

# Knowledge, Attitude and Practice of Oral Biopsy Procedures among Dental Surgeons Registered with Nepal Dental Association

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## ABSTRACT

**Background:** Oral biopsy procedures are rarely practiced by dental surgeons around the world though they should be able to perform the biopsies for the diagnosis of oral lesions. Our objective was to assess the knowledge, attitude and practice of oral biopsy procedures among the dental surgeons who are members of Nepal Dental Association.

**Methods:** A cross sectional study was conducted from December 2018 to March 2019, among the dental surgeons who were registered in Nepal Dental Association till September 2018. A standard pretested questionnaire was prepared using Google forms, was emailed to 374 dental surgeons. Two reminder emails were sent at an interval of 1 month. The non-responding dental surgeons who were reachable through mobile number (N=274) were contacted after the third email. Out of 274, 10 dental surgeons had completed postgraduation, so 264 of them were included in the study. A reminder call was made after one week. The data was entered in SPSS version 20 software and analyzed using descriptive statistics.

**Results:** There were 160 responses to the emails after the conversation through mobile phone. The response rate was 60.6% with the predominance of female responders (66.9%). Though the majority of dental surgeons (96.2%) had encountered one or the other lesions requiring biopsy, only few of them (7.5%) had performed the biopsy which was mainly due to lack of experience and skill (75.6%).

**Conclusions:** Most of the dental surgeons are not comfortable performing biopsy with majority seem to lack experience and skill. There is a need to organize training for dental surgeons to enhance their practical skills.

**Keywords:** Dental surgeon; lesion; oral biopsy

## INTRODUCTION

Biopsy is the removal of tissue from the living organism for the histo-pathological diagnosis.<sup>1</sup> The indications for oral biopsies are: malignant, premalignant, benign, vesiculobullous lesions, periapical granuloma and cysts.<sup>1-3</sup> The dental surgeons should be able to detect the oral lesion and perform the biopsy for early diagnosis and treatment.<sup>3,4</sup> The dental surgeons around the world rarely practice biopsy procedures due to the lack of skill in biopsy technique, fear of medico-legal complication, misconception of it being a predominant specialist procedure etc.<sup>6-9</sup>

There is a lack of availability of information on practice of biopsy procedure among DSs in Nepal, so our general objective was to assess the knowledge, attitude and practice of biopsy procedures among a sample of dental surgeons who are members of Nepal Dental Association.

The specific objective was to assess the need of organizing the training to dental surgeons in order to enhance the practical skills on biopsy procedures.

## METHODS

A cross sectional study using online questionnaire was conducted among a sample of dental surgeons who are members of Nepal Dental Association till September 2018. The ethical approval was obtained from Nepal Health Research Council (reg. No. 659/2018). The study period was from December 2018 to March 2019.

A sample size of 266 was calculated using formula:  $n = Z^2 pq/e^2$  where, n = desired sample size Z = standard normal deviate; usually set at 1.96 which corresponds to 95% confidence level and p = proportion in the target population. q = 1-p (proportion in the target population) and e = margin of error (margin of error set at 0.06).

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The list of dental surgeons had been retrieved from directory of Nepal Dental Association. Out of the dentists (Total Dentists=1443) membered with Nepal Dental Association till September 2018, 608 dentist's email addresses along with mobile numbers were available. Among them, 234 were identified as having master's degree. All the dental surgeons with bachelor in dentistry degree (N= 374) were included whereas dental specialists with Master degree in Dental Science, Basic Science and Public Health were excluded from this study.

An online questionnaire adapted from previous study was prepared using Google forms and a link was created.<sup>7</sup> Link to the questionnaire and a covering letter along with an informed consent form were distributed through email to all 374 dentists. The covering letter attached in the email along with the questionnaire included the detail description of the study and the assurance of maintaining the confidentiality and anonymity of the data. Out of 374 emails, 130 were returned due to incorrect email address (automated mail delivery failure messages were received). The 2<sup>nd</sup> email was send to all the non responding dental surgeons 1 month after the initial email. The 3<sup>rd</sup> email was send to all the non responding dental surgeons at an interval of 1 month. As there was no response to the emails, the same dental surgeons were informed about the study through mobile phone. They were requested to e-mail back the completed questionnaire along with signed consent form. Among 374 mobile numbers available, 274 were reachable and the email addresses were reconfirmed. Among 274, 10 of them had completed the

masters' degree; so 264 dental surgeons were included in this study. The non responding dental surgeons were given a reminder call 1 week after the initial call. This close ended questionnaire adapted from previous study consisted of two sections; the first comprised of the socio-demographic and professional aspects and the second section consisted of 12 questions related to knowledge regarding oral lesions requiring biopsy, biopsy methods, diagnostic pathology, referral, preservation of specimens and questions related to attitude and the practice of oral biopsy by dental surgeons in Nepal Dental Association and need of knowledge upgrading. There is no published data on knowledge, attitude and practice of oral biopsy procedures among dental surgeons of Nepal to compare current data. The data from Google forms were entered in Statistical Package for Social Sciences (SPSS) version 20 software and was analyzed using descriptive statistics.

**RESULTS**

Out of 264 dental surgeons, 100 dental surgeons (37.8%) responded to the questionnaire and 60 dental surgeons (22.7%) responded after the reminder call. All the data was used for analysis. None of the total questionnaires had to be discarded due to incomplete answers (< 50% being the criteria).

Out of 264 dental surgeons, 160 responded to the questionnaire (the response rate was 60.6%) with predominance of female responder (107 females, 66.9%). Majority of responders (116 responders, 72.5%) were in the age range of 25-30 years with 133 responders (83.1%) having less than 5 years of dentistry practice.

**Table1. Dental surgeons' knowledge on lesions requiring biopsy and the lesions encountered in their practice (n=160).**

Lesions encountered/ lesions requiring biopsy	Lesions Encountered (Percent)	Lesion requiring biopsy (Percent)
Cystic / Benign/Premalignant/Malignant	77(48.1%)	40(25%)
Cystic only	1(0.6%)	20(12.5%)
Benign only	0	3(1.9%)
Premalignant only	1(0.6%)	8(5.0%)
Malignant only	1(0.6%)	0
Benign/ Malignant	5(3.1%)	3(1.9%)
Cystic/Premalignant	1(0.6%)	21(13.1%)
Benign/Premalignant	5(3.1%)	7(4.4%)
Benign/Premalignant/Malignant	29(18.1%)	7(4.4%)
Premalignant/Malignant	5(3.1%)	2(1.3%)
Malignant/Cystic	3(1.9%)	0
Benign/Cystic	3(1.9%)	7(4.4%)
Benign/Premalignant/Cystic	12(7.5%)	29(18.1%)
Premalignant/Malignant/Cystic	13(8.1%)	6(3.8%)
Benign/Malignant/Cystic	4(2.5%)	1(0.6%)
Not encountered	0	6(3.8%)

For the questions accessing the knowledge, if there was more than 50% of the response it was considered as adequate knowledge. All the responders were aware that oral biopsy essential for a definitive diagnosis of the oral lesions. Regarding the questions on the lesions requiring biopsy only 77 out of 160 respondents (48.1%) knew the

correct answer (Table 1). Majority of respondents had encountered one or the other kind of lesions requiring biopsy (Table 1). Majority of dental surgeons reported the reason for not performing biopsy by themselves was due to lack of experience and practical skills in biopsy procedures (Table 2).

**Table 2. Frequency of the biopsy requiring lesions encountered, referral practice and reasons for not performing the biopsy by the dental surgeons (N=160).**

Frequency Of biopsy requiring lesions encountered	Number (%)	Referral practice	Number (%)	Reasons for not performing biopsy	Number (%)
Once a week	19(11.9%)	Call a specialist	27(16.9%)	Patients do not agree	3(1.9%)
Once a month	86(53.8%)	Refer to a higher center	48(30.0%)	Lack of experience and skill	121(75.6%)
Once a Year	42(26.3%)	Perform biopsy on their own	12(7.5%)	Lack of Instruments required for biopsy	20(12.5%)
Once in 5 year	5(3.1%)	Either call a specialist or refer to a higher center	73(45.6%)	Lack of confidence in interpreting histo-pathological report	4(2.5%)
No response	8(5.0%)			No response	12(7.5%)

**Table 3. Dental surgeons' knowledge on biopsy methods and methods of biopsy used (n=160).**

Methods of Biopsy	Aware of biopsy methods(%)	Methods of biopsy used (%)
Incisional	4(2.5%)	25(15.6%)
Excisional	6(3.8%)	30(18.8%)
Fine needle aspiration	2(1.3%)	17(10.6%)
Incisional/excisional	22(13.8%)	36(22.5%)
Incisional/excisional/ Fine needle aspiration	120(75.0%)	19(11.9%)
Incisional/Fine needle aspiration	4(2.5%)	5(3.1%)
Excisional/ Fine needle aspiration	2(1.3%)	4(2.5%)
No response	4(2.5%)	24(15%)

**Table 4. Dental surgeons' knowledge on the preservation of biopsy specimen and methods of preservation of specimen used in their clinic (n=160).**

Methods of preservation of biopsy specimen used	Aware of method of preservation of biopsy specimen(%)	Methods for preservation of specimen used in your clinic(%)
Saline	13(8.1%)	20(12.5%)
10% formalin	146(91.3%)	132(82.5%)
Alcohol	0	1(0.6%)
No response	1(0.6%)	7(4.4%)

**Table 5. Dental surgeons' self perceived need to update their knowledge on oral lesion and biopsy procedures and practice regarding the same.**

who felt a need to update knowledge regarding oral lesions and biopsy procedures/ percent	who update knowledge regarding the same n=160(%)	Methods used to update their knowledge regarding the same	Number=121 (%)
160/ 100%	121/ 75.6%	Journals	9/ 7.4%
		Internet	67/ 55.4%
		Conferences	1/ 0.6%
		Any other sources (workshops, group practice, Continuous dental education programmes)	17/ 14.3%
		No response	27/ 22.3%

Majority of dental surgeon were well aware of all the oral biopsy methods mentioned in the questionnaire (Table 3). Most of the dental surgeons (107 respondents, 66.9%) always send the excised tissue for analysis, 36 of them (22.5%) send it for analysis only when required and five of respondents (3.1 %) send it for analysis only sometimes. Most of the dental surgeons (146 out of 160 respondents, 91.3%) were aware of the correct method of preservation of biopsy sample (Table 4).

Though all the dental surgeons felt the need to update their knowledge regarding lesions requiring biopsy and biopsy procedures, 121 out of total 160 respondents (75.6%) update their knowledge on this field using various means (Table 5).

## DISCUSSION

The survey using email had variable and low response rate: López-Jornet et al.<sup>10</sup> had 42.7% response rate while George et al.<sup>11</sup> had 13.6% response rate. We could have increased the response rate by using self administered questionnaire as in study by Murgod et al. where the response rate was 90.5%.<sup>7</sup>

It was quite reassuring that all the dentists were aware of the importance of biopsy for diagnosis of oral lesions, a finding similar to study by Murgod et al.<sup>7</sup>

All the responding dental surgeons had encountered one or the other lesions requiring biopsy showing that the dental surgeons are exposed to variety of lesions and play pivotal role in diagnosis of oral lesions.

Majority of the dental surgeons encountered the lesion once a month, a finding similar to Anandani et al.<sup>12</sup> This finding was in contrast to findings in the previous studies in which most general dental practitioners reported seeing lesions once in a year.<sup>6-8</sup> As they frequently encounter the lesions they should have sufficient knowledge regarding oral pathology and their diagnosis.<sup>7</sup>

Only 18.1% of the dental surgeons thought the indications for biopsy are benign, premalignant and malignant. This data shows their lack of awareness that the benign, premalignant and malignant lesion requires biopsy. This is of major concern as the failure of early diagnosis of premalignant and malignant will lead to severe morbidity and mortality.<sup>13</sup> It is still reassuring that 48.1% of responding dental surgeons were aware of the whole range of lesions requiring biopsy. This finding was in contrast to findings by Murgod et al. who found only 22.3% of general dental practitioner knew the correct indication of biopsy.<sup>7</sup> Among the

responding dental surgeons, only 7.5% of them had performed the biopsy procedures themselves. This was less than in other studies by Jornet et al.<sup>3</sup>, Diamanti et al.<sup>6</sup>, Murgod et al.<sup>7</sup>, Wan and Savage<sup>8</sup> and Anandani et al.<sup>12</sup> who reported 21%, 15%, 14.9%, 22.7%, and 11.3% of the general dental practitioners, respectively had performed the biopsy procedures by their own. Those who had not performed the biopsy, preferred to either refer to specialist or refer to higher center (45.6%). In other studies by Diamanti et al., Murgod et al., Wan and Savage and Anandani et al. found 55%, 64.67%, 76.2%, 50.8% of dental practitioner respectively preferred to refer the lesion requiring biopsy.<sup>6-8,12</sup> Several factors like fear of medico-legal issues, lack of skills in diagnosis and biopsy procedures or misconception of it requiring a specialist intervention, are attributable for reluctance in performing biopsy.<sup>6-8,12</sup>

Most of the dental surgeons did not perform the biopsy due to their lack of the experience and the skills in biopsy procedures (75.6%) which is much higher than in other studies.<sup>3,7,12</sup> This indicates an inadequate emphasis in acquiring practical experience and skills in biopsy procedures during their undergraduate training. In a study by Wan and Savage, more than 50% of dental practitioners reported being taught theoretical aspect of the biopsy procedures and diagnostic histopathology during undergraduate training but had not received any practical experience and skills regarding the same.<sup>8</sup>

Further, majority of respondent were aware of all the methods for biopsy mentioned in the questionnaire as seen in Murgod et al.<sup>7</sup> The dental surgeons must acquire the skill to perform the biopsy techniques. They should also have the knowledge on its indications and contraindications which will assist them to select the biopsy types in particular cases.<sup>7,12</sup>

Majority of respondents were well aware of the protocol that any abnormal tissue removed should be sent for histopathological evaluation. It is noteworthy that 22.5% of respondents send the removed tissue for analysis only when required. This may be because dental surgeons perform the excisional biopsy as a final treatment of clinically obvious lesions and didn't feel the necessity of its histopathological evaluation and confirmation of diagnosis.<sup>7,12</sup>

It was noteworthy that although majority of responders knew about the correct method of preservation of specimen, 12.5% of responders preserved the specimen for the biopsy in saline. It seems they are either neglecting or ignorant of the fact that 10% formalin results in optimal fixation of tissue and saline results

in poor fixation and introduce artefactual changes hindering the histopathological diagnosis.<sup>14</sup>

All the respondents had perceived need to update their knowledge regarding oral lesions and biopsy procedures and majority of them (75.6%) did the same by means of various methods such as journals, internet, conferences, workshops, group practice and continuous dental education programmes. This findings was similar to that seen in study by Murgod et al. and Anandani et al.<sup>7,12</sup>

However, the limitation of our study is low response rate. This limits the generalization of our findings among the dental surgeon of Nepal. We had to confine the interpretation of results to those who answered the questionnaire. We would like to recommend further studies using another mode of administering the questionnaire such as self-administered questionnaire to increase the response rate and generalize the findings.

## CONCLUSIONS

Most of the dental surgeon are not comfortable performing biopsy with majority seem to lack experience and skill. There is need to organize training to Dental Surgeons to enhance their practical skills. This will provide the dental surgeons with the necessary experience and practical skill and make them confident and competent enough to carry out the procedures by themselves.

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