

Evaluation of Clinical Training in Pediatric Dentistry: Tunisian Student Perspectives from the Faculty of Dental Medicine

Auto-évaluation étudiante du stage clinique en odontologie pédiatrique à la faculté de Médecine Dentaire de Monastir

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ABSTRACT

Aim: In pediatric dentistry, self-assessment plays a pivotal role in students' professional development by enabling them to critically reflect on and evaluate their clinical competencies. This study aimed to enhance clinical training in pediatric dentistry through structured student self-assessment, identification of educational gaps, and collaborative evaluation with educators to reinforce learning objectives and support continuous quality improvement.

Methods: A descriptive cross-sectional study was conducted over two weeks during the 2023/2024 academic year at Monastir Dental Clinic. A total of 180 fifth-year Tunisian dental students completed a self-assessment questionnaire covering diagnostic confidence, clinical autonomy (5-point Likert scale), and overall preparedness/satisfaction (rated 1–10). Gender data and open-ended feedback were also collected. Prior to deployment, the questionnaire was pretested for clarity and content validity.

Results: Of the 163 respondents (90% response rate; 73% female), diagnostic confidence varied: 22.1% for early childhood caries, 52.1% for malocclusion, and 40–50% for other conditions. Autonomy in trauma management was reported by 67.5%, but only 4.9% felt fully autonomous in clinical protocols. Preparedness averaged 6.3/10, and satisfaction was high (82.7% rated 5–8/10). Data was analyzed using SPSS 22 and Excel 2020. Descriptive statistics were complemented by inferential analysis (Chi-square and Student's t-tests), revealing significant associations between satisfaction and both clinical preparedness ($p < 0.001$) and theoretical teaching adequacy ($p = 0.001$). Female students reported significantly higher satisfaction ($p < 0.001$).

Conclusion: Students showed uneven diagnostic skills, especially with molar incisor hypomineralization (MIH) and early childhood caries (ECC). Despite overall satisfaction, findings call for targeted pedagogical reforms to ease clinical transition and support skill development.

Key words: self-assessment, dental students, clinical education, pediatric dentistry, confidence

RÉSUMÉ

Objectif : En odontologie pédiatrique, l'auto-évaluation joue un rôle essentiel dans le développement professionnel des étudiants, en leur permettant de réfléchir de manière critique et d'évaluer leurs compétences cliniques. Cette étude visait à améliorer la formation clinique en odontologie pédiatrique par le biais d'une auto-évaluation structurée des étudiants, l'identification des lacunes pédagogiques et une évaluation collaborative avec les enseignants afin de renforcer les objectifs d'apprentissage et de soutenir une amélioration continue de la qualité.

Méthodes : Une étude descriptive transversale a été menée sur une période de deux semaines durant l'année universitaire 2023/2024 à la Clinique dentaire de Monastir. Un total de 180 étudiants tunisiens en cinquième année de médecine dentaire ont complété un questionnaire d'auto-évaluation portant sur la confiance diagnostique, l'autonomie clinique (échelle de Likert à 5 points) et la préparation/satisfaction globale (notée de 1 à 10). Les données de genre ainsi que des commentaires libres ont également été recueillis. Avant sa diffusion, le questionnaire a été prétesté afin d'en assurer la clarté et la validité du contenu.

Résultats : Parmi les 163 répondants (taux de réponse de 90 % ; 73 % de femmes), la confiance diagnostique variait : 22,1 % pour les caries de la petite enfance, 52,1 % pour les malocclusions et entre 40 et 50 % pour les autres affections. L'autonomie dans la gestion des traumatismes dentaires a été rapportée par 67,5 % des étudiants, mais seulement 4,9 % se sont déclarés pleinement autonomes dans l'application des protocoles cliniques. Le niveau de préparation moyen était de 6,3/10, et la satisfaction globale était élevée (82,7 % ont attribué une note entre 5 et 8/10). Les données ont été analysées à l'aide des logiciels SPSS 22 et Excel 2020. Les statistiques descriptives ont été complétées par des analyses inférentielles (test du χ^2 et test t de Student), révélant des associations significatives entre la satisfaction et la préparation clinique ($p < 0,001$), ainsi que l'adéquation de l'enseignement théorique ($p = 0,001$). Les étudiantes ont rapporté une satisfaction significativement plus élevée ($p < 0,001$).

Conclusion : Les étudiants ont montré des compétences diagnostiques inégales, notamment en ce qui concerne l'hypominéralisation des molaires (MIH) et les caries précoces (ECC). Malgré une satisfaction générale élevée, les résultats soulignent la nécessité de réformes pédagogiques ciblées pour faciliter la transition clinique et soutenir le développement des compétences.

Mots-clés : auto-évaluation, étudiants en odontologie, formation clinique, odontologie pédiatrique, confiance

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INTRODUCTION

Self-assessment is defined as “a process by which an individual is led to make a judgment regarding the quality of their progress, work, or acquired knowledge in relation to predefined objectives and guided by specific evaluation criteria” [1]. Closely associated with peer assessment, self-assessment falls within the broader framework of formative, diagnostic evaluation, with the primary aim of regulating learning. Whether conducted at variable intervals or on a continuous basis, it serves to provide both students and educators with objective insights into the nature and value of the learning outcomes achieved. This, in turn, allows them to optimize and adjust their learning strategies or pedagogical interventions accordingly.

Given its significance, self-assessment is regarded as a foundational component in establishing clinical competence within medical faculties [2]. This process holds particular importance in dental education, prompting numerous studies to explore trends in dental students' self-assessment practices. Several investigations have demonstrated that dental students can enhance the accuracy of their self-assessment skills. In pediatric dentistry, self-assessment plays a pivotal role in students' professional development by enabling them to critically reflect on and evaluate their clinical competencies. This process is essential to improving clinical practice and ensuring high-quality care for pediatric patients, emphasizing the value of self-reflection and ongoing growth. [3,4]. Self-assessment is a vital competency for dental students, enabling them to critically evaluate their own skills, recognize areas for improvement, and cultivate habits of lifelong learning. It is widely regarded as a foundational element in the development of clinical decision-making and critical thinking, both of which are essential for delivering comprehensive, evidence-based patient care [5].

Despite its recognized importance internationally, there is a notable lack of published data on self-assessment practices among dental students in Tunisia, particularly within the Faculty of Dental Medicine of Monastir. This gap highlights the need for localized research to better understand how Tunisian students engage with self-assessment and how it can be optimized within their specific educational context.

The aim of this study was to strengthen the clinical training of dental students by actively involving them in structured self-assessment, identifying pedagogical gaps to guide targeted improvements, and implementing collaborative evaluation practices between students and educators, ensuring alignment with learning objectives and supporting continuous quality enhancement in education.

METHODS

Study: This exhaustive cross-sectional descriptive study involved the self-assessment of 180 fifth-year Tunisian dental students for the 2023/ 2024 academic year

regarding their clinical internship in pediatric dentistry and prevention. Conducted over a two-week period, the study was took place at the Department of Pediatric Dentistry and Prevention at the Monastir Dental Clinic.

Data collection: For the descriptive component, general demographic data (gender) was collected at the time of questionnaire distribution. The questionnaire, written in French, was designed to gather educational data. It was adapted from a published doctoral thesis in Dental Medicine (HAL open science, Université de Paris) to suit the Tunisian context. The questions were predominantly closed-ended.

The questionnaire was composed of three sections. The first focused on assessing students' perceived confidence in diagnosing and managing specific clinical scenarios. The diagnostic list included conditions most characteristic of pediatric dentistry, such as Early Childhood Caries (ECC), deep or carious fissures, Molar-Incisor Hypomineralization (MIH), interdental septum inflammation and malocclusions. Students were asked to rate their diagnostic confidence by selecting one of the following: > – Yes > – Yes, but I still need assistance > – No > – I prefer not to answer > > The second section explored student autonomy in performing interceptive orthodontic treatments, the adequacy of theoretical teaching in preparing them for clinical practice, their knowledge of clinical protocols necessary for independent care, their ability to develop comprehensive treatment plans and justify therapeutic alternatives, and their readiness to manage dental trauma. Responses were collected using a five-point Likert scale [7] ranging from ‘totally agree’ to ‘totally disagree’. > >. The final section invited students to rate, on a scale from 1 to 10, their perceived readiness to manage pediatric and adolescent patients in future private practice settings, as well as their satisfaction with the first semester of clinical training in pediatric dentistry. Additionally, students were encouraged to provide comments and suggestions regarding the pediatric dentistry clinical internship.

The questionnaire was administered in small groups, with each student receiving it individually during their routine clinical training sessions. A written statement outlining the study's purpose was provided to encourage participation. Distribution occurred after the first examination period. **Pretest and validation:** Prior to data collection, the questionnaire was pretested on a sample of undergraduate dental interns from the same institution to ensure clarity, comprehension, and content validity. Feedback from the pretest led to minor linguistic and formatting adjustments, but no structural modifications were required.

Statistical analysis: The questionnaire data were entered and analyzed using IBM SPSS Statistics version 22 and Microsoft Excel 2020. The distribution of quantitative variables was assessed using the Kolmogorov-Smirnov test, and categorical variables were expressed as percentages. Inferential analyses were conducted using the Chi-square (χ^2) test to compare proportions between groups and to explore associations between categorical variables. A p-value of < 0.05 was considered statistically significant

Ethical consideration: This study did not offer any direct individual benefit. Ethical approval from the Ethics Committee of the Faculty of Dental Medicine of Monastir (FMDM) was requested and obtained prior to the start of the study. Completion of the questionnaire was considered as informed consent to participate.

RESULTS

Descriptive analysis

The response rate was 90%. A total of 163 students completed the questionnaire correctly. A female

predominance was observed, accounting for 73% of respondents.

Assessment of Students' Diagnostic Confidence (Table 1)

The majority of students did not report full autonomy in diagnosing common pediatric dental conditions. Confidence levels varied: only 22.1% felt capable of independently diagnosing early childhood caries, while 52.1% reported autonomy in identifying malocclusion. For other diagnoses, interproximal caries, MIH, and carious fissures and proximately 40–50% felt confident, whereas one-third to one-half of students indicated they still needed support

Table 1. Assessment of student's diagnostic confidence

Item	Yes	Yes, but I still need assistance	No	I prefer not to answer
To diagnose ECC (early childhood caries)	36 (22.1%)	83 (51%)	39 (23.8%)	5 (3%)
To perform a positive and differential diagnosis of occlusal fissures (deep, stained, or carious)	81 (49.7%)	57 (35%)	21 (12.8%)	4 (2.5%)
To diagnose MIH (Molar Incisor Hypomineralization)	65 (39.8%)	64 (39.3%)	25 (15.3%)	9 (5.6%)
To diagnose interdental septum inflammation	67 (41.1%)	64 (39.3%)	27 (16.5%)	5 (3.1%)
To diagnose malocclusion	85 (52.1%)	63 (38.6%)	11 (6.8%)	4 (2.5%)

Assessment of student's treatments and clinical protocols (table 2)

Student feedback reveals a moderate level of confidence in clinical preparedness, with notable variations across domains. A majority (67.5%) felt autonomous in managing traumatic dental cases, and 65% agreed that their teaching was well-adapted—though only 8.6% strongly affirmed this. Confidence in clinical protocols was affirmed by

56.4%, but just 4.9% felt completely autonomous. When it came to treatment planning, 57.1% reported the ability to justify therapeutic alternatives, while only 12.3% were fully confident. Regarding interceptive treatment, perceptions were more divided: 44.2% remained neutral, 23.9% agreed, and 23.9% disagreed. Strong disagreement ranged from 5.5% to 6.7% across domains, and full agreement remained consistently low (2.5–12.3%).

Table 2. Assessment of student's treatments and clinical protocols

Item	Totally Agree	Agree	Disagree	Totally Disagree	Neutral
Autonomy in performing interceptive treatment	36 (22.1%)	39 (23.9%)	39 (23.9%)	9 (5.5%)	72 (44.2%)
Autonomy in managing a trauma patient	31 (19%)	78 (48.5%)	21 (12.9%)	3 (1.8%)	42 (25.8%)
Knowledge of clinical protocols was sufficient to manage a patient independently	8 (4.9%)	92 (56.4%)	21 (12.9%)	1 (0.6%)	41 (25.2%)
The theoretical training from the previous year was appropriate for managing pediatric dental patients	14 (8.6%)	106 (65%)	9 (5.5%)	3 (1.8%)	31 (19%)
Establish a treatment plan by justifying the different therapeutic alternatives	20 (12.3%)	93 (57.1%)	14 (8.6%)	1 (0.6%)	35 (21.5%)

Self-perceived scores on pediatric patient management and satisfaction with clinical training (table 3)

Most students reported moderate clinical preparedness in pediatric dentistry, with 27.6% rating 7/10, followed by 22.1% at 6 and 20.9% at 5. Only 1.2% felt fully prepared, while low scores (2–3) were marginal (5.5%). Satisfaction with the first clinical semester was generally positive. Ratings between 5 and 8 made up 82.7% of responses, with the most frequent being 6 (23.9%) and 7 (24.5%). Very low satisfaction (≤ 3) accounted for just 4.3%, and scores of 10 were rare (2.5%).

Inferential statistical analysis

The analytical phase of this study aimed to explore associations between students' perceptions of their pediatric clinical training and various influencing factors. Beyond descriptive findings, inferential analyses were conducted to determine whether differences in satisfaction and perceived clinical preparedness were statistically significant across subgroups such as gender and perceived adequacy of theoretical teaching.

The use of chi-square and Student's t-tests allowed for a deeper understanding of the relationships between these variables, highlighting trends that reflect both the strengths and potential areas for improvement within the clinical training program.

A statistically significant association was found between students' satisfaction with their first semester of pediatric clinical training and their perceived level of clinical preparedness ($p < 0.001$) (table 4).

Table 3. Self-perceived scores on pediatric patient management and satisfaction with clinical training

Score (0–10)	Readiness n (%)	Satisfaction n (%)
0	0 (0.0)	1 (0.6)
1	0 (0.0)	0 (0.0)
2	2 (1.2)	1 (0.6)
3	7 (4.3)	5 (3.1)
4	17 (10.4)	9 (5.5)
5	34 (20.9)	31 (19.0)
6	36 (22.1)	39 (23.9)
7	45 (27.6)	40 (24.5)
8	16 (9.8)	25 (15.3)
9	4 (2.5)	8 (4.9)
10	2 (1.2)	4 (2.5)
Total (n)	163 (100.0)	163 (100.0)

Table 4. Association between clinical preparedness and satisfaction with the first semester of pediatric dentistry training

Level of satisfaction (0–10 scale)	n	%	Mean preparedness score (0–10 scale)	Observed trend	p
0–2	2	1.2	3.5	Very low satisfaction, low perceived preparedness	<0.001
3–4	14	8.6	5.5	Low to moderate satisfaction, moderate preparedness	
5–6	70	42.9	6.1	Moderate satisfaction, moderate to good preparedness	
7–8	65	39.9	7.1	High satisfaction, good preparedness	
9–10	12	7.4	8.6	Very high satisfaction, excellent preparedness	
Total	163	100	—	—	

The Chi-square test revealed a statistically significant association between students' clinical satisfaction level and their perceived adequacy of theoretical teaching ($p = 0.001$) described in table 5.

Table 5. Relationship between clinical satisfaction level and perception of theoretical teaching adequacy

Clinical satisfaction level (0–10 scale)	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total n	p
0–2	0	0	2	0	0	2	<0.001
3–4	0	2	1	10	1	14	
5–6	2	3	13	51	1	70	
7–8	1	4	14	40	6	65	
9–10	0	0	1	5	6	12	
Total (n)	3	9	31	106	14	163	
%	1.8	5.5	19.0	65.0	8.6	100	

A statistically significant gender difference was observed in students' satisfaction with their first semester of pediatric clinical training. Female students reported a higher mean satisfaction score (6.5 ± 2.1) compared to male students (3.5 ± 2.5), and this difference was highly significant ($p < 0.001$) (table 6).

Table 6. Gender differences in satisfaction with the first semester of pediatric dentistry clinical training

Gender	n	Mean satisfaction (0–10)	df	p
Male	44	3.5	280	< 0.001
Female	119	6.5		
Total	163	—	—	

Student' feedback:

Student feedback highlighted a generally positive perception of the self-assessment process, regarded as a valuable tool for identifying acquired competencies and areas for improvement. Participants expressed a clear need for more consistent supervision and personalized feedback to support their clinical development. In addition, the limited diversity of clinical cases was noted, with some protocols proving difficult to apply in practice. Several students also suggested that enhanced tracking of their progress through dedicated monitoring tools would have strengthened their engagement and facilitated a deeper ownership of their clinical learning.

DISCUSSION

This study, the first of its kind conducted with Tunisian dental students, explored how students assessed their own clinical skills during pediatric rotations. Using structured questionnaires, students identified areas of confidence and difficulty, providing valuable insights into their learning needs. The results helped faculty better target instructional priorities.

Surveys were distributed in person during regular clinical sessions using paper forms. This approach improved response rates and allowed for immediate clarification of any questions, minimizing information bias. As noted by Nulty, face-to-face distribution tends to yield higher participation and more reliable data than online methods

[8].

A pretest phase, conducted with undergraduate dental interns, helped refine item clarity and ensure comprehensibility. Unlike online surveys, often affected by lack of supervision, this standardized approach ensured consistency: a single facilitator handled distribution, monitoring, and data collection, guaranteeing uniform explanation and reducing missing or erratic data.

Importantly, this framework gave students a tangible opportunity to reflect on their professional development throughout the year and engage in meaningful discussions with faculty at two distinct intervals. As noted by Pelaccia (2016), such settings promote reflective practice, which is essential for maintaining clinical competence across a practitioner's career [9]. In this context, self-assessment emerges as a formative tool for both individual learning and the continuous improvement of pedagogical systems. This study included all fifth-year dental students enrolled during the 2023–2024 academic year, with approximately two-thirds identifying as female, a trend consistent with prior findings. A 2019 Tunisian study had already noted the growing feminization of the dental profession, reporting that nearly 70% of students chose dentistry voluntarily [10]. Interestingly, gender differences emerged: 73% of women cited personal choice, compared to just under 55% of men, with statistically significant results. These findings align with broader international research, highlighting the increasing representation of women in dentistry over recent years [11]. The assessment of diagnostic competence in pediatric dentistry revealed that nearly half of the students (49.9%) felt confident in identifying early childhood caries. However, the fact that more than half did not express a clear opinion may reflect a lack of confidence or clinical experience. These findings highlight the need to strengthen diagnostic education through complementary training and interactive pedagogical tools, in order to reinforce knowledge and build confidence among future practitioners [12].

Regarding the diagnosis of molar-incisor hypomineralization (MIH), the results are consistent with studies conducted in Turkey and Germany, in which most students reported low confidence in their ability to recognize this condition [13,14]. MIH remains a challenging diagnosis, often confused with other enamel defects such as amelogenesis imperfecta or fluorosis. Several international studies have demonstrated that these diagnostic difficulties are common among students and early-career practitioners [15,16].

Students could really benefit from using newer imaging techniques like fluorescence, especially when paired with practice cases and digital tools. It might help them get more comfortable spotting different kinds of enamel issues, some of those can be tricky to tell apart at first. The study also highlighted dental students' diagnostic abilities regarding the interdental septum inflammation in children. The results indicated a high identification rate, suggesting a degree of familiarity with this anomaly. However, a noteworthy proportion of students appeared to require additional clinical training in this specific area. These findings underscore the need for targeted pedagogical strategies to support students

whose diagnostic competencies in pediatric pathology remain underdeveloped. Artificial intelligence presents a compelling solution. Karakuş et al. showed that a YOLOv8 deep learning model, trained on 860 annotated bite-wing radiographs, achieved high performance (97.7% precision, 93.2% sensitivity, F1 score 95.4) [17]. Its user-friendly interface enables dual use: clinical decision support and radiographic interpretation training enhancing both accuracy and educational impact.

The study showed that dental students had different levels of confidence in diagnosing malocclusions. Nevertheless, a substantial proportion demonstrated the ability to identify these anomalies independently, aligning with results from studies conducted in India and Saudi Arabia, even though some students struggle more than others, most of them show a solid foundation in orthodontic diagnosis [18,19]. This likely reflects better integration of these concepts into the training program.

Most students reported feeling confident and autonomous in managing pediatric dental trauma. However, a significant subset expressed some uncertainty, underscoring the need to further strengthen clinical skills. These results differ from certain international studies, which found that dental students and practitioners generally possessed limited knowledge regarding the management of traumatic dental injuries (TDIs) in children, revealing low to moderate understanding for both primary and permanent dentition [20-21].

Most students also gave positive feedback about how well the theoretical content matched the clinical demands in pediatric dentistry. This indicates that theoretical teaching helped prepare them for real-life clinical situations, even though some students remained neutral. Overall, the largely favorable responses support the relevance of the current curriculum, although lectures, starting in the fourth year, are still the main method of delivering theoretical instruction at our faculty. The adaptation of theoretical instruction in pediatric dentistry plays a pivotal role in preparing students for clinical practice. Their perceptions are crucial for evaluating the curriculum's effectiveness and identifying areas for enhancement. Several studies have examined this issue from various perspectives, including assessment strategies and the integration of psychosocial competencies [22]. Notably, these authors demonstrated a significant correlation between students' theoretical knowledge and their practical skills. As such, objective evaluation of theoretical understanding can serve as a proxy for estimating clinical competence, thereby streamlining the overall assessment process.

Several challenges persist in the teaching of pediatric dentistry, particularly the lack of coordination between theoretical knowledge and practical skills, which may hinder students' ability to effectively apply their knowledge in clinical settings [23].

This gap highlights the need to adopt a teaching approach that closely links theory to practice. This helps students better understand what they learn and apply it more effectively in clinical settings.

Furthermore, it is essential for students to become familiar early with the specific protocols and unique aspects

of pediatric dentistry. As Cheng et al. demonstrated, integrating pediatric education from the initial years of the curriculum not only strengthens the development of clinical competencies but also promotes a deeper understanding of the challenges involved in managing young patients [24].

Most students expressed confidence in their understanding of clinical protocols, suggesting a promising level of autonomy. However, this confidence was nuanced: only 4.9% strongly agreed, indicating that few felt fully prepared without reservations. Nearly one-quarter of respondents adopted a neutral stance, reflecting a notable degree of uncertainty. This hesitation may be attributed to a curriculum that remains largely theoretical, limited exposure to real-life clinical scenarios, or cautious self-assessment in the absence of structured feedback.

These findings call for thoughtful pedagogical attention. Notably, around one in seven students expressed doubts about their clinical preparedness, highlighting a gap that warrants targeted intervention. Strengthening practical exercises, expanding supervised clinical exposure, and adapting the pace of protocol integration to individual learning trajectories appear essential. Moreover, the data underscores the need to bridge theoretical instruction with hands-on experience, ensuring that students transition confidently and competently toward professional autonomy. Dental students' perceptions of their preparedness and ability to autonomously apply clinical protocols in pediatric dentistry offer valuable insights into their educational journey and perceived readiness to deliver quality care. These perspectives reflect not only individual confidence but also broader pedagogical influences. Several studies have examined these dimensions, particularly in relation to clinical competence, satisfaction with training, and proficiency in behavior management techniques [25]. Importantly, students' views appear shaped by the depth and quality of clinical exposure, the integration of behavior management strategies, and the coherence between medical and dental instruction. Picart et al. underscore the critical role of ongoing evaluation in training programs to ensure alignment with evolving clinical demands and learner needs. that future practitioners are adequately prepared to deliver optimal care to young patients [26]. In the present study, most participants reported being able to formulate treatment plans and justify various therapeutic options, reflecting a promising degree of confidence in their clinical reasoning. Nonetheless, 21.5% adopted a neutral stance and 9.2% expressed disagreement, revealing a notable variability in perceived preparedness. This heterogeneity may be attributed to limited exposure to complex pediatric cases or constrained opportunities for hands-on practice. These findings align with those from Qassim University where dental students demonstrated satisfactory clinical competence in pediatric dentistry, yet still exhibited areas requiring further development. Such findings reinforce the value of pedagogical strategies centered on clinical decision-making particularly interactive simulations, guided therapeutic planning sessions, and small-group

discussions of complex cases [25]. These approaches facilitate knowledge consolidation and foster the clinical reflexes necessary for professional autonomy. Regular reflective feedback following each practical activity may further enrich the learning process.

In this study, 70.6% of students expressed confidence in their future ability to manage pediatric patients, with most self-assessed scores falling between 6 and 8 out of 10. The most common rating 7 out of 10, reported by 27.6%, reflects a generally positive but cautious outlook. This emerging confidence likely stems from a strong theoretical foundation, though students clearly recognize the need for more hands-on clinical training, especially in behavior management and handling unexpected situations. These findings align with a Turkish study by Baş Öztürk and Çelikel ,where postgraduate students emphasized the importance of developing practical skills, particularly in areas like sedation and complex extractions [27].

Student satisfaction is a key indicator of perceived training quality in pediatric dentistry. In this study, students reported a generally positive experience during their first clinical semester, with most satisfaction scores ranging from 6 to 8. However, the relative scarcity of higher ratings (9–10) may suggest unmet expectations, limited autonomy, or insufficient exposure to diverse clinical cases highlighting that some educational goals remain only partially achieved and that the transition from theory to practice still presents challenges.

These results echo the conclusions of Al-Homaidhi who found that student satisfaction in clinical training is strongly influenced by effective supervision, exposure to a wide range of cases, and the gradual development of confidence throughout rotations. The study at King Saud University further explored final-year students' perspectives, shedding light on their skillsets and identifying areas needing additional support [28].

Taken together, these findings underscore the importance of strengthening faculty supervision, diversifying clinical experiences, and providing ongoing support to students as they build competence. Numerous studies have shown that student satisfaction is a critical performance metric for higher education institutions, shaped by factors such as service quality, institutional reputation, and student caliber [29,30]. Su et al. also found that satisfaction is positively linked to system quality, instructional effectiveness, and the alignment between tasks and technology, suggesting that improvements in these areas can enhance student engagement and outcomes [31].

Statistical analysis revealed a significant correlation between students' perceived clinical preparedness and their overall satisfaction with the pediatric dentistry program ($p < 0.001$). Students who felt more equipped to manage pediatric patients were also more likely to report higher satisfaction levels. Similar trends were observed in studies by Puranik et al. (2022), which identified perceived competence and self-efficacy as key predictors of satisfaction and motivation during clinical training [13]. A strong relationship was also found between the perceived quality of theoretical instruction and satisfaction scores ($p < 0.001$). Students who felt that

the theoretical content was well-integrated with clinical practice tended to be more satisfied, reinforcing the pedagogical principle that coherence between theory and application enhances learning. This finding supports research by Haupt and Kanzow (2023), who demonstrated that theoretical understanding significantly impacts clinical performance and satisfaction [22].

Gender-based analysis revealed a notable difference ($p < 0.001$): female students reported significantly higher satisfaction (mean score 6.5 ± 2.1) compared to male students (3.5 ± 2.5). This pattern is consistent with studies from Saudi Arabia where female dental students consistently showed greater engagement, empathy, and perceived readiness in pediatric settings [28]. These differences may reflect variations in communication styles, emotional intelligence, or motivation toward pediatric care, though they should be interpreted as context-dependent rather than inherent. Overall, these findings highlight the multifaceted nature of clinical satisfaction and preparedness among dental students.

In this study, Student feedback revealed a clear commitment to professional growth, underscoring a strong interest in structured self-assessment. This emerging awareness of clinical competencies aligns with current medical education frameworks that emphasize learner autonomy and active engagement in the training process. Nonetheless, several areas for improvement were identified:

- Limited longitudinal tracking hinders the ability to map individual progress over time.
- A lack of clinical diversity restricts the integration of certain protocols into authentic practice.
- The absence of personalized feedback impedes the refinement of clinical behaviors tailored to each student's specific needs.

These insights support the implementation of a more robust educational framework that includes:

- Iterative self-assessment tools administered at multiple stages of the curriculum.
- Enhanced clinical supervision with targeted feedback and documented progress.
- Broader exposure to clinical scenarios, including complex pediatric pathology and simulated cases.
- Collaborative evaluation between faculty and students to co-construct a high-quality pedagogical environment.

Limitations of the study:

Student autonomy was assessed using a single-point measurement, conducted at the moment the questionnaire was administered. While this snapshot approach offered immediate insights, it limited the ability to track individual progression and competence development over the academic year thus constraining the longitudinal scope of the findings.

The questionnaire utilized a five-point Likert scale. Notably, the "neutral" option was frequently selected, potentially reflecting reluctance to take a stance or a lack of self-confidence. To mitigate central tendency bias and promote more decisive responses, future investigations might consider employing a four-point scale.

Using a non-standardized questionnaire represents a

significant limitation in this study, as it may compromise the reliability and consistency of the data collected. Without prior validation, such instruments risk introducing measurement bias, reducing the accuracy of participant responses, and hindering comparability across studies.

A key limitation of this study lies in its cross-sectional design, which restricts our ability to observe longitudinal trends in students' clinical competencies. To draw more robust conclusions and identify meaningful patterns, it would be necessary to administer the self-assessment questionnaire across multiple student cohorts over successive academic years. Such an approach would enable comparative analysis, track the evolution of diagnostic and procedural skills in pediatric dentistry, and inform targeted improvements to both the academic curriculum and clinical training protocols.

CONCLUSION

The assessment of clinical and diagnostic competencies among pediatric dentistry students, along with their satisfaction levels following the first clinical semester, revealed contrasting yet insightful trends. Diagnostic proficiency, particularly in the context of specific conditions such as molar incisor hypomineralization (MIH) and early childhood caries, remains an area in need of reinforcement for certain students. Pedagogical strategies that emphasize clinical decision-making, simulation-based learning, reflective feedback, and a broader variety of clinical cases appear to be promising avenues for enhancing performance.

While most students reported overall satisfaction with their training, the findings also indicate a clear need for pedagogical adjustments. These improvements should aim to foster a smoother transition from theory to practice and provide a supportive framework that acknowledges both students' strengths and their developmental needs.

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