Biopsy is defined as the removal of tissue from a living organism for microscopic examination. It is a Greek word (bio- life, opsia- to see), which means view of the living [1]. When any abnormal tissue is biopsied from the oral and maxillofacial region, it is recommended by the American Academy of Oral and Maxillofacial Pathology to submit it to an oral and maxillofacial pathologist [2].

Performing a biopsy is generally done for reasons such as establishing a definitive diagnosis, providing a prognosis for malignant or premalignant lesions and serving as a record with legal significance in the medical field [3]. Diamanti N et al., reported that both specialists and general dental practitioners hold the view that additional expertise in the biopsy procedure is of utmost importance [4]. General dentists rarely find oral lesions that require biopsying, as reported by Schnetler JF and Leonard MS [5,6]. Hence, despite dentists having an advantage in screening patients for oral cancer, due to inexperience and lack of familiarity with the clinical patterns of oral cancer, it becomes more likely that these patients are referred [7]. Therefore, dentists must be well acquainted with the when and how of biopsies and understand that not only tumours, but also oral lesions like premalignant lesions, non healing ulcers and swellings need to be biopsied [8,9].

A biopsy is typically performed to obtain a specimen for the purpose of histopathologic diagnosis. The procedure needs to be followed precisely and meticulously in order to produce a suitable specimen for pathological analysis, as an inaccuracy in the procedure may cause a misdiagnosis of the lesion [10]. Instead of being sent for analysis and histological reporting, most of the specimens that are obtained might be discarded, subsequently losing the possibility of

obtaining more supportive data from the surgery and transforming the diagnostic procedure into a therapeutic one [11].

In order to ensure that the patient is managed effectively, dentists who refer patients to other healthcare professionals for biopsies nevertheless need to be acquainted with the technique and the outcomes [12]. Though clinician's expertise may eliminate the need for a biopsy in a few obvious cases, it is always a prudent choice to perform a biopsy when in doubt, as the gold standard for diagnosis is the microscopic analysis [13].

Previous studies have been conducted to explore the practices and attitudes of general dentists towards oral biopsy in different parts of the world and in India [4,9,11,14-22]. But no such study has been carried out in the Jamnagar city of Gujarat, India. Therefore, the aim of the present study was to investigate the attitude and practice of general dentists towards the oral biopsy technique in Jamnagar city of Gujarat, India and compare studies performed in other regions of India and the world, aiming to obtain a comprehensive outlook at the scenario regarding oral biopsies on a larger scale.

MATERIALS AND METHODS

The present questionnaire-based cross-sectional study was conducted in the city of Jamnagar, Gujarat, India, from July 2023 to August 2023. Study was approved by the Institutional Ethics Committee (ADC/IHEC/31).

Inclusion criteria: Dentists performing clinical practice and having a minimum qualification of BDS degree were included in the study.

Exclusion criteria: Undergraduate dental students and interns were not included in the study.

Sample size: A convenient sample size of 50 was considered after obtaining contact details through the Dental Association of Jamnagar.

Study Procedure

Questionnaire details: The questionnaire was prepared in Google Forms from similar studies on the attitude and practice of dental practitioners towards the oral biopsy procedure and pretested by senior professionals [14-22]. The questionnaire comprised 18 questions, including demographic details, practices, attitude and an evaluation of patient compliance.

The questionnaire's reliability was evaluated using the test-retest method and the results showed a good agreement of 0.8. The questionnaire's validity was evaluated using the Content Validity Ratio (CVR), which yielded a result of 0.95. None of the questions needed to be skipped because they were all crucial. The questionnaire was electronically sent to 70 dentists and out of them, 50 responded, giving a response rate of 71.43%.

STATISTICAL ANALYSIS

Microsoft Excel software 2020 was employed to tabulate and analyse the obtained data.

RESULTS

Fifty (71.43%) dental practitioners responded out of 70 practitioners. Among them, 17 (31%) Master of Dental Surgery (MDS) and 33 (66%) were BDS. Thirty three (66%) participants had an experience of less

than five years, 35 (70%) participants were associated with private practice and 15 (30%) were in institutional practice [Table/Fig-1].

Question	Option	n (%)
Designation	BDS	33 (66)
	MDS	17 (34)
Type of practice	Private practice	35 (70)
	Institutional practice	15 (30)
Years of experience	0-5	33 (66)
	5-10	12 (24)
	>10	5 (10)

[Table/Fig-1]: Demographic details of dental practitioner.
MDS: Master of dental surgery

Out of all, 42 (84%) participants stated that they encountered less than 10 potentially malignant disorders in the oral cavity in a month and 8 (16%) encountered 10 to 20 potentially malignant lesions in a month. It was found that 8 (16%) participants encountered more than 20 other lesions like swellings, ulcerations, etc., in a month. Out of 50, 44 (88%) participants recommended only less than five biopsies in a month, while 4 (8%) of them recommended >10 biopsies a month. Forty three (86%) participants recommended biopsy for red and white lesions, 18 (36%) for submucous fibrosis and 23 (46%) for pigmented lesions [Table/Fig-2].

It was found that 11 (22) participants performed the biopsy themselves, while 38 (76) referred them to an oral surgeon. Fourty four (88%) participants agreed that they used formalin for tissue

Question	Option	n (%)
Average no. of patients examined per month	<25	10 (20)
	25-50	15 (30)
	50-75	11 (22)
	75-100	3 (6)
	>100	11 (22)
Average no. of patients detected with potentially malignant disorders per month	<10	42 (84)
	10-20	8 (16)
	20-30	-
	>30	-
Average no. of patients with other conditions like swellings, ulcerations, pigmentations in a month	<10	23 (46)
	10-20	19 (38)
	>20	8 (16)
Method of examination of oral lesions	Visual	6 (12)
	Visual and radiographic	19 (38)
	Visual, radiographic and adjuvant methods	25 (50)
When do you generally recommend oral biopsy? (Can select multiple options)	Red and white lesions	43 (86)
	OSMF	18 (36)
	Pigmented lesions	23 (46)
	Single ulcer	22 (44)
	Multiple ulcers	28 (56)
	Swellings	25 (50)
How often do you generally recommend biopsy in a month?	<5	44 (88)
	5-10	2 (4)
	>10	4 (8)
Whom do you send biopsy for histological examination?	Oral pathologist	30 (60)
	General pathologist	20 (40)
Refer patients with oral lesions to (can select multiple options)	Oral surgeon	30 (60)
	Oral pathologist	16 (32)
	Higher centre	14 (28)
	Other specialists e.g., dermatologist, ENT specialist, etc.	5 (10)

[Table/Fig-2]: Responses to questions pertaining to number and management of patients with oral lesions.

OSMF: Oral submucous fibrosis; ENT: Ear, nose and throat

preservation, while 4 (8%) used saline for tissue preservation [Table/Fig-3]. Out of the total participants, 42 (84%) agreed that only a few patients complied with the biopsy procedure readily. Of all, 30 (60%) stated that non compliance of patients was the main reason for not performing biopsies routinely, while 16 (32%)

Question	Option	n (%)
Who generally performs the biopsy procedure?	Performed by yourself	11 (22)
	Oral surgeon	38 (76)
	General surgeon	1 (2)
Type of biopsy generally recommended	Incisional	28 (56)
	Excisional	12 (24)
	Punch	10 (20)
How do you preserve biopsy tissue?	Formalin	44 (88)
	Alcohol	1 (2)
	Saline	4 (8)
	Other	1 (2)

[Table/Fig-3]: Responses to questions aimed at assessing their practice of biopsy procedure.

Question	Option	n (%)
Approximately how many patients comply for the procedure easily?	Few	42 (84)
	All	8 (16)
What do you think is the reason many dentists do not perform the biopsy procedure?	Non compliance of patients	30 (60)
	Lack of trained professionals	16 (32)
	Complications related to the procedure	4 (8)
How do you recommend to increase the knowledge of biopsy procedure among dentists?	Inclusion in undergraduate curriculum	24 (48)
	Hands-on workshops	16 (32)
	Scientific sessions	4 (8)
	Training centres	6 (12)
How do you recommend to increase the awareness of biopsy procedure among patients?	Through sessions during health camps	17 (34)
	Social media	13 (26)
	Dedicated time for patient counselling	20 (40)

[Table/Fig-4]: Responses to questions regarding patient compliance and continuing education.

Name of the author and year of the study	Region of study	Number of participants	Objective of study	Parameters studied	Conclusion of the study
Diamanti N et al., 2002 [4]	Manchester, England	335 GDP, 98 oral surgeon, 220 patients	Assess views of specialists, general practitioners and patients towards biopsy	Views of general dentists, specialists and patients	Dentists believed that they must be capable of carrying out simple biopsies for benign lesions, but they required additional training
López Jorret P et al., 2007 [9]	Murcia, Spain	170	To evaluate general dentists' attitude on oral biopsy as a diagnostic technique for oral lesions	The attitude of general dentists	Majority dentists did not perform oral biopsy in practice due to lack of experience
Wan A and Savage NW, 2010 [11]	Brisbane, Australia	200	To explore how soft tissue biopsy techniques are utilised in Brisbane's general and specialty dental practices	Views of dentists on biopsy and diagnostic histopathology	In order to increase the utilisation of these procedures, it is imperative to have more training in both undergraduate and postgraduate biopsy and diagnostic histopathology
Balan N et al., 2014 [20]	Puducherry, India	105	To examine the attitude of dental surgeons towards biopsy as a method of diagnosing oral lesions	Attitude	Dental surgeons don't usually use biopsy and histopathology because they find it convenient to refer them to specialists
Tyagi KK et al., 2017 [14]	Uttar Pradesh, India	55	Assess attitude and awareness of GDPs towards biopsy procedure for oral lesions	Awareness and attitude	Most GDPs felt lack of knowledge and emphasised need for specialised training programs in UG curriculum
Khajuria N and Anjum R, 2019 [15]	Jammu and Kashmir, India	50	Assess attitude and awareness of GDPs towards biopsy procedure for oral lesions	Attitude and awareness	Though most GDPs were aware of the biopsy procedure, very less number of them actually performed biopsies
Aishwariya S et al., 2020 [18]	Tamil Nadu, India	50	To assess knowledge, attitude and practices towards oral biopsies by dentists in private and institutional practice	Knowledge, attitude, Practice	GDPs were aware of oral screening and biopsy procedures, but were reluctant to perform them
Sabharwal HV et al., 2021 [22]	Dehradun, India	163	Assess knowledge, perception and behaviour towards oral pathologies	Knowledge, attitude, behaviour	Dental practitioners had low knowledge, positive attitude and poor behaviour regarding oral biopsy

dentists felt that the lack of trained professionals was the main reason for not performing biopsies in routine practice. Regarding methods to increase the knowledge of biopsy procedures, 24 (48%) felt the need for its inclusion in the undergraduate curriculum, while 16 (32%) and 6 (12%) were of the opinion that hands-on workshops and training centers, respectively, can help [Table/Fig-4].

DISCUSSION

The present study was undertaken to evaluate the practice and attitude of dentists regarding the biopsy procedures, the medium of specimen preservation, referral to a specialist when in doubt and the choice of referral to a general pathologist or an oral pathologist, as all these factors do have an impact on a patient's diagnosis and treatment plan. The biopsy technique is a competence skill that is easily earned. Research showed that only 22% of dentists would perform a biopsy on their patients [3]. Similar studies have been conducted in different parts of the country [14-22]. The present study also attempts to review the Indian scenario by comparing the results with similar studies undertaken in other regions of India and other countries [Table/Fig-5] [4,9,11,14-22].

Arunachalam M et al., 2022 [17]	Chennai, India	50	Assess awareness of GDPs about oral screening and biopsy procedure in Chennai	Awareness	Most GDPs were aware of oral screening and biopsy procedures, but were reluctant to perform them
Thete SG et al., 2022 [19]	Maharashtra, India	1000	Assess attitude and awareness of general dental practitioners towards oral biopsy	Attitude	General practitioners advocated for the use of biopsy as a tool in the diagnosis of questionable oral lesions on a regular basis
Phulari RG et al., 2022 [16]	Vadodara, India	200	Explore attitude of general practitioners towards oral biopsy	Attitude	The lack of confidence and skills is a reason why many GDPs fail to perform biopsies on their own
Keshwar S et al., 2022 [21]	Haryana, India	68	Determine awareness of oral biopsy among dentists in Haryana	Awareness	Awareness of oral biopsy technique was not up to date among majority of dentists
Present study, 2023	Jamnagar, Gujarat, India	50	To determine practice and attitude of oral biopsy among dentists in Jamnagar city of Gujarat	Practice and attitude	In spite of being aware about importance of biopsy as an important diagnostic procedure, not many dentists perform it routinely due to reasons like lack of training

[Table/Fig-5]: Comparison of the present study with similar studies conducted in India and internationally [4,9,11,14-22].

GDP: General dental practitioner; UG: Undergraduate

The present study found that only 11 (22%) of dentists preferred performing biopsies on their own. Similar studies were undertaken by Tyagi KK et al., in Uttar Pradesh, Arunachalam M et al., in Chennai and Aishwariya S in Tamil Nadu, which showed that 17.2%, 26% and 26% of dentists performed the biopsy on their own, respectively [14,17,18]. While Khajuria N and Anjum R reported a much lower percentage (7%) in Jammu [15]. This suggests that though the biopsy is a routine diagnostically important procedure, which can help to detect malignancy in the early stages, general dental practitioners are not very confident in performing it.

In the present study, regarding the preservation of the biopsy specimen, 44 (88%) dental practitioners preferred formalin as the ideal medium, while 4 (8%) dentists still thought of saline as the ideal medium. In the study done by Arunachalam M et al., in Chennai, 80% and 10% of dentists preferred formalin and saline, respectively [17].

Thete SG et al., found 82% and 18% preference for formalin and saline, respectively, in Maharashtra [19]. While the studies performed by Tyagi KK et al., in Uttar Pradesh, Phulari RG et al., in Vadodara and Aishwariya S in Tamil Nadu showed that only 60%, 67.5% and 62% of practitioners preferred formalin as the ideal preserving medium, respectively [14,16,18]. Keshwar S et al., reported that dentists were little aware of the importance of preservation and fixation of the tissue specimen in their study [21]. It is indeed known that fixation plays a crucial role in arriving at a diagnosis. All studies undertaken in various parts of India show a significant lack of awareness regarding the ideal fixative, which can have a deleterious effect on the tissue and ultimately lead to inconclusive results. This would compel a repeated procedure, which is traumatising to the patient, both physically and mentally, due to the delay in diagnosis.

When asked about the reason for not performing the biopsy procedure routinely, 30 (60%) of practitioners in the present study answered non compliance of patients as the main reason, while 16 (32) dentists answered lack of trained professionals as the reason. Noncompliance of patients was stated as the main reason for not performing the biopsy by 31.4% of dental practitioners in Vadodara and 38% of dental practitioners in Tamil Nadu, in studies conducted by Phulari RG et al., and Aishwariya S, respectively [16,18]. While 46.8%, 46.7%, 74%, 22% of dentists in Jammu, Uttar Pradesh, Maharashtra and Puducherry found a lack of knowledge as the main reason for not performing the biopsy in studies conducted by Tyagi KK et al., Khajuria N and Anjum R, Thete SG et al., and Balan N et al., respectively [14,15,19,20].

When asked about methods to increase knowledge regarding the same, 24 (48%) dentists in the present study felt the need for its inclusion in the undergraduate curriculum. In the study by Tyagi KK et al., 52% of dentists in Uttar Pradesh felt the need for inclusion in the undergraduate curriculum [14]. In the study by Aishwariya S in Tamil Nadu, it was found that 59% of dentists preferred

Continuing Dental Education (CDE) programmes to increase their knowledge [18]. These results reflect how the dentists consider it important to learn biopsy techniques early by its inclusion in the undergraduate curriculum itself. A comparison of the present study with similar studies conducted in India and internationally has been done in [Table/Fig-5] [4,9,11,14-22]. A review of studies conducted in other regions of India showed significant similarity to the present study [14-22].

The present study found that despite their knowledge of biopsies as a diagnostic tool, dentists did not commonly perform biopsies because of a variety of reasons, including lack of knowledge, patient non compliance and inadequate training. Additionally, many dentists are unfamiliar with the fundamentals of oral biopsies, such as the best preservation medium for biopsy samples. Incorrect approaches can lead to a delay in diagnosis, which may negatively affect patient care. Therefore, it is important to familiarise general practitioners with this procedure enough so that they feel competent enough to carry it out.

Limitation(s)

The present study had some limitations, such as being limited to a small region and a small sample size, so the responses may not be the actual reflection of the entire population.

CONCLUSION(S)

In the present study, it was found that general dentists struggle when it comes to performing an oral biopsy. Although dentists are aware of the use of biopsies, this knowledge is not reflected in their practice. However, practitioners have expressed their readiness to receive training on the oral biopsy procedure, which shows their positive attitude towards it. Hence, it is essential to incorporate the theory and practice of an oral biopsy in the undergraduate curriculum and offer continuing dental education programs for the same. Moreover, non compliance of patients is also a factor that demotivates practitioners from recommending biopsies in some cases. Hence, programs promoting oral health should also incorporate sessions to increase awareness of oral biopsies as a diagnostic procedure, so as to decrease patients' anxiety and promote early diagnosis.

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PARTICULARS OF CONTRIBUTORS:

1. Private Practitioner, Jamnagar, Gujarat, India.
2. Associate Professor, Department of Oral Pathology and Microbiology, Ahmedabad Dental College and Hospital, Ahmedabad, Gujarat, India.
3. Private Practitioner, Vadodara, Gujarat, India.
4. Professor and Head, Department of Oral Pathology and Microbiology, Ahmedabad Dental College and Hospital, Ahmedabad, Gujarat, India.
5. Professor, Department of Oral Pathology and Microbiology, Ahmedabad Dental College and Hospital, Ahmedabad, Gujarat, India.
6. Private Practitioner, Morbi, Gujarat, India.
7. Private Practitioner, Ahmedabad, Gujarat, India.
8. Senior Lecturer, Department of Oral Pathology and Microbiology, Ahmedabad Dental College and Hospital, Ahmedabad, Gujarat, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Mitulkumar Rameshbhai Prajapati,
12, Goverdhannagar-2, Bhuravav, Sapa Road, Godhra-389001, Gujarat, India.
E-mail: opadc08@gmail.com

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