The Perception of Undergraduate Degree Students in Dentistry About the Importance of Learning and Continuing Education in Head and Neck Morphology

Isabela Daneze[1], Lucas Meciano Pereira dos Santos[2], Claudio do Prado Amaral[3], Valéria Paula Sassoli Fazan[4], Sara Feldman[5], João Paulo Mardegan Issa[6]

[1]School of Dentistry of Ribeirão Preto, University of São Paulo – FORP-USP, Ribeirão Preto, SP, Brazil

[2]Department of Pathology and Legal Medicine, School of Medicine of Ribeirão Preto, University of São Paulo – FMRP-USP, Ribeirão Preto, SP, Brazil

[3]Department of Public Law, Law School of Ribeirão Preto, University of São Paulo – FDRP-USP, Ribeirão Preto, SP, Brazil

[4]Department of Surgery and Anatomy, School of Medicine of Ribeirão Preto – FMRP-USP, Ribeirão Preto, SP, Brazil

[5]Laboratory of Osteoarticular Biology, Tissue Engineering and Emerging Therapies (LABOATEM), School of Medical Sciences, National University of Rosario, Santa Fe, Argentina

[6]Department of Basic and Oral Biology, School of Dentistry of Ribeirão Preto, University of São Paulo – FORP-USP, Ribeirão Preto, SP, Brazil

Disclose and conflicts of interest: none to be declared by all authors

ABSTRACT

Introduction: this study aimed to evaluate undergraduates from the 2nd to the 5th year of the School of Dentistry of Ribeirão Preto of University of São Paulo (FORP-USP) in relation to their perception of the impact of teaching on head and neck morphology in their professional career through a satisfaction questionnaire, based on the Posnick and Wallace (2008) model with modifications for such specificity.

Methods: an evaluation form was elaborated with 100 multiple-choice questions referring to specific knowledge of head and neck morphology, subdivided into the areas of temporomandibular joint and skeletal, nervous, circulatory and muscular systems. Additionally, 10 questions of a satisfaction questionnaire were applied at: 1) the beginning of the research; 2) after 60 specific knowledge questions; and 3) at the end of the research (after 100 specific knowledge questions), with the objective of measuring students' satisfaction and understanding of the content based on the answers to the questions, and to relate the progress of the participating students in different stages of undergraduate education.

Results: although the sample group was very small, it was observed that the students' self-assessment is a strategy that drives and stimulates their perception of the importance of studying head and neck morphology for professional practice in dentistry, as well as the relevance of maintaining this knowledge updated after completing the course.

Conclusion: further works will be proposed in this line of research to increase the sample size, obtain broader results, and strengthen the statistical analysis in order to better understand the experimental model.

Keywords: Regional Anatomy; Stomatognathic System; Educational Measurement; Dentistry; Universities.

Introduction

Contemporaneity expresses a significant increase in the search to improve the quality of teaching, so that it is perceived that learning is not limited only to the student's permanence in the classroom.[1-4] To this end, the objective is to develop professional skills in undergraduate students based on learning, with the support of professors in search of their own knowledge, through the application of practical teaching methods in the health sciences[5]. However, the evaluation of the quality of teaching in the academic environment is necessary and of fundamental importance for the improvement of teaching in dentistry.

In addition to the classes taught, support materials such as PDF files, scientific articles related to the topic of the class, didactic handouts or even informative videos, help and often encourage students to delve deeper into the subject in question, so that they can recognize what are their biggest difficulties related to the discipline, or even to become more familiar with the practice. In addition, feedback from students regarding the content taught serves as a parameter for professors to constantly update their methodology.

Generally, it is in the first year of academic training that undergraduate students in dentistry concentrate their learning on basic disciplines, with the aim of establishing knowledge based on the human body and the structures that compose it. In addition, anatomical teaching aims to avoid errors and accidents that can happen in professional dental practice and, consequently, compromise the quality of life and well-being of patients. In this way, the study of anatomy is a pillar in understanding the human organism and how its systems interact with each other[6].

Daneze I *et al.*

The Perception of Undergraduate Degree Students in Dentistry About the Importance of Learning and Continuing Education in Head and Neck Morphology

In the scientific literature, there are several questionnaires available that were created to measure the satisfaction of individuals with the procedures they were submitted to or the experiences they had. One of them, suggested by Posnick and Wallace (2008),[7] seeks to assess post-surgical satisfaction of patients undergoing complex orthognathic surgeries. In this questionnaire, called the Post-Surgical Patient Satisfaction Questionnaire (PSPSQ), nine questions are asked to the patient, with answers arranged on a scale ranging from "no, not at all" (1), "neutral" (4) and "very likely" (7), where the remaining numbers, that is, 2, 3, 5, and 6 represent intermediate responses to those previously mentioned[7,8].During the interview, the interviewee circles the number that best matches their current level of satisfaction and, subsequently, these data are tabulated and statistically analyzed.

When modified for the reality of academic teaching, instead of assessing the pre and postoperative periods of patients undergoing orthognathic surgery, this type of questionnaire can become a means of evaluating undergraduate students regarding their perception of teaching in head and neck morphology and the impact of the learning obtained on the quality of their training as a proper professional in dentistry. Questions were added that bring the questionnaire and its possible answers closer to the reality of dentistry students at their different undergraduation levels, in the search for more specific results.

Materials and Methods

The present study was approved by the Research Ethics Committee (CAAE: 53822021.9.0000.5419 – protocol number: 5.229.950) of the School of Dentistry of Ribeirão Preto, University of São Paulo.

The questionnaire designed to carry out this research took into account the Post-Surgical Patient Satisfaction Questionnaire (PSPSQ) prepared by Posnick & Wallace (2008),[7] adapted to the reality of undergraduate students in dentistry in order to numerically measure their degree of personal satisfaction in relation to the knowledge in head and neck morphology obtained over the years of training at the School of Dentistry of Ribeirão Preto and what are their expectations for the application of this knowledge during their professional activities in the future.

The student satisfaction questionnaire was organized with 10 questions, each with seven levels of satisfaction to be marked by the students participating in the research, distributed from 1 to 7, where 1 meant "no, not at all", 4 meant "neutral" and 7 meant "very likely", like Posnic and Wallace (2008),[7] and was applied together with another questionnaire, in a multiple-choice format, containing 100 questions about specific knowledge in head and neck morphology. This specific knowledge questionnaire was divided into five stages,

namely, 20 questions on the skeletal system, 20 questions on the nervous system, 20 questions on the circulatory system, 20 questions on the muscular system and 20 questions on the temporomandibular joint (TMJ). Thus, the satisfaction questionnaire was applied in three stages of the research, namely: 1) right before opening the specific knowledge questionnaire, that is, even before the student answered the first 20 questions; 2) after the student completes 60 questions; and, finally, 3) after the student completes the total 100 questions of specific knowledge.

This application methodology was designed so that the student could assess their satisfaction and expectations regarding the studies throughout the year, also assessing whether the knowledge in head and neck morphology becomes increasingly vague the more advanced the student is in obtaining their undergraduate degree or not. In addition, all students who agreed to participate in the research did so by signing an Informed Consent Form as recommended by the Research Ethics Committee.

Results

The objective of this study was to evaluate male and female students from different undergraduate levels (2nd to 5th year of the School of Dentistry of Ribeirão Preto (FORP-USP regarding their perception of the impact of teaching in head and neck morphology on their professional training through the application of a satisfaction questionnaire. The study aimed to analyze how students understand the importance of studying head and neck morphology, whether on a continuous basis or not, during their undergraduate studies and later in their professional life as duly qualified dental surgeons. Therefore, it is a self-assessment.

Furthermore, it is important to note that this study did not aim to question or judge the didactic methods used by the professors responsible for teaching the referred discipline in the aforementioned Institution.

In total, seven students (n = 7 from the 2nd to the 5th year of undergraduate studies were evaluated: one 2nd year student (n = 1, three 3rd year students (n = 3, one 4th year student (n = 1, and finally, two 5th year students (n = 2.

As previously explained, the satisfaction questionnaire was inserted at the beginning of the specific knowledge questionnaire, after 60 questions and also at the end. When comparing the initial and final answers from the questionnaire in relation to the first question regarding "*Did the teaching of head and neck morphology, as it happened, helped you to form your own habits of study*?", the results show some changes, with students being closer to "neutral" than being "very likely" satisfied with the way the teaching took place and how it influenced their search for knowledge on their own (Figure 1).

The Perception of Undergraduate Degree Students in Dentistry About the Importance of Learning and Continuing Education in Head and Neck Morphology
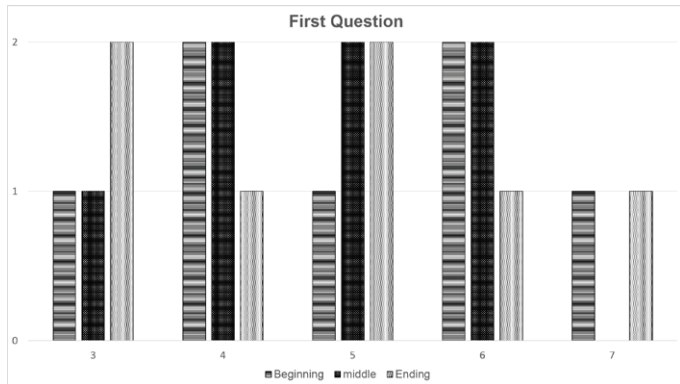
Daneze I *et al.*

Figure 1. Graphic representation referring to the answers to the first question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "*Did the teaching of head and neck morphology, as it happened, helped you to form your own habits of study*?". Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

When asked "*In general, did the teaching of head and neck morphology, as it happened, encouraged you to guide your own conduct of studies as an undergraduate student*?", the numbers fluctuated so that only one student changed his degree of satisfaction from 4 to 3, although still remaining close to "neutral", while the others remained closer to "very likely" satisfied. This shows how teaching with an emphasis on self-learning is variable and depends not only on a collective direction, but also on an individualized study routine and habits (Figure 2).
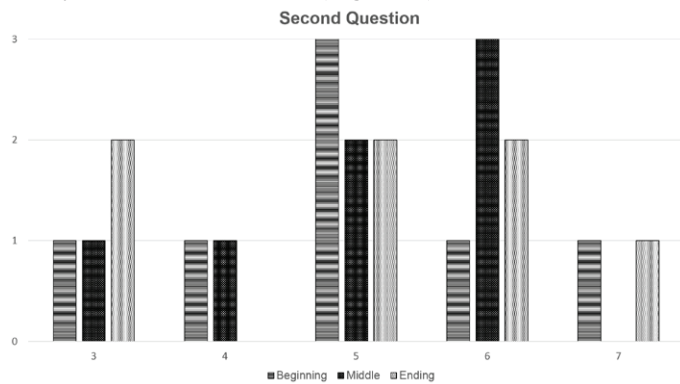

Figure 2. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "In general, did the teaching of head and Neck Morphology, as it happened, encouraged you to guide your own conduct of studies as an undergraduate student?" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

When asked "If you had to make the decision to take the head and neck morphology course again, would you take it?", it was noted that initially only one student felt "neutral". However, with the progress in the specific knowledge questionnaire, there was a moment of transition, in which, at the end, a good part of the students felt closer to "very likely". It is worth mentioning that at all times when the satisfaction questionnaire was applied, the vast majority of students were more adjacent to "very likely" satisfied, thus emphasizing the importance of the subject in their professional training (Figure 3).
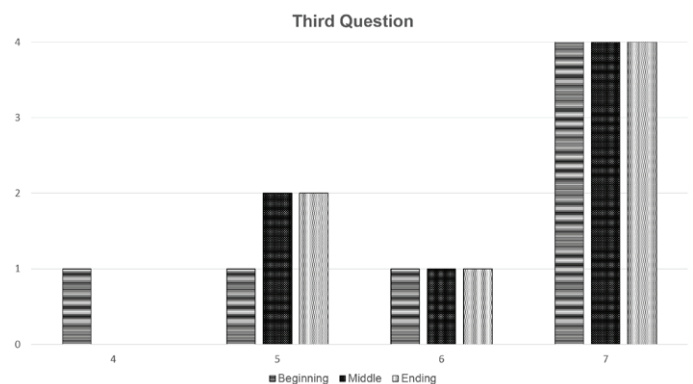

Figure 3. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "I*f you had to make the decision to take the head and neck morphology course again, would you take it?*" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

However, when asked "*In general, based on the teaching of head and neck morphology, the way it happened, would you recommend the dentistry course at FORP-USP to other people?*", oscillation between answers was quite noticeable. Perhaps this is a reflection of the post-COVID-19 pandemic period in which the research was carried out, which consisted of a time when many of the students were challenged to fit into the distance learning method. In addition, there is also the factor of self-learning, which varies for each individual. Therefore, comparing the results, it was clear that, at the end of the questionnaire, the largest number of students voted between 3 and 5, that is, the predominant result was "neutral" for satisfaction and, consequently, recommendation of the course (Figure 4).
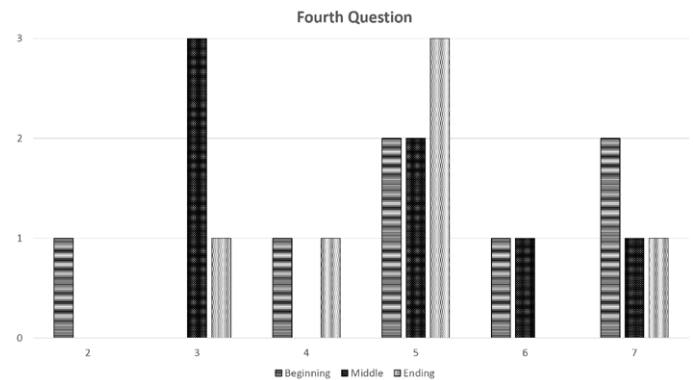

Figure 4. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "I*n general, based on the teaching of head and neck morphology, the way it happened, would you recommend the dentistry course at FORP-USP to other people?*" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

When asked "*In general, are you satisfied with the current knowledge you have in head and neck morphology*?", the comparison of the answers obtained during the different periods of application of the satisfaction questionnaire by detriment of the progress achieved in the specific knowledge questionnaire, allows us to conclude that, in this subject, students are

closer to the "neutral" and even slightly biased towards "no, not at all" (Figure 5).
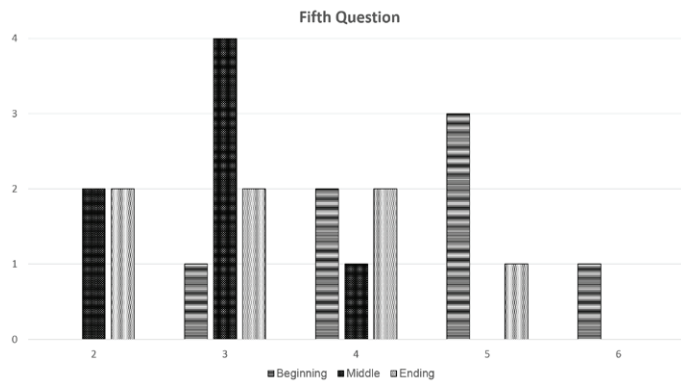
Fifth Question

Figure 5. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "I*n general, are you satisfied with the current knowledge you have in head and neck morphology?*" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

When asked "*In general, are you satisfied with the impact of the teaching in head and neck morphology, as it happened, in the other disciplines of the dentistry course?*", in the applications of the satisfaction questionnaire at the beginning and at the middle of filling of the specific knowledge questionnaire, the answers were well balanced, but at the end it was more concentrated between numbers 3 and 6, that is, surrounding the "neutral" or "very likely" satisfaction factors (Figure 6.
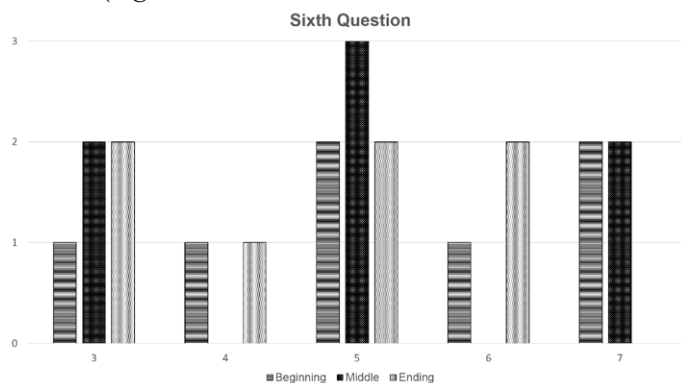
Sixth Question

Figure 6. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "I*n general, are you satisfied with the impact of the teaching in head and neck morphology, as it happened, in the other disciplines of the dentistry course?*" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

However, when asked "*In general, do you believe that knowledge about how the different systems of the head and neck region interact with each other during the clinical approach in dentistry is important?*", the answer was unanimous. The students were "*very likely*" firmly satisfied, at all times of application of the satisfaction questionnaire, evidencing their perception of the importance of knowledge and learning in relation to the discipline of head and neck morphology, regardless of the progress obtained in the completion of the specific knowledge questionnaire (Figure 7).
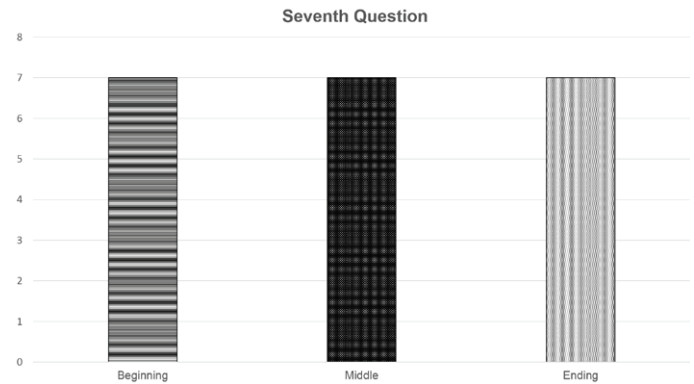
Seventh Question

Figure 7. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "I*n general, do you believe that knowledge about how the different systems of the head and neck region interact with each other during the clinical approach in dentistry is important?*" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

When asked "I*n general, do you believe that knowledge about how the different systems of the head and neck region interact with each other is important for the management of clinically compromised patients in dentistry?*", at least one student was close to "neutral" when indicate satisfaction levels 4 and 5 both in the first application of the satisfaction questionnaire, as well as in the second and third, while the majority agreed with the importance of such knowledge by always indicating the level of satisfaction 7 in all three times of application of the questionnaire (Figure 8).
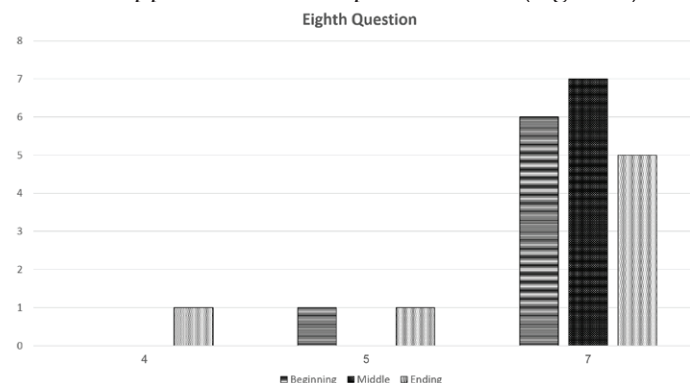
Eighth Question

Figure 8. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "I*n general, do you believe that knowledge about how the different systems of the head and neck region interact with each other is important for the management of clinically compromised patients in dentistry?*" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

Interestingly, when asked "I*n general, did the teaching of head and neck morphology, as it happened, encourage you to define, so far, some dental specialty to work professionally after undergraduation?*", this
was the question that there was a greater variation of opinions among the students participating in the research. It was noted that the votes were well distributed, but initially the students were concentrated between satisfaction levels 2 and 4, that is, close to "no, not at all" and "neutral". However, in the second

The Perception of Undergraduate Degree Students in Dentistry About the Importance of Learning and Continuing Education in Head and Neck Morphology

Daneze I *et al.*

and last application of the satisfaction questionnaire, although the votes remained well distributed, they were concentrated between satisfaction levels 5 and 7, showing students closer to "neutral" and "very likely" satisfied with the influence of the discipline of head and neck morphology in the choice of a clinical specialty of dentistry for future professional career performance (Figure 9).
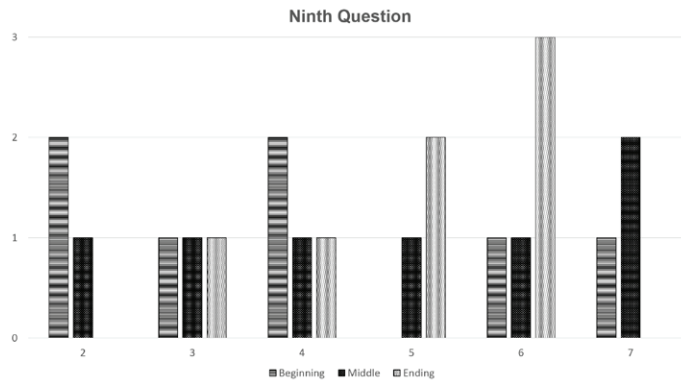

Figure 9. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "*In general, did the teaching of head and neck morphology, as it happened, encourage you to define, so far, some dental specialty to work professionally after undergraduation?*" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

Finally, when asked "*In the future, after undergraduation, do you believe that constant updating in head and neck morphology content (via reading textbooks, scientific articles or attending specific courses in the area) is important for your professional performance as a surgeon-dentist?*", all answers were above satisfaction level 4 ("neutral") and most students marked satisfaction level 7 ("very likely") in the three times of application of the satisfaction questionnaire (Figure 10). This shows that regardless of how the learning process occurs, students recognize the importance of content in head and neck morphology for professional practice in dentistry.
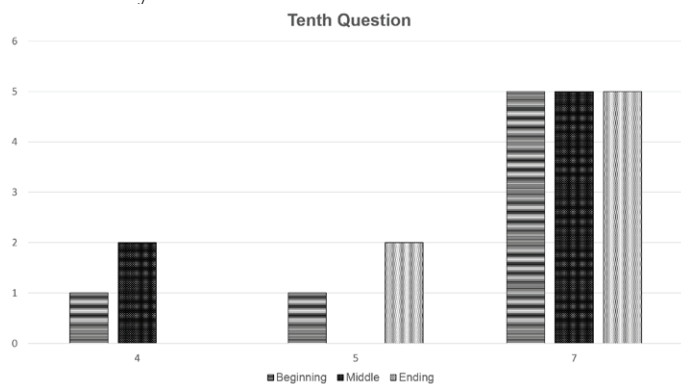

Figure 10. Graphic representation referring to the answers to the second question of the satisfaction questionnaire, being compared at the beginning, middle and end of the specific knowledge questionnaire in relation to the question "*In the future, after undergraduation, do you believe that constant updating in head and neck morphology content (via reading textbooks, scientific articles or attending specific courses in the area) is important for your professional performance as a surgeon-dentist?*" Faced with the data, the numbers are understood as follows: 1 – No, not at all; 4 – Neutral; 7 – Very likely. (Source: by the author.)

Discussion

The traditional teaching model is based on transferring information to the student through an educator. However, the method of memorization, common in students' daily lives, often becomes flawed when the application of theoretical knowledge in professional practice is required, since the vast majority of students focus on studying only to pass the exams. Thus, interactive and self-directed learning is presented as an incentive to a better quality study and aims to promote the student's personal performance and to develop responsibility for their own learning, as well as for the practical application of it[9].

Self-directed study is a model in which students take responsibility for their own learning in detriment of their own goals, with the aim of diagnosing and remedying gaps in their learning performance through the development of a certain critical sense during the study routine[10]. Bearing in mind the demanding timetable of the brazilian undergraduation in dentistry, as it is a full-time course organized in 8 (eight hours a day, in which the student needs to reconcile theoretical classes, laboratory practices and clinical procedures, this routine often becomes stressful and the student, in turn, becomes physically and psychologically exhausted. Therefore, it is important when the student is able to self-regulate his learning according to his routine and needs, an opportunity that can even enhance his professional performance[11].

In view of this, the way teaching is conducted at FORP-USP, more specifically, in the head and neck morphology discipline, through the administration of theoretical classes and practical experiences in laboratories (usually assisted by the supervision of more experienced technicians and post-graduate students, jointly aims to close some gaps that may even exist in student learning. Furthermore, when the student proposes to deepen their knowledge in an extracurricular way, this can promote better clinical reasoning based on solid scientific evidence and also develop more complex and concrete diagnostic skills.

The results obtained allow us to observe that when the students participating in the research were asked, at the beginning of the questionnaire, if "*Did the teaching of head and neck morphology, as it happened, helped you to form your own study habits?*", the students positioned themselves closer to the neutral answer. However, no specific knowledge question had yet been answered at this stage of the research. Therefore, such neutrality was relative to the way in which the student thought that, at that exact moment, his level of knowledge was in relation to the content contemplated by the discipline of head and neck morphology.

However, when the same question was repeated at the end of the research, after all the specific knowledge questionnaire questions were applied, the

Daneze I *et al.*

The Perception of Undergraduate Degree Students in Dentistry About the Importance of Learning and Continuing Education in Head and Neck Morphology

students showed quite divergent positions. While some students remained closer to neutral, others felt more confident and closer to the "very likely" answer in the sactisfaction questionnaire. This shows how the absorption of knowledge by the students is varied and fundamentally needs to be directed by supervising professors.

An important observation that can also be attributed to the data obtained is that the research was carried out in the year 2022, that is, in the midst of the COVID-19 pandemic, an atypical historical moment in which the whole world had to adapt itself to numerous adversities. Thus, this research shows how teaching was, in a certain way, "misaligned" in this period. Students and even professors had to abruptly adapt themselves to an online teaching methodology without a specific initial direction. The pandemic triggered several challenges in education systems in general, which ended up making it necessary and indispensable to reflect on world standards of education in the post-pandemic period[12].

There was a notable change in the paradigms of education, so that the student was challenged to develop new skills to study and delve deeper into the content taught in undergraduate degree classes. This transition was innovative from the moment it was possible to integrate a new learning method with pre-existing knowledge and skills inherent in the student's lifestyle. In this context, self-directed learning enables students to complete their traditional studies through the incorporation of different means of content fixation and through a new reflection on how the knowledge obtained can really impact their own professional life[13].

Still, as analyzed in the results, in relation to basic knowledge about the roles played by the different systems present in the head and neck region for a positive impact on the clinical approach in dental practice, the students participating in the research consider this interface very important for their professional development. The way in which classes were taught in the subject of head and neck morphology at FORP-USP, during and after the pandemic, through virtual theoretical classes, in addition to practical learning in histological analysis through microscopic images projected on an online class platform and, even, with interactive games among students, thus developed a very innovative teaching method and allowed the undergraduate student to form a certain sense of teamwork with their peers.[14] In addition to the spirit of team, a spirit of leadership was also formed, because when the classes returned to presential mode, students who felt more confident and with greater mastery of a given subject, in one way or another, conveyed their acquired knowledge for the rest of the class.

It is noted in contemporary times the change in the way information (especially the scientific ones) is obtained and, consequently, transmitted for certain target audiences[15-22]. The traditional method of study has been changing and the importance given to memorizing in a rigid way is ending as other means become more accessible and aimed at specific groups, such as, in the present case, undergraduate students in dentistry[23,24]. In these terms, it is of fundamental importance to encourage the updated elaboration of didactic contents from period to period, even if the subjects change, but in such a way that they always correlate the new content with the old content, as long as the latter is not scientifically outdated, obviously. By the way, it is the duty of professors to be attentive when students provide feedback that reflects their own perception of how they absorbed the proposed teaching method and how this actually impacted the performance of their self-directed studies, as this usually indicates what the way to be followed to keep the quality of education high[25].

Conclusion

Highlighting the specific analysis of the results obtained with this research, the students admit the importance of teaching and self-directed study in head and neck morphology for professional practice in dentistry, as well as recognizing the importance of continuing this knowledge in life after obtaining the university degree diploma (a.k.a., the "DDS" title – Doctor in Dental Science), bearing in mind that learning occurs throughout life and not just in a relatively short period of time. In addition, the analysis of the percentage of results, between hits and misses, also serves as an academic evaluation parameter for professors to monitor learning at the different undergraduation levels of Dental Schools.

According to the data verified through the application of the satisfaction questionnaire, the students consider themselves able to self-direct their studies. However, the fact that the majority is closer to the "neutral" in some questions when compared to the number of students "very likely" satisfied, shows that they still feel the need to combine self-directed learning with personal guidance from professors and experts available in the teaching environment.

Furthermore, throughout the research, the students showed themselves to be more self-reflective, confident and capable as they progressed in the specific knowledge questionnaire, even considering themselves prepared for clinical practice due to the skills acquired in the learning process in diagnosis and treatment, which form dentists who even recommend the institution they attended.

Acknowledgments

The Perception of Undergraduate Degree Students in Dentistry About the Importance of Learning and Continuing Education in Head and Neck Morphology

Daneze I *et al.*

References

1. Oliveira RP, Araújo AC. Qualidade do ensino: uma nova dimensão da luta pelo direito à educação. Rev Bras Educ. 2005 jan-abr; 28:5-24.

2. Oliveira RP. A transformação da educação em mercadoria no Brasil. Educ Soc. 2009 out; 30(108):739-760.

3. Bauer A, Cassetari N, Oliveira RP. Políticas docentes e qualidade da educação: uma revisão da literatura e indicações de política. Aval Pol Publ. 2017 out-dez; 25(97):943-970.

4. Chamlian HC. Charles William Eliot expõe o sistema eletivo como "Liberdade de Educação", 1985. Rev Fac Educ. 1998 jul-dez; 24(2):163-180.

5. Fonseca TS. Ciências morfológicas no processo de ensino-aprendizagem em Odontologia. Arch Health Invest. 2022; 11(3):544-548.

6. Scortegagna A. Anatomia humana, anatomia da cabeça e do pescoço e neuroanatomia em 800 questões comentadas. Curitiba/PR: Juruá, 2012, p. 15.

7. Posnick JC, Wallace J. Complex orthognathic surgery: assessment of patient sactisfaction. J Oral Maxillofac Surg. 2008 May; 66(5):934-942. doi: 10.1016/j.joms.2008.01.014

8. Santos LMP. Impacto da cirurgia ortognática para correção de deformidades dentofaciais na qualidade de vida relacionada à saúde bucal. 2016. 52f. Monografia. (Graduação em Odontologia) – Faculdade de Odontologia de Bauru, Universidade de São Paulo, Bauru/SP.

9. Alexander CJ, Crescini WM, Juskewitch JE, Lachman N, Pawlina W. Assessing the integration of audience response system technology in teaching of anatomical sciences. Anat Sci Educ. 2009 Jul-Aug; 2(4):160-166. doi: 10.1002/ase.99

10. Anshu, Gupta P, Singh T. The concept of self-directed learning: implications for practice in the undergraduate curriculum. Indian Pediatr. 2022 Apr. 59(4):331-338.

11. Siddiqui FS, Neralli JT, Telang LA. Relationship between the sense of coherence, self-directed learning readiness, and academic performance in Malaysian undegraduate dental students. J Educ Health Promot. 2021 Mar; 10:105. doi: 10.4103/jehp.jehp_758_20

12. Herrmann-Werner A, Erschens R, Zipfel S, Festl-Wietek. Where there are challenges, there are opportunities: an undergraduate medical students' teaching concept for mental health in times of COVID-19. PLoS One. 2022 Nov; 17(11):e0277525. doi: 10.1371/journal.pone.0277525.

13. Loka SR, Doshi D, Kulkarni S, Baldava P, Adepu S. Effect of reflective thinking on academic performance among undergraduate dental students. J Educ Health Promot. 2019 Sep; 8:184. doi: 10.4103/jehp.jehp_77_19.

14. Vedi N, Dulloo P. Student's perception and learning on case based teaching in anatomy and phisiology: an e-learning approach. J Adv Med Educ Prof. 2021 Jan; 9(1):8-17. doi: 10.30476/jamp.2020.87332.1304

15. Bordini SB, Sato CM, Santos LMP, Fazan VPS, Feldman S, Issa JPM. Importance of raising awareness in people in charge of old age homes about metabolic bone diseases and their prevention for the elderly. J Morphol Sci. 2023; 40:72-76. doi: 10.51929/jms.40.72.2023

16. Santos IC, Neto OMS, Uliana VIS, Pedrazzi V, Issa JPM. Percepções de estudantes do ensino médio quanto à automedicação. e-Mosaicos (Cap-UERJ). 2020 set-dez; 9(22):264-275. doi: 10.12957/e-mosaicos.2020.47477

17. Uliana VIS, Neto OMS, Issa JPM. Anatomical characteristics of the human being in different periods of artistic expression.. Arch Health Invest. 2019 Nov; 8(11):670-673. doi: 10.21270/archi.v8i11.4746

18. Monteiro LO, Ribeiro EB, Gonzaga MG, Pedrazzi V, Figueiredo FAT, Feldman S, Issa JPM. Osteometabolic disease: aspects of importance to the population. Interfaces – Revista de Extensão da UFMG. 2016 jul-dez; 4(2):232-267.

19. Rodrigues GA, Ferreira PF, Morando BC, Issa JPM, Iyomasa MM. The human body know through the renovated museum of anatomy from the Faculty of Dentistry of Ribeirão Preto. Int J Morphol. 2015 Sept; 33(3):1078-1084.

20. Gonzaga MG, Dolens ES, Pedrazzi V, Moreira BM, Issa JPM. Problemas bucais relacionados ao sistema estomatognático em adolescentes: experiência extensionista. Rev Cien Ext. 2015; 11(3):94-102.

21. Paliologo T, Gonzaga MG, Issa JPM, Pedrazzi V. Scientific investigations and practices associated to osteometabolic disturbes for high schoolers. Rev Cult Ext USP. 2014 Set; 11(Supl):20-29. doi: 10.11606/issn.2316-9060.v11isupl.p20-29

22. Issa JPM, Campos M, Miani PK, Nascimento C, Watanabe PCA. Expectativa, ensino e prática em escolas públicas e privadas. Stoma (Lisboa). 2005; 75:21-31.

23. Hayashi MM, Issa JPM, Tiossi R, Pardini LC, Watanabe PCA. Evaluation of the use of film holders by undergrauate students. Int J Odontostomat. 2007; 1(2):109-114.

24. Tekkol IA, Demirel M. An investigation of self-directed learning skills of undergraduate students. Front Psychol. 2018 Nov; 9:2324. doi: 10.3389/fpsyg.2018.02324

25. Chong SCS, Anderson K, Mackenzie-Stewart R, Hobbs C, Conna B. Embedding experiental learning in undergraduate health promotion curriculum. Health Promot J Austr. 2022 Oct; 33(Suppl 1):9-16. doi: 10.1002/hpja.629.

Mini Curriculum and Author's Contribution

1. Isabela Daneze: Bibliographical update of the research, data collection, data tabulation, data analysis, writing of the preliminary and final versions of the research report, writing of the preliminary and final versions of the manuscript. ORCID: 0000-0002-9515-9262

2. Lucas Meciano Pereira dos Santos: Research project development, bibliographical update of the research, data analysis, review and approval of the preliminary and final versions of the research report, review and approval of the preliminary and final versions of the manuscript. ORCID: 0000-0003-4285-877X

3. Claudio do Prado Amaral: critical revision of the preliminary version of the manuscript and approval of the final version of the manuscript. ORCID: 0000-0002-1402-7568

4. Valéria Paul Sassoli Fazan: Data interpretation, drafting of the manuscript, critical revision of the manuscript, and approval of the final version of the manuscript. ORCID: 0000-0003-1293-5308

Daneze I *et al.*
The Perception of Undergraduate Degree Students in Dentistry About the Importance of Learning
and Continuing Education in Head and Neck Morphology

5. Sara Feldman: critical revision and approval of the final version of the manuscript. ORCID: 0000-0001-9804-8421

6. João Paulo Mardegan Issa: Research orientation, research project development, review and approval of the final version of the research report, review and approval of the final version of the manuscript. ORCID: 0000-0002-1056-0795

Corresponding author
 João Paulo Mardegan Issa
E-mail: jpmissa@forp.usp.br