

Students' perceived knowledge and confidence of performing extra-oral clinical examinations during Bachelor of Dental Surgery (BDS) study in New Zealand

Guangzhao Guan, Lawanya Rathninde, Lara Friedlander, Suzanne Hanlin, Ajith Polonowita, Li Mei

ABSTRACT

AIMS: To investigate students' self-perceived understanding and confidence in performing extra-oral examinations on patients during their Bachelor of Dental Surgery (BDS) education and training in New Zealand.

METHOD: A mixed-methods, cross-sectional study design was used to explore the understanding and perceived confidence of students who were in their third, fourth and final years of training in performing extra-oral examinations on patients. A questionnaire containing Likert and open-ended questions was distributed to 270 students.

RESULTS: A total of 270 questionnaires were distributed to BDS3, BDS4 and BDS5 dental students, with an 80.7% response rate. Approximately 60% of students conducted general patient observations consistently, with no significant difference across year levels. Temporomandibular joint assessments were more frequently conducted by BDS5 students, while muscle of mastication, lymph node and salivary gland assessments were less consistently performed. Confidence varied across examination types, with over two-thirds expressing uncertainty in conducting some assessments. Many students felt that structured electronic templates and anatomical knowledge were helpful; however, they noted a need for improved training on palpation techniques and earlier integration of hands-on clinical practice.

CONCLUSION: Most students perceived they were well taught and felt confident in the extra-oral examination of a patient. Students of all levels of experience believed they would benefit from curriculum development and additional modes of teaching to aid their learning and improve their ability to perform an extra-oral examination.

Extra-oral examinations form the initial part of dental examinations when patients present for oral healthcare. The extra-oral examination of a patient is the initial and essential part of assessment, which needs to be performed thoroughly and systematically to ensure nothing is missed.¹ This includes assessing the face, head and neck region for the presence of swellings, discolouration, asymmetries and other abnormalities.² A good knowledge of head and neck anatomy is important to identify any departures from "normal" and facilitate the early detection of pathology or disease.¹

The Bachelor of Dental Surgery (BDS) programme in New Zealand is a 5-year degree. The first year of the BDS degree is a common health science year for students seeking entry to several health professional programmes including medicine, dentistry, pharmacy and physiotherapy. Admission

to dentistry occurs in the second year (BDS2) of the BDS degree and is competitive. The programme is arranged into three vertical themes that deliver papers from BDS2 to BDS5: "The Dentist and the Patient", "Biomedical Sciences" and "The Dentist and the Community". BDS2 is a largely pre-clinical year, and students begin managing patients under supervision for comprehensive care in BDS3. The BDS curriculum framework is horizontally and vertically integrated to enable students to engage in the didactic teaching and learning underpinning clinical practice activities in different disciplines that are appropriate for the stage of learning.³

Examination of a patient is introduced in BDS2, as part of Dentistry and the Patient. Each year of the BDS curriculum builds on prior learning and experience, and aligns horizontally with other papers such as Biomedical Science and Dentist in

the Community. Oral medicine is taught didactically through lectures and assessed clinically as part of patient care. In BDS3, patient clinics are introduced, and students work in pairs or trios under close supervision of academic clinical specialists or general dental practitioners. Students have increased clinical practice as they develop independence, and identification of pathology is an essential competency for graduation.

By the end of the final year (BDS5) students need to have met the competencies for independent practice, which are aligned with the New Zealand Dental Council's standards framework for oral practitioners and are similar to international standards.⁴ Higher education institutions in the United Kingdom follow a similar curriculum in order to teach the fundamentals of dentistry while following the expected learning outcomes outlined by the General Dental Council.⁵ The framework for European dental undergraduates reflects the principles of the Bologna process and coincides with the 48 countries that form the European Higher Education Area.⁶ In the United States of America (USA), curriculum requirements are framed by the Commission on Dental Accreditation, which has expected competencies and associated theoretical knowledge that must be addressed during dental school.⁷

Previous qualitative and quantitative studies have found that extra-oral examinations are only performed superficially, if at all, by dental students. In 2001, a study conducted in Maryland reported that clinicians omitted extra-oral examinations as they felt they did not have the time, it was an invasion of the patient's personal space and they had inadequate knowledge for conducting these exams.⁸ In 2019, at Iwate Medical University's School of Dentistry in Japan, a questionnaire revealed that only 43.6% of dentists routinely performed oral cancer screenings at the first appointment, and that there was no significant difference between specialists and clinical experience.⁹

In 2005, a study of dental students' knowledge of oral cancer screenings in South Carolina indicated that 74.8% had knowledge of the clinical appearance of an early oral cancer lesion, and 63.2% had knowledge that cancerous lymph nodes when palpated are hard, painless, mobile, or fixed. Only 55.2% of students were able to identify the most likely sites of oral cancer.¹⁰ Another study conducted in Italy in 2007 found that 64.8% of dentists believed that they were prepared to perform extra-oral exams and palpate oral structures.¹¹ Furthermore, several studies

found that there was a general lack of knowledge and skills regarding oral cancer screenings and extra-oral examinations, and that dental students and qualified dentists perceived this as a deficiency in their learning.¹¹⁻¹³

Although similar studies have been conducted on the oral cancer screening aspect of the extra-oral examination, they have not focussed on the overall extra-oral screening of a patient. To our knowledge there have not been any studies conducted in New Zealand concerning extra-oral examinations performed by dental students.

The aim of this study was to investigate students' self-perceived understanding and confidence in performing extra-oral examinations on patients during their BDS education and training in New Zealand.

Method

Ethical approval was obtained from the University of Otago Human Ethics Committee (D20/359), and Māori research consultation was undertaken with the Ngāi Tahu Research Consultation Committee. A physical copy of the anonymous questionnaire was distributed to BDS3, BDS4 and BDS5 students at the beginning of their morning lectures. Respondents were asked not to confer with others and were provided approximately sufficient time to complete the questionnaire. BDS students do not provide patient care until the third year and so BDS2 students were excluded from this study.

The questionnaire was guided from the expected learnings within the undergraduate oral medicine curriculum and perceived strengths and limitations in students learning by oral medicine staff. The questionnaire comprised five questions that described the participant characteristics (year group, gender, age, ethnicity and previous qualifications), 25 multi-choice questions (including Likert scale and multiple selection) and three open-ended questions that provided context to responses and enriched the data (Appendix). Questions were designed to explore the following core topic areas:

1. General observations (observing the patient's general appearance)
2. Temporomandibular joint (TMJ) assessment
3. Muscles of mastication assessment
4. Lymph nodes assessment
5. Salivary glands assessment
6. Overall programme attitudes and comments

Statistical analysis

Data were analysed by using Statistical Package for the Social Sciences (SPSS) version 23 (SPSS Inc., Chicago, Illinois) and Microsoft Excel (Microsoft Corp, Redmond, Washington). Continuous variables were expressed as mean \pm standard deviation (SD) if normally distributed, or as median and quartiles if they had a skewed distribution. Categorical variables were described as counts and percentages. A bivariate analysis of categorical variables was conducted using the Chi-squared test, and P-values were calculated. A P-value <0.05 indicated statistical significance. The qualitative responses to the open-ended questions were transcribed verbatim and NVivo 12 (Lumivero, Denver, Colorado) was used to assist in the organisation and reflexive thematic analysis of the data using a general inductive approach. Initially, thematic coding, which involved separating textual data units for manual coding, was performed. Using an iterative approach, coding was checked for consistency, refined and organised, and any contradictory views were discussed to reach consensus agreement. The codes were then compared, and patterns from frequent and recurring ideas were used to develop overarching themes and subthemes. The similarities, differences and relationships among the themes were examined to identify any new themes.

Results

A total of 270 questionnaires were distributed across the BDS3 (N=94), BDS4 (N=78) and BDS5 (N=98) dental student cohorts. A total of 218 responses were received, with a response rate of 80.7% (Table 1). Across the year groups, the response rates were 87.2% for BDS3, 74.4% for BDS4 and 79.6% for BDS5.

General observations

Within the student cohorts, 60.5% of BDS3, 53.4% of BDS4 and 61.5% of BDS5 stated that they conducted a general observation of their patients all the time. About a third of the students stated that they did not always conduct a general observation. No statistical significance was found among BDS3, 4 and 5.

Of the students who did not conduct a general observation all the time, 40.2% had a lack of understanding of how to conduct one, 27.2% deemed it unnecessary, 19.5% said it was time consuming and 12.6% had various other reasons for

not conducting a general observation. Regarding opinions on why general observations are not consistently conducted, a statistically significant difference was found ($X^2=13.1$; $P<0.05$), with BDS5 students performing them more frequently than BDS3 and BDS4 students.

Around half of the students in each year level felt confident when conducting general observations (Figure 1). The most commonly recorded items of the general observation were physical disabilities, facial symmetry and lip competency (93.1%, 89.4% and 87.2% respectively) (Figure 2).

TMJ assessment

Most of the BDS students (93.9% of BDS3, 84.2% of BDS4, 75.6% of BDS5) stated that they conducted a TMJ assessment of their patients all the time. However, regarding the overall frequency of how often TMJ assessments are conducted across the groups, a statistically significant difference was found between the three groups ($X^2=13.0$; $P<0.05$), with the BDS5 students conducting examinations more often than BDS3 and BDS4.

Of the students who did not conduct a TMJ assessment all the time, 47.2% deemed it unnecessary, 30.6% indicated a lack understanding of how to conduct one, 11.1% said it was time consuming and 11.1% cited "other reasons".

The proportion of students that felt confident conducting a TMJ assessment was fairly similar between the year groups, with 68.3%, 67.2% and 55.1% for BDS3, BDS4 and BDS5 respectively (Figure 1). The most commonly recorded items were TMJ sounds (97.2%), locking (86.2%) and tenderness to palpation (84.4%) (Figure 2).

Muscles of mastication assessment

More than half of the students stated that they conducted an assessment of the muscles of mastication all the time (59.8% of BDS3, 63.2% of BDS4 and 62.8% of BDS5). Additionally, a smaller proportion of students reported conducting this assessment most of the time (29.6% of BDS3, 17.2% of BDS4 and 20.5% of BDS5).

Among those who did not conduct a muscles of mastication assessment all the time, the most common reason was a lack of understanding (64.4%), followed by the perception that it was unnecessary (13.6%) or time-consuming (9.8%), or was due to other reasons (12.1%).

Confidence levels varied, with more than one-third of students in each year group feeling confident about conducting this assessment, while less than two-thirds did not feel confident

(Figure 1). The most commonly recorded assessment components were tenderness, referred pain, muscle contraction and range of movement (Figure 2).

Lymph nodes assessment

About one-third of all students—BDS3 38.3%, BDS4 37.9% and BDS5 26.9%—stated that they conducted an assessment of the lymph nodes on their patients all the time

Of the students who did not conduct a lymph nodes assessment all the time, 56.6% had a lack of understanding of how to conduct one, 14.5% deemed it unnecessary, 13.2% said it was time consuming and 15.8% had various other reasons for not conducting one.

The proportion of students who felt confident when conducting a lymph node assessment was 55.6% of BDS3, 45.6% of BDS4 and 51.3% of BDS5 students (Figure 1). With regard to the total components recorded, a statistically significant difference was found between the three groups ($X^2=26.4$; $P<0.05$), with the most recorded aspects being size, tenderness to palpation and site (Figure 2).

Salivary glands assessment

Approximately one-third of all students stated that they conducted a bimanual examination of the salivary glands on their patients consistently, with 37.8% of BDS3, 26.8% of BDS4 and 24.4% of BDS5 students reporting this practice.

Of the students who did not conduct a salivary glands assessment all the time, 61.3% had a lack of understanding of how to conduct one, 13.4% deemed it unnecessary, 19.7% said it was time consuming and 5.6% had various other reasons for not conducting one.

The proportion of students who felt confident when conducting a salivary gland assessment was 35.4% of BDS3, 31.6% of BDS4 and 26.9% of BDS5 students, while over two-thirds of all students reported not feeling confident performing this assessment (Figure 1). The most recorded items were site, tenderness to palpation and size (Figure 2).

Overall perceptions of teaching regarding extra-oral examinations Overall confidence and extra-oral examination teaching satisfaction

Overall, 6.1% of BDS3, 7.0% of BDS4 and 5.1% of BDS5 students felt very confident conducting a full extra-oral head and neck examination. Most

students (59.0%) across all three year groups felt confident conducting a full extra-oral head and neck examination (Figure 3). Furthermore, 60.0% of students indicated that they did not complete a full extra-oral examination all the time, with the most common reasoning being a lack of understanding on how to conduct one properly. Most students felt satisfied or neutral with their understanding of extra-oral examinations (Figure 3).

Opinions on aspects of satisfaction of the teaching

Students perceived that the emphasis on using a systematic approach and having access to an electronic template was most helpful for clinical workflows.

1. *“The general flow of the history and examination of the patient’s first appointment is good as we have an electronic form to have a structured approach. A part of this form is the extra-oral component.”* – BDS3 student

Students also highlighted the usefulness of having background anatomical knowledge.

2. *“General anatomical knowledge of the head & neck as well as knowing where the landmarks are was taught well in second year in preparation for clinical years.”* – BDS4 student
3. *“The importance of palpating lymph nodes is very well highlighted, as well as training on how to identify TMJ issues.”* – BDS3 student

Comments from students reflected their learning stage at different years.

Opinions on aspects of improvements of the teaching

Most students struggled with understanding and interpreting palpation techniques, particularly when differentiating between normal and abnormal tissues.

4. *“I would like to know how to interpret findings of certain abnormalities (a hard node or soft, rubbery node). I also don’t know the proper technique of palpating the lymph nodes, muscles of mastication, or salivary glands (specifically bimanual salivary gland palpation).”* – BDS4 student
5. *“What could/should we expect when there is an abnormality, and what does it feel*

like? I am also unsure of when I should be referring cases and don't know what should be classified as severe.” – BDS5 student

Some students suggested the implementation of small group tutorials, and earlier learning in the programme to help improve upon these gaps of knowledge.

6. *“Maybe there can be more clinical presentations and tutorials on how exactly we carry out extra-oral techniques. I am a more hands-on learner and being able to do it on patients or other students will be very helpful. Although the theoretical notes are essential in providing the knowledge of what to do as well.” – BDS5 student*
7. *“Clinical sessions on how to conduct full E/O [extra-oral] exam, including a description of what we might come across; what it might look/feel like, and what is normal/abnormal.” – BDS3 student*
8. *“We got one lecture from an oral medicine specialist in fourth year but by then it was too late as we were already seeing patients. Streamline lecture content followed by clinical sessions to practice extra-oral exams. It would be most helpful to have this in second or third year instead.” – BDS5 student*

These quotes were used to generate a word cloud (Figure 4) highlighting the main themes discussed by the students.

Discussion

A mixed-methods, cross-sectional study design was used to explore the understanding and perceived confidence of students who were in their third, fourth and final years of training in performing extra-oral examinations on patients. First, this quantitative study explored clinical-year students' self-reported understandings when performing an extra-oral examination and their confidence levels. The study showed varying results from the different year groups with regard to the frequency of conducting the different aspects of an extra-oral examination. While there was a higher frequency of conducting most aspects of the extra-oral examination in their third year of study, the frequency gradually decreased with each succeeding year group. This may be due to the closer supervision in BDS3, which gradually decreases as students become more independent.

This study had some limitations. There may have been some confounding bias from background experiences of participants, such as a previous oral health-related degree or employment in dental hygiene or dental assisting. Variation in the clinical experiences and supervision may also have contributed to the differences in students' clinical protocols and knowledge. Furthermore, the higher response rate from BDS3 students compared with BDS4 and BDS5 students may have influenced responses and as such may reflect the students' stage of learning.

This study revealed the confidence level and knowledge gaps of dental students and may provide a reference for the development of potential solutions and improvements for teaching extra-oral examinations within the BDS curriculum. Statistically significant differences were found in the view of the different year groups with regard to why general observations were not conducted all the time, and with regard to how often a TMJ assessment was carried out. Students who did not conduct an extra-oral examination most commonly reported a lack of understanding about the technique or the increased time that was needed to complete the examination, and some felt it was unnecessary. This perception may be attributed to students receiving didactic teaching on clinical examination of a patient in both the Biomedical Sciences and the Dentist and the Patient papers. Although they are being provided with comprehensive teaching because learning is in two areas of the curriculum, it may be perceived by students as diluted or less important. Further, the increasing expectations for efficiency and speed with each succeeding year of study may impact how students approach clinical tasks and prioritise elements of the examination process. This highlights the importance of reflection, reinforcement and the assessment of techniques for examining a patient at each stage of learning.

Self-reported understanding and confidence levels were similar for all students, and this was not affected by stage of training. Overall, students perceived they were confident conducting an extra-oral examination. More than half of those who participated in the study felt confident in making general observations and TMJ assessments. However, most students did not feel confident with assessing lymph nodes, muscles of mastication and salivary glands. In a similar study, involving Malaysian dental students, Awan et al. found 53.3% of students felt that they had sufficient knowledge

about the detection of oral cancer, and this was further enhanced as students progressed in their academic training.¹⁴ In the current study, most students were satisfied that they had sufficient knowledge to perform extra-oral examinations. Interestingly, senior students appeared to be more likely to be dissatisfied with their knowledge when it comes to performing an extra-oral examination. This may explain the low level of performance in some of the subcategories related to the extra-oral examination. Although the theory behind an extra-oral exam is taught through lectures, students may feel unable to take this theory and apply it in a clinical setting. Furthermore, students usually conduct an extra-oral examination independently and often without direct observation by supervising clinicians. This is then reviewed by the supervisor at the time of treatment planning so real-time feedback, learning and students' confidence performing lymph nodes, muscles of mastication and salivary glands assessments can be enhanced at chairside.

Qualitative findings in the second part of the study indicated that most students felt they were well taught. However, there were perceived weaknesses in some areas that could be strengthened to enhance their learning—for example, through use of hands-on clinical demonstrations and tutorials, which have been used in other areas of dentistry to improve knowledge gaps and to help students apply knowledge to clinical practice.¹³ An experimental study among undergraduate nursing students in Brazil considered a group who had an intervention of an instructional module for lymph node palpations, and a control group without the instructional module. The findings showed a statistically significant difference between the intervention and control groups, with those who had the instructional module more accurately able to identify the size, consistency, coalescence and mobility of lymph nodes.¹⁵ Further, a prospective cohort study con-

ducted in the USA explored medical students' knowledge of head and neck cancer screening before and after an educational fair on this topic. The results indicated that students' understanding of conducting head and neck examinations as well as knowledge of risk factors and symptoms had significantly improved compared with before the event.¹⁶ A module that provides more in-depth knowledge and understanding of examinations with preclinical examples and opportunities for hands-on clinical experience would be highly beneficial for dental students, particularly in the area of nodule palpation.

Currently, only 71.9% of general dental practitioners in New Zealand routinely screen the head and neck region.¹⁷ Greater emphasis within the BDS curriculum will help to ensure that extra-oral examinations are conducted thoroughly when students graduate and become practicing dentists. Inclusion of seminars and small group tutorials could provide more knowledge and experience in extra-oral examinations for students, allowing them to develop a better understanding of the technique and become more confident in conducting a thorough examination on patients. Information packs or instructional videos demonstrating correct technique and common errors would also be beneficial and could be used for ongoing professional development for new graduates and dentists.

Conclusion

Most students perceive they are well taught and feel confident performing extra-oral examinations of patients. Students were more confident performing a general observation and TMJ assessment but were less confident performing assessments of lymph nodes, muscles of mastication and salivary glands. Students of all levels of experience believe they would benefit from curriculum development and additional modes of teaching to aid in their learning and clinical practice.

Table 1: Demographic characteristics of the BDS (Bachelor of Dental Surgery) students (N, %).

	BDS3 (N=82)	BDS4 (N=58)	BDS5 (N=78)
Gender			
Male	27 (32.9%)	27 (46.6%)	31 (39.7%)
Female	55 (67.1%)	31 (53.4%)	47 (60.3%)
Ethnicity			
European	20 (24.4%)	6 (10.3%)	9 (11.5%)
Asian	42 (51.2%)	31 (53.4%)	52 (66.7%)
Māori or Pacific	8 (9.8%)	14 (24.1%)	8 (10.2%)
Other	12 (14.6%)	7 (12.2%)	9 (11.6%)
Previous qualification			
No	63 (76.8%)	36 (62.1%)	69 (88.5%)
Yes	19 (23.2%)	22 (37.9%)	9 (11.5%)
Bachelor of Oral Health	2 (10.5%)	2 (9.1%)	0 (0.0%)
Bachelor of Dental Technology	2 (10.5%)	0 (0.0%)	2 (22.2%)
Bachelor of Pharmacy	1 (5.3%)	0 (0.0%)	0 (0.0%)
Bachelor of Science	9 (47.4%)	12 (54.5%)	5 (55.6%)
Other	5 (26.3%)	8 (36.4%)	2 (22.2%)

Figure 1: The proportion of students that felt confident in conducting TMJ, general observation, lymph nodes, muscles of mastication and salivary glands assessment across third-, fourth- and fifth-year dental students.

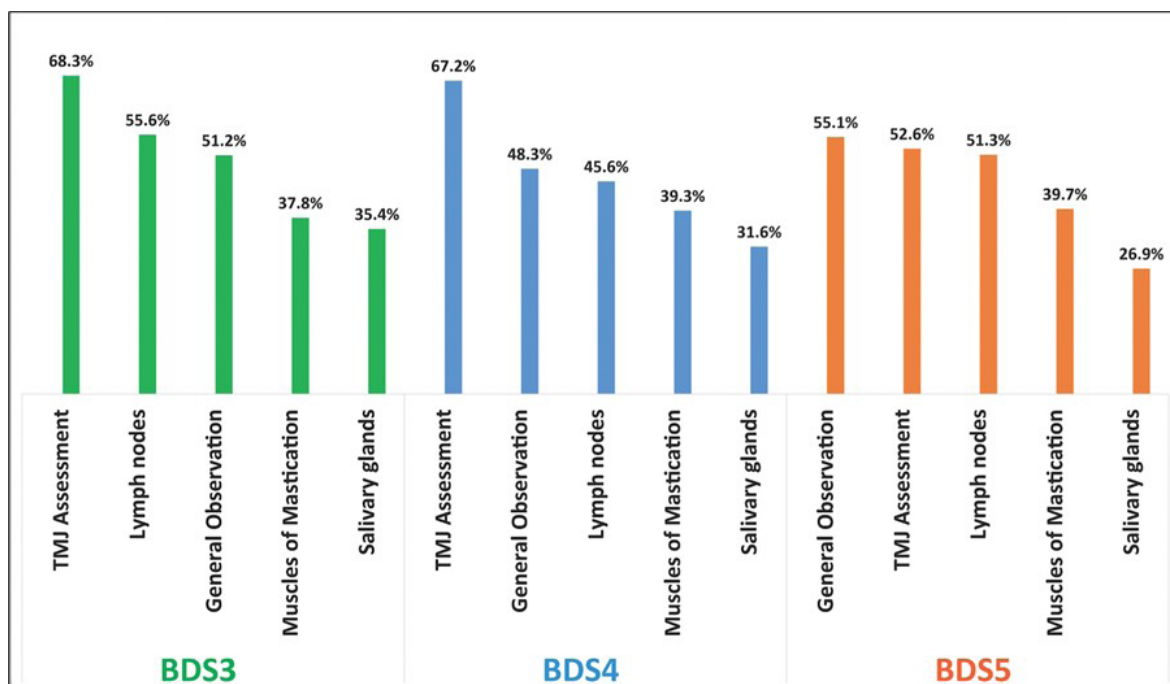
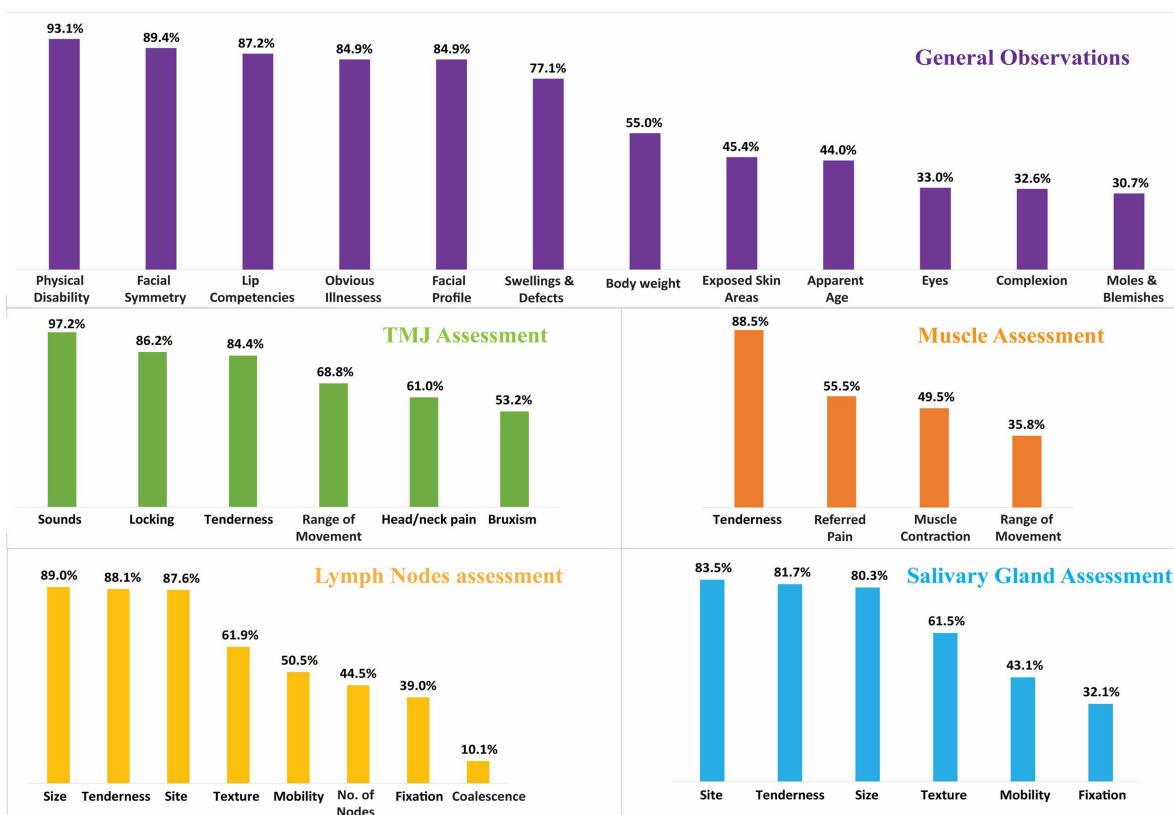


Figure 2: The most recorded items during extra-oral examination.



COMPETING INTERESTS

The authors declare that they have no competing interests.

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AVAILABILITY OF DATA AND MATERIALS

Data available on request due to privacy/ethical restrictions.

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Appendix: Exploring competencies in dental students when performing extra-oral examinations

Please answer the following questions below by inserting a tick (✓) in the box next to your answer.

1. Which year of Bachelor of Dental Surgery course are you currently in?

- BDS 3
- BDS 4
- BDS 5

2. Gender

- Male
- Female
- Other

3. Ethnicity

- New Zealand European
- Maori
- Pacific Islander
- Asian
- Others (please specify _____)

4. Age _____ years old

5. Do you have any previous qualifications?

- Yes
- No

If yes, please select from the list below:

- Bachelor of Medicine and Bachelor of Surgery
- Bachelor of Oral Health
- Bachelor of Dental Technology
- Bachelor of Pharmacy
- Bachelor of Science
- Others (please specify _____)

Section A: Clinical examination aspects

General Observations

6. How often do you conduct a general observation of the patient?

- All of the time
- Most of the time
- Sometimes
- Never

Only if the patient mentions something of concern

7. If you don't conduct a general observation all the time, what is your reasoning?

- Takes too much time
- Lack understanding of how to do it
- Deem it unnecessary
- Other (please explain _____)

8. How confident do you feel conducting a general observation of the patient?

- Very confident
- Confident
- Neutral
- Unconfident
- Very unconfident

9. When conducting a general observation of the patient, which of these do you assess and record? (Tick all that apply)

- Body weight
- Physical disability
- Obvious illnesses
- Apparent age, relative to chronological age
- Complexion (e.g. pallor with anaemia, yellow with jaundice)
- Exposed skin areas on the head & neck, as well as hands
- Facial symmetry
- Facial profile
- Eyes (including blinking rate, limited ocular movement, ulcerations, discoloration of sclera, corneal scarring, conjunctivitis)
- Lip competencies (including muscle tone, colour, texture, ulcerations, lesions, angular cheilitis, etc.)
- Visible enlargements & defects
- Moles & blemishes

TMJ Assessment

10. How often do you conduct a TMJ assessment of the patient?

- All of the time
- Most of the time
- Sometimes
- Never
- Only if the patient mentions something of concern

11. If you don't conduct a TMJ assessment all the time, what is your reasoning?

- Takes too much time
- Lack understanding of how to do it
- Deem it unnecessary
- Other (please explain _____)

12. How confident do you feel conducting a TMJ assessment of the patient?

- Very confident
- Confident
- Neutral
- Unconfident
- Very unconfident

13. When conducting a TMJ assessment of the patient, which of these do you assess and record? (Tick all that apply)

- Range of movement (e.g. maximum pain-free jaw opening, lateral deviations, trismus)

- Tenderness (using bilateral palpation)
- Sounds
- Locking
- Bruxism
- Head/neck pain

Muscles of Mastication Assessment

14. How often do you palpate ALL the muscles of mastication (masseter, temporalis, lateral pterygoid, medial pterygoid muscles) of the patient?

- All of the time
- Most of the time
- Sometimes
- Never
- Only if the patient mentions something of concern

15. If you don't palpate the muscles of mastication all the time, what is your reasoning?

- Takes too much time
- Lack understanding of how to do it
- Deem it unnecessary

Other (please explain _____)

16. How confident do you feel on the anatomical landmarks of the muscles of mastication?

- Very confident
- Confident
- Neutral
- Unconfident
- Very unconfident

17. How confident do you feel palpating the muscles of mastication of the patient?

- Very confident
- Confident
- Neutral
- Unconfident
- Very unconfident

18. When conducting a muscles of mastication assessment of the patient, which of these do you assess and record? (Tick all that apply)

- Range of movement
- Tenderness
- Referred pain
- Muscle contraction

Lymph Node Assessment

19. How often do you palpate ALL the lymph nodes of the patient (i.e. cervical, supraclavicular, submandibular, submental, preauricular, postauricular, and occipital nodes)?

- All of the time
- Most of the time
- Sometimes
- Never

Only if the patient mentions something of concern

20. If you don't palpate all the lymph nodes all the time, what is your reasoning?

- Takes too much time
- Lack understanding of how to do it
- Deem it unnecessary
- Other (please explain _____)

21. How confident do you feel palpating the lymph nodes of the patient?

- Very confident
- Confident
- Neutral
- Unconfident
- Very unconfident

22. If the patient has an abnormality, which of these do you assess and record? (Tick all that apply)

- Site
- Size
- Texture
- Tenderness to palpation
- Fixation to surrounding tissues
- Coalescence
- Mobility
- Number of nodes felt

Salivary Gland Assessment

23. How often do you do a bimanual examination of ALL the salivary glands of the patient (i.e. parotid, submandibular, submental, sublingual glands)?

- All of the time
- Most of the time
- Sometimes
- Never

Only if the patient mentions something of concern

24. If you don't conduct a bimanual examination of the salivary glands all the time, what is your reasoning?

- Takes too much time
- Lack understanding of how to do it
- Deem it unnecessary
- Other (please explain _____)

25. How confident do you feel conducting a bimanual examination of the salivary glands of the patient?

- Very confident
- Confident
- Neutral
- Unconfident
- Very unconfident

26. If the patient has an abnormality, which of

these do you assess and record? (Tick all that apply)

- Site
- Size
- Texture
- Mobility
- Fixation to surrounding tissues
- Tenderness to palpation

Section B: Clinical examination confidence

27. How comfortable do you feel performing a full extra-oral head and neck examination?

- Very comfortable
- Comfortable
- Neutral
- Uncomfortable
- Very uncomfortable

28. Do you ever find yourself skipping over certain aspects of an extra-oral examination (e.g. skipping certain nodes, skipping over asymmetries, skipping general observations)?

- Yes
- No

29. If yes, what is your reasoning?

- Takes too much time
- Lack understanding of how to do it
- Deem it unnecessary
- Other (please explain _____)

Section C: Teaching curriculum & student attitudes:

30. Overall, how satisfied are you with your knowledge of extra-oral examinations?

- Very satisfied

- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

31. What aspects of extra-oral teaching are you most satisfied/happy with?

32. What aspects of extra-oral teaching do you think could be improved?

33. Do you have any other comments regarding extra-oral examinations?

Thank you for taking the time to complete this questionnaire.