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Content And Cognitive-Level Analysis Of Surgery Questions In The Dental Specialty Examination (2012–2025)

Diş Hekimliğinde Uzmanlık Sınavı'nda Cerrahi Sorularının İçerik ve Bilişsel Düzey Analizi (2012–2025)

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ABSTRACT

Objectives: This study examined the content characteristics and cognitive-level demands of Oral and Maxillofacial Surgery (OMFS) questions in the Turkish Dental Specialty Examination (DUS; *Diş Hekimliğinde Uzmanlık Sınavı*), with the goal of informing candidate preparation and curriculum–assessment alignment in dental education.

Materials and Methods: A retrospective, cross-sectional, descriptive item analysis was conducted using publicly available DUS question booklets from Spring 2012 to Spring 2025. After excluding officially annulled questions (n=2), 188 OMFS items were analyzed. Items were coded by topic, item format (knowledge-based vs case-based), presence of visual material, and Bloom-based cognitive level (Level 1–3, based on the highest cognitive process required). Inter-rater reliability was assessed on a random subset of 50 questions (Cohen's κ=0.8677).

Results: Lower-order cognitive demand predominated across periods. Level 2 (Apply/Analyze) questions increased from 9.4% (2012–2022) to 20.0% (2023–2025) and were consistently case-based; however, this shift did not reach statistical significance (OR=2.40, p=0.075, 95% CI: 0.98–5.90). Visual items were rare in 2012–2022 (5/138; 3.62%) and absent in 2023–2025 (0/50). Topic coverage showed redistribution over time, indicating changing examination emphasis.

Conclusion: DUS–OMFS assessment remains heavily weighted toward remembering/understanding, with limited representation of higher-order clinical reasoning and minimal use of clinically relevant visuals. These findings suggest opportunities to strengthen assessment validity by expanding well-designed case-based and visual-supported items, which may better promote clinical reasoning and visual literacy within dental education.

Keywords: *Clinical Competence, Curriculum, Education Dental Graduate, Educational Measurement, Oral Surgery.*

ÖZET

Amaç: Bu çalışma, Türkiye'de Diş Hekimliğinde Uzmanlık Sınavı'nda (DUS) yer alan Ağız, Diş ve Çene Cerrahisi (ADÇC/OMFS) sorularının içerik özelliklerini ve bilişsel düzey gereksinimlerini inceleyerek; aday hazırlığını ve diş hekimliği eğitiminde müfredat–ölçme/değerlendirme uyumunu desteklemeyi amaçlamıştır.

Gereç ve Yöntemler: İlkbahar 2012–İlkbahar 2025 dönemine ait, kamuya açık DUS soru kitapçıkları kullanılarak retrospektif, kesitsel ve tanımlayıcı madde analizi yürütülmüştür. Resmî olarak iptal edilen sorular (n=2) dışlandıktan sonra 188 ADÇC maddesi analiz edilmiştir. Sorular; konu başlığı, madde formatı (bilgi temelli vs olgu/vaka temelli), görsel materyal varlığı ve Bloom temelli bilişsel düzey (en yüksek bilişsel süreç esas alınarak Düzey 1–3) açısından kodlanmıştır. Değerlendiriciler arası uyum, rastgele seçilen 50 soru üzerinde Cohen's κ=0,8677 olarak saptanmıştır.

Bulgular: Dönemler boyunca düşük düzey bilişsel talep baskın bulunmuştur. Düzey 2 (Uygulama/Analiz) sorularının oranı 2012–2022'de %9,4 iken 2023–2025'te %20,0'ye yükselmiş ve bu sorular tutarlı biçimde vaka temelli olmuştur; ancak bu artış istatistiksel anlamlılığa ulaşmamıştır (OR=2,40; p=0,075; %95 GA: 0,98–5,90). Görsel içeren sorular 2012–2022 döneminde nadir görülmüş (5/138; %3,62) ve 2023–2025 döneminde hiç yer almamıştır (0/50). Konu kapsamı zaman içinde yeniden dağılım göstermiş ve sınavın vurgu alanlarında değişime işaret etmiştir.

Sonuç: DUS–ADÇC değerlendirmesi, ağırlıklı olarak hatırlama/anlama düzeyinde kalmakta; daha üst düzey klinik akıl yürütmeyi sınırlı ölçüde temsil etmekte ve klinik açıdan anlamlı görselleri asgari düzeyde kullanmaktadır. Bu bulgular, iyi tasarlanmış vaka temelli ve görsel destekli maddelerin artırılmasıyla ölçme geçerliğinin güçlendirilebileceğini; bunun da diş hekimliği eğitiminde klinik akıl yürütme ve görsel okuryazarlığı daha iyi destekleyebileceğini düşündürmektedir.

Anahtar Kelimeler: *Diş hekimliği lisansüstü eğitimi, Eğitimsel ölçme ve değerlendirme, Klinik yeterlilik, Müfredat, Oral cerrahi,*

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Introduction

Societal expectations of the healthcare system are changing markedly. The public is increasingly demanding greater transparency and accountability, stronger participation in decision-making processes, and more efficient use of resources. This transformation is also shaping the future of specialization in dentistry.[1] Undergraduate dental education is a lengthy process in which intensive theoretical knowledge is delivered alongside clinical training. However, in a field where the margin for error is minimal, undergraduate training may not always provide sufficient experience to manage all complex or "special" cases. Therefore, specialty training represents a critical step for the accurate planning and effective delivery of diagnosis and treatment for rare clinical conditions and for improving patient satisfaction.[2] The advanced knowledge and clinical experience gained during specialization facilitate more accurate treatment planning under atypical circumstances, and specialists with advanced training in specific patient groups are increasingly preferred in contemporary practice.[3,4]

In Türkiye, dentists who complete the five-year undergraduate dental curriculum must pass the Dental Specialty Examination (DUS) to be eligible for specialty training in a specific field. With the amendment to Law No. 1219 published in the Official Gazette dated 26 April 2011 (No. 27916), commonly referred to as the "Omnibus Law," specialty training in dentistry was structured under eight main disciplines: Oral and Maxillofacial Surgery; Oral and Maxillofacial Radiology; Paediatric Dentistry; Endodontics; Orthodontics; Periodontology; Prosthodontics; and Restorative Dentistry[5] (Table 1).

Table 1. Distribution of dentistry specialization entrance exam questions by branch.

Clinical sciences	n	%	Basic sciences	n	%
Restorative dentistry	10	12.5	Anatomy	6	15
Prosthetic dentistry	10	12.5	Physiology	6	15
Oral and maxillofacial surgery	10	12.5	Histology and embryology	4	10
Oral and maxillofacial radiology	10	12.5	Medical biochemistry	6	15
Periodontology	10	12.5	Medical microbiology	6	15
Endodontics	10	12.5	Pathology	4	10
Pediatric dentistry	10	12.5	Pharmacology	4	10
Orthodontics	10	12.5	Medical biology and genetics	4	10
Total	80	100	Total	40	100

The Dental Specialty Examination (DUS) was first administered in the spring term of 2012. Between 2012 and 2014, the exam was generally held twice a year (in April and September); in the 2015–2022 period, it reverted to an annual administration. As of 2023, it has again been conducted twice yearly, in the first and second terms (Assessment, Selection and Placement Center).[6] Within the framework of dental specialty training regulations, the DUS is a centrally administered examination grounded in the principles of merit and competition, consisting of multiple-choice sections that cover both clinical and core professional knowledge domains.[7]

The increasing number of candidates taking the DUS, the test-taking strategies required by its multiple-choice format, and the limited number of specialty training positions have made the examination an increasingly competitive selection tool. This competitive environment encourages candidates to concentrate on content areas that are perceived as "high-yield" and has promoted study practices grounded in systematic item analysis. However, beyond identifying which content domains are emphasized, it is equally important to understand which cognitive processes the questions demand from candidates, because this may shape both learning strategies and the alignment of educational programmes with the examination.[8]

To strengthen the alignment of written examinations with intended learning outcomes, educators often design and evaluate assessment items using a learning taxonomy. One of the most widely used frameworks for this purpose is Bloom's Taxonomy of Learning.[9] Bloom's taxonomy conceptualizes cognitive processes across six levels that progress from simple to complex: remembering (recalling information), understanding (making meaning of information), applying (using information in new situations), analyzing (breaking down relationships and components), creating/synthesizing (generating a new product or solution from existing knowledge), and evaluating (making judgments based on criteria). This approach is frequently used as a reference for curriculum planning and the design of assessment tools, and it is based on the assumption that learners first develop competence at lower cognitive levels and gradually advance toward higher-order thinking skills.[10-12]

In recent years, several studies have examined topic headings and distributions of questions from different disciplines in the DUS, making it easier to identify which areas candidates prioritize during preparation and which domains are emphasized in educational content.[13-16] However, evaluating exam content solely through topic distributions may be insufficient to capture the level of thinking and cognitive demand expected from candidates. In this study, we aimed to extend the existing framework by analyzing Oral and Maxillofacial Surgery questions not only in terms of year-by-year topic distribution, but also with respect to cognitive level based on the revised Bloom's taxonomy, as well as whether items included visual material and how these characteristics changed over time. By doing so, we sought to provide a more in-depth evaluation that may inform both candidate preparation and curriculum–assessment alignment.

Materials and Methods

This study is a retrospective, cross-sectional, descriptive item analysis conducted to examine the content characteristics and cognitive-level demands of Oral and Maxillofacial Surgery (OMFS) questions included in the Turkish Dental Specialty Examination (DUS). Questions from DUS administrations between Spring 2012 and Spring 2025 were compiled from publicly released ÖSYM materials (Assessment, Selection and Placement Center)[17] and commercially available secondary sources used in DUS preparation materials. A total of 190 OMFS questions were identified and included in the analysis. For temporal comparison, the 2012–2022 period was treated as the historical baseline because OMFS questions from this interval had already been examined in the published literature, whereas the 2023–2025 period was included to provide an updated analysis of recent examinations. In addition, 2023 was considered a meaningful analytical breakpoint because DUS resumed twice-yearly administration from that year onward. Topic and subtopic classification for OMFS was structured under 25 headings based on the core reference textbooks officially listed for the examination.[18-21] These headings were analyzed by year, and the topics were tabulated to show which content areas were represented in each examination administration (Table 2).

Table 2. Distribution of oral and maxillofacial surgery questions by years.

Topics	2012/1	2012/2	2013/1	2013/2	2014/1	2014/2	2015	2016	2017	2018	2019	2020	2021	2022	2023/1	2023/2	2024/1	2024/2	2025/1	Total
Oral Pathology	1	5	2	2	1	2	2	3	1	3	2	1	3	1	1	2	3		1	36
Trauma	1	1	1	2		1	1	1	2	1	2		1				1	1		16
Anesthesia & Sedation		1	1	1	1			2	1	1	1	1		2				3	2	17
Systemic Diseases			1	1	2	2		1	1		1	1	1		1		1	1	1	15
TMJ	1		1	1		1	1	1	1		1	1		2	1	2	1		1	16
Infection			1				2			2		1	1	2	3	1	2		1	16
Surgical Techniques	1		1		1		1			1	1					1	1	1		9
Cleft Lip and Palate	1			1	1			2			1									6
Orthognathic Surgery	1			1	1	1	1		1			1								7
Complications			1						1	1				1		1		1	1	7
Neurologic Pain		1		1						1				1					1	5
Implants	1	1			1	1													1	5
Cyst/Tumor	2		1						1			1							1	6
Salivary Gland Disorders											1			1	1	1				4
Sinus		1					1								1			1		4
Preprosthetic Surgery					1								1		1					3
Head and Neck Syndromes					1								1					1		3
Head and Neck Pathology						1														1
Oncology												1	1							2
Impacted Tooth												1	1		1		1			4
Endodontic Surgery						1														1
Biopsy												1								1
ASA	1																			1
Reconstructive Surgery																1		1		2
Pharmacology																1				1
Total	10	10	10	10	10	10	9	10	9	10	10	10	10	10	10	10	10	10	10	188

Inclusion Criteria: (i) Questions included in the DUS question booklet for the specified period, and (ii) questions determined to belong to the Oral and Maxillofacial Surgery (OMFS) domain. *Exclusion criteria:* Officially annulled/cancelled questions (n = 2).

Variables and Coding

For each question, the following variables were recorded according to a pre-defined coding scheme:

1. Exam period and year: The year of the exam and the administration term (e.g., Spring/Fall) were recorded.
2. Topic: Questions were classified under a primary topic heading based on the OMFS topic list developed for this study. Even if a question related to more than one area, the primary topic was determined according to the main learning outcome the item was intended to assess.
3. Question format:

- Knowledge-based: Items primarily assessing factual knowledge/recall.
- Case-based (vignette-based): Items requiring clinical decision-making or interpretation based on a clinical scenario/case vignette.

4. Visual content: The presence of visual material (e.g., radiographs, clinical photographs, drawings/schematics) was recorded as present/absent.
5. Cognitive level (Bloom-based, 3-level classification): Cognitive demand was coded into three levels based on the revised Bloom's taxonomy:

- Level 1: Remembering + Understanding
- Level 2: Applying + Analyzing
- Level 3: Evaluating + Creating

During coding, the highest cognitive process required by the item was used as the primary determinant.

Coding Process and Inter-rater Reliability

Before coding, a coding manual was developed, including operational definitions of variables supported by examples. After the full dataset was coded, inter-rater consistency was assessed by having two independent raters, blinded to each other's classifications, re-code a randomly selected subset of 50 questions. Inter-rater agreement was evaluated using Cohen's kappa coefficient and was calculated as $\kappa = 0.8677$. This value indicates a high level of agreement between raters and supports the reliability of the classification approach. Any discrepancies were resolved through a consensus meeting, and final codes were agreed upon.

Statistical Analysis

Data were summarized using descriptive statistics. Categorical variables were reported as counts (n) and percentages (%). Distributions of topics, question format (knowledge-based vs. case-based), visual content (present/absent), and cognitive level were presented using tables and appropriate graphs. Period comparisons (2012–2022 vs. 2023–2025) were performed using Fisher's exact test or the chi-square test when appropriate. Effect sizes were reported as odds ratios (ORs) with 95% confidence intervals (CIs). Statistical significance was set at $p < 0.05$.

Results

A comparative analysis of OMFS questions in the DUS exam between the periods 2012–2022 and 2023–2025 reveals significant shifts in topic emphasis. Oral Pathology, which was the dominant subject in the earlier period with 29 questions, saw a marked reduction to 7 in the recent years. Similarly, traditional topics such as Trauma, Orthognathic Surgery, and Cleft Lip and Palate experienced noticeable declines or were completely absent in the latest exams. In contrast, the presence of topics like Reconstructive Surgery and Pharmacology, which were not previously covered, suggests an expansion of the curriculum toward emerging or clinically evolving areas. Core topics such as Anesthesia & Sedation, Infection, and TMJ maintained their relevance, with modest fluctuations, indicating their continued clinical importance. Interestingly, some subfields such as Oncology, Biopsy, and Endodontic Surgery, which appeared in earlier exams, were completely excluded in the 2023–2025 period, possibly reflecting a shift in examination priorities or a reframing of subject boundaries (Fig.1).

Overall, the data highlight a trend toward greater diversity and redistribution of question topics, emphasizing the importance of staying aligned with current exam patterns and evolving clinical priorities in oral and maxillofacial surgery education.

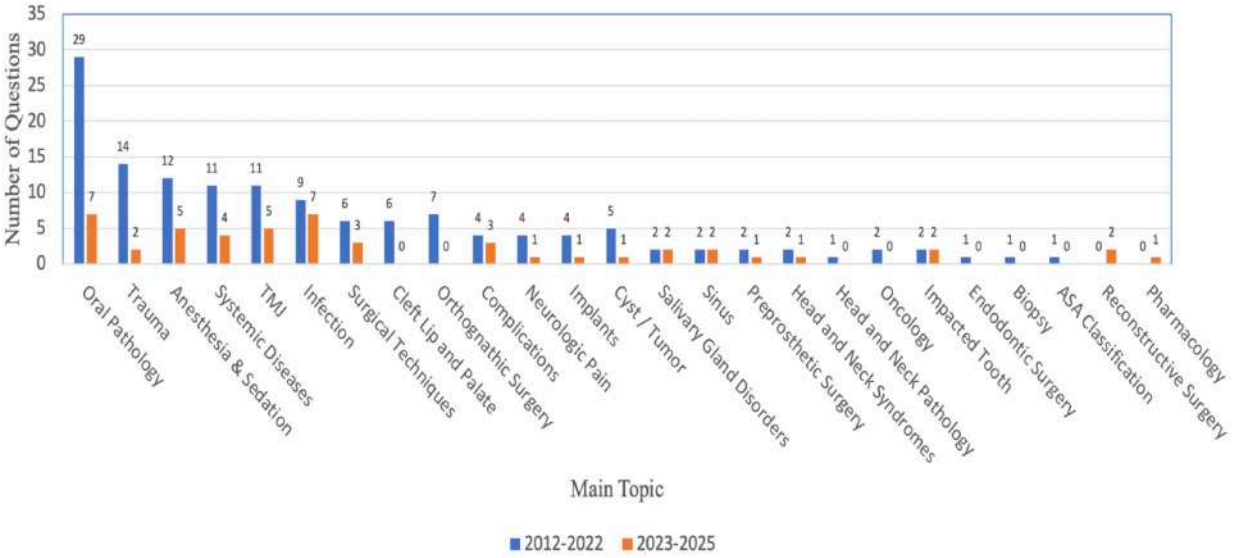

Figure 1. Distribution of OMFS questions by topic 2012-2022 vs. 2023-2025.

When the questions were classified according to Bloom's taxonomy, a predominant focus on Level 1 (Remember/Understand) items was observed in both periods. Importantly, Level 2 (Apply/Analyze) items were consistently case-based, indicating that higher cognitive demand in OMFS was primarily assessed through clinical vignette formats.

A proportional shift toward Level 2 questions became apparent in the more recent period. In 2012–2022, Level 2 questions accounted for 9.4% (13 of 138 questions), whereas Level 1 comprised 90.6% (125 questions). In contrast, during 2023–2025, the share of Level 2 questions rose to 20.0% (10 of 50), while Level 1 questions represented 80.0% (40 questions).

Overall, although lower-order cognitive questions continue to dominate, the more recent period suggests a trend toward incorporating a greater proportion of case-based, higher-order questions that emphasize clinical application and analytical reasoning in OMFS assessment.

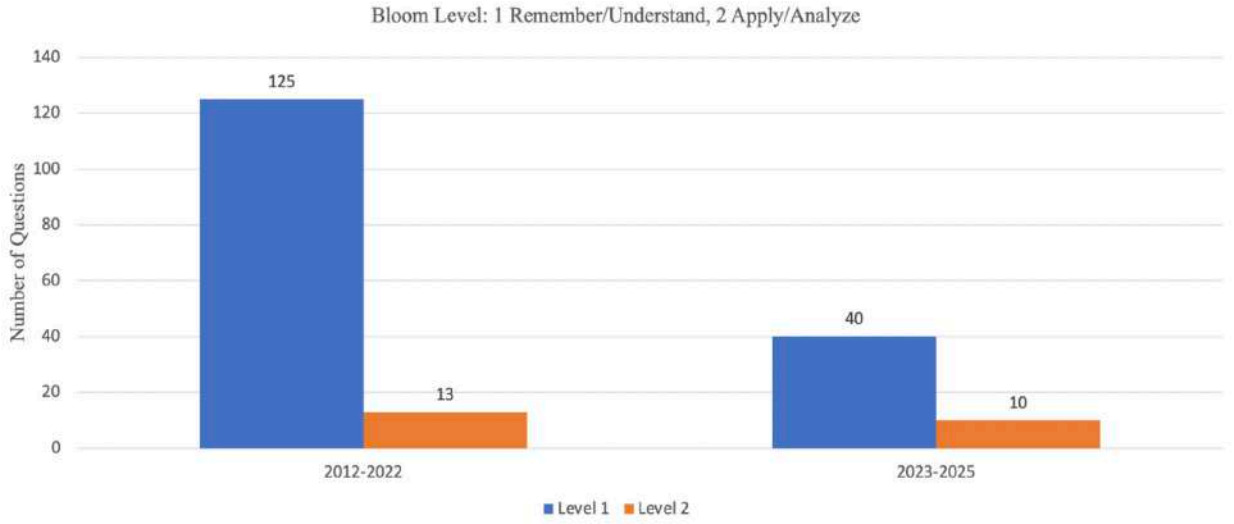

Figure 2. Distribution of questions according to Bloom's taxonomy levels between the 2012-2022 and 2023–2025 DUS examinations.

To further explore whether this shift in cognitive complexity was statistically significant, an odds ratio analysis was performed. A comparison of Bloom's taxonomy levels between the two periods (2012–2022 and 2023–2025) showed a higher proportion of Level 2 (Apply/Analyze) questions in the recent period. Although the odds of a Level 2 question were 2.40 times higher in the 2023–2025 period compared to the previous one, this difference did not reach statistical significance (p = 0.075, OR = 2.40, 95% CI: 0.98–5.90). This result may reflect a trend toward increased cognitive complexity in recent years, warranting further observation in upcoming exam cycles (Table 3).

Table 3. Comparison of Level 1 and Level 2 Bloom taxonomy questions in DUS exams by period, including odds ratio and statistical significance.

Comparison	Odds Ratio (OR)	95% Confidence Interval	p-value
Level 2 vs Level 1 (2023–2025 vs 2012–2022)	2.40	0.98 – 5.90	0.075

Statistical comparison was performed using Fisher's exact test. Effect size is reported as odds ratio (OR) with 95% confidence interval (CI).

Between 2012 and 2022, only 5 out of 138 OMFS questions included a visual component corresponding to 3.62% of all questions in that period. In contrast, no visual materials were used in any of the 50 questions administered between 2023 and 2025. This finding suggests a decrease in the proportional use of visual materials, even though clinical visual interpretation is a critical competency in OMFS.

The complete absence of visual questions in the 2023–2025 period might indicate a shift in exam design or assessment focus. In the previous period (2012–2022), the visual materials were limited and included formats such as (Fig.3):

- CT scans/(n=2),
- OPG (orthopantomogram)/(n=1)
- Clinical photographs/(n=1)
- Clinical photographs+CT scan/ (n=1).

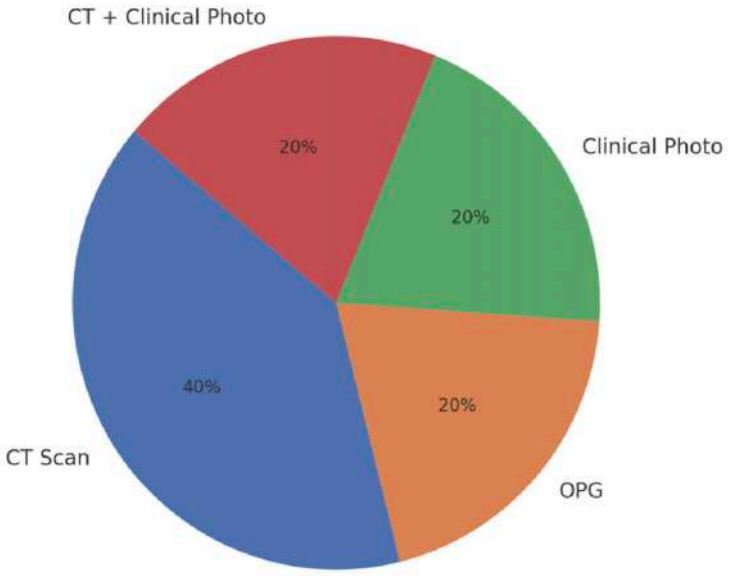

Figure 3. Types of Visual Materials Used in OMFS Questions (2012-2022).

Discussion

It is well established that assessment influences learning through multiple mechanisms, including assessment design, the pre-assessment preparation process, the test-taking experience, and post-exam reflection. For this reason, the question profile of high-stakes examinations can shape not only what is assessed, but also which topics and skills candidates perceive as "high-yield," thereby influencing their study strategies. In dental education, structuring assessment systems in a way that supports exam preparation while also encouraging clinical practice and analytical reasoning is important for long-term learning and professional development.[22]

In this study, we aimed to help DUS candidates set their study priorities more rationally and to provide OMFS educators with an objective overview of the examination's content emphasis. Accordingly, Oral and Maxillofacial Surgery questions from DUS administrations between Spring 2012 and Spring 2025 were retrospectively compiled and analyzed. By evaluating topic distribution, item format (knowledge-based vs. case-based), the presence of visual materials, and Bloom-based cognitive level, we characterized the examination representation profile of the OMFS domain.

In dental education, assessment is not merely a tool to measure student achievement; it is also a fundamental element that shapes perceptions of the academic environment by influencing whether students adopt a "performance" orientation rather than a "learning" orientation.[23-25]

An ideal dental education environment should enable students to acquire not only theoretical knowledge, but also core professional competencies—such as clinical decision-making, patient communication, and interprofessional collaboration—in a structured manner. Moreover, the curriculum should go beyond safeguarding students' psychological and physical well-being and contribute to the development of ethical values, professional culture, and social/psychosocial well-being. Because higher education inherently supports personal development as well as professional training, it also offers an important opportunity to foster values such as solidarity, volunteerism, and service to the community. Given that dental practice can sometimes evolve into a relatively "isolated" mode of work, it is particularly important for students to strengthen teamwork, effective communication, and coordination with other healthcare professionals during their training.[26]

To achieve these goals, the curriculum should not rely on a single, uniform teaching approach; rather, it should be delivered through innovative methods that accommodate diverse learning needs and provide early clinical exposure. In addition, helping students "learn how to learn" is a key outcome that shapes their post-graduation approach to knowledge acquisition and promotes lifelong learning and critical thinking.[27]

In today's rapidly evolving landscape of knowledge production and technological innovation, dental practice is increasingly grounded in a broader scientific base and more complex clinical decision-making processes. While this dynamism makes it challenging for predoctoral education alone to provide deep specialization across all areas, it also renders postgraduate specialty training a more visible necessity for attaining advanced competence in specific fields. In Türkiye, candidates who complete undergraduate dental education are required to pass the Dental Specialty Examination (DUS) to be placed into specialty programmes. Because the examination encompasses both clinical and basic sciences, it requires candidates to integrate the knowledge and skills acquired during undergraduate training.

The most striking finding of our study was the strong concentration of items at lower cognitive levels: 87.8% of questions were classified as Level 1 (remembering/understanding), whereas the proportion of Level 2 (applying/analyzing) questions remained at 12.2%, and no Level 3 (evaluating/creating) items were identified. This distribution suggests that, within the OMFS domain, the examination primarily tends to assess factual knowledge and basic comprehension, while questions representing higher-order clinical reasoning and decision-making are relatively limited.

An important additional finding was that all Level 2 questions were presented in a case-based (vignette-based) format. This indicates that higher cognitive demand in the examination is operationalized mainly through clinical scenarios. Therefore, if the goal is to increase the assessment of clinical reasoning and applying/analyzing components in OMFS, expanding the use of well-constructed case-based items may be a key strategy. However, the relatively low overall proportion of case-based questions (12.2%) suggests that candidates encounter fewer items that reflect clinical decision-making processes. This may lead "high-yield" preparation to be shaped predominantly around memorization and basic knowledge, with clinical reasoning receiving comparatively less emphasis.

The low proportion of questions containing visual materials (2.7%) is also noteworthy given the nature of Oral and Maxillofacial Surgery (OMFS). In routine OMFS practice, radiographic assessment, interpretation of clinical photographs/schematics, and image-based decision-making (e.g., trauma, infection, cystic lesions, temporomandibular joint pathologies, and surgical planning) are central to daily clinical workflow. In contrast, the limited use of visuals in the examination may suggest that the assessment tools do not sufficiently reflect real-world clinical decision-making contexts. Nevertheless, an appropriate balance is required: increasing the proportion of visual items should not merely involve "adding an image," but rather ensuring that the visual is constructed and integrated in a way that strengthens the item's cognitive objective.

In the period comparison, although an upward trend in Level 2 questions was observed in 2023–2025 (2012–2022: 9.4% vs. 2023–2025: 20.0%), this difference did not reach statistical significance ($p = 0.075$). This finding can be interpreted in two ways: (i) there may have been a recent shift toward writing more questions that require clinical reasoning; or (ii) the study may have lacked sufficient power to detect a statistically significant difference because the number of questions in the 2023–2025 subperiod was smaller. Therefore, it is more appropriate to interpret this result as an "emerging trend" rather than definitive evidence of change.

From the perspective of topic distribution, the more frequent representation of certain headings (e.g., oral pathology, anesthesia/sedation, trauma, TMJ disorders, and infection) can be considered an expected pattern within the broad scope of Oral and Maxillofacial Surgery (OMFS) (see Table 2). Nevertheless, because a wide field must inevitably be sampled with a limited number of questions, some clinically critical subtopics may be underrepresented in the examination (Assessment, Selection and Placement Center [6] [7]. From an educational planning standpoint, this finding is valuable at two levels. First, identifying high-frequency topic clusters can help candidates rationalize their preparation strategies. Second, undergraduate and specialty curricula should be structured in a balanced manner that is not driven solely by "frequently tested" areas, but also ensures adequate coverage of domains that may be less represented on the exam yet carry high clinical importance and risk.[26]

The strengths of this study include its long observation period, the clarification of the analytic dataset by excluding annulled questions, and the use of a standardized coding scheme. In addition, the high inter-rater agreement observed in a randomly selected subset of 50 questions (Cohen's $\kappa = 0.8677$) supports the reliability of the classifications for cognitive level and other variables. However, several limitations should be acknowledged. First, Bloom-based cognitive-level assignment inherently involves subjective judgment; despite the use of a coding guide and a high kappa value, the classification process is not fully "automatic." Second, psychometric indicators of item quality (e.g., discrimination, difficulty, and item analysis) could not be evaluated because such metrics require candidate performance data.

Overall, DUS–OMFS questions were predominantly concentrated at Level 1 cognitive demand, while Level 2 questions were limited in number and appeared almost exclusively in a case-based format. These findings suggest a potential area for improvement in increasing the proportion of items that assess clinical reasoning

within the OMFS domain. Future studies could provide a more comprehensive evaluation of the examination's measurement validity by expanding the use of case-based and visually supported item structures that strengthen cognitive objectives, conducting comparative analyses across different specialties, and, where feasible, incorporating psychometric indicators.

Conclusion

Across 2012–2025, DUS–Oral and Maxillofacial Surgery questions demonstrated a noticeable re-weighting of topic coverage, with declines/disappearance in some traditional subdomains and the emergence of new headings, suggesting a shift in examination priorities over time. In terms of cognitive demand, items were predominantly concentrated at lower levels (87.8% Level 1; 12.2% Level 2; no Level 3), and higher-level demand was observed exclusively in case-based items. Although there was an upward trend in Level 2 questions in 2023–2025 (OR=2.40; p=0.075), this did not reach statistical significance; moreover, the absence of any visual-material questions in the most recent period may indicate a potential gap in assessing clinically relevant visual interpretation skills. These findings imply that dental curricula and assessment strategies should not only align with evolving exam content, but also strengthen case-based teaching, clinical reasoning, and visual literacy (e.g., interpretation of radiographs and clinical images) while encouraging item-writing practices that incorporate cases and high-quality visuals to better support higher-order learning outcomes.

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Ethical Approval

No individual patient data were used; only publicly available examination questions were analyzed. Therefore, the study was considered a secondary analysis of non-human-subject data.

Conflict of Interest

The authors declare no conflicts of interest.

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Authorship Contributions

Idea/Concept: N.Ü.K, E.Ş Design: N.Ü.K Control/Supervision: N.Ü.K, E.Ş Literature Review: E.Ş Data Collection and/or Processing: N.Ü.K, E.Ş Analysis and/or Interpretation: N.Ü.K, E.Ş Writing the Article: N.Ü.K, E.Ş Critical Review: N.Ü.K, E.Ş

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