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Is the implementation of the sixth-year clinical internship meeting the needs of dental students?

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ABSTRACT

Aims: To assess the perceptions of the first two cohorts of students at the Faculty of Dental Medicine of Casablanca (2020/2021 and 2021/2022) regarding the implementation of the sixth year in their initial training curriculum.

Methods: This mixed-methods study combined qualitative and quantitative approaches. For the qualitative component, 20 participants from the first two cohorts were randomly selected and underwent semi-structured individual interviews. The data were analyzed using MAXQDA software. The quantitative study used a descriptive cross-sectional design and involved an online questionnaire administered to the second cohort (2021/2022). Data were processed using SPSS software.

Results: The response rate to the questionnaire was 92% (91/99). Most respondents (67.1%) reported being moderately to very satisfied with their sixth-year experience, and 92% felt better prepared for independent practice. However, only 49.5% of participants considered the intensive internship duration sufficient. While students generally acquired skills such as multidisciplinary treatment planning and surgical extractions, some skills, including immediate partial dentures (57%) and endodontic complication management (36.3%), required further development. Qualitative analysis revealed that 16 interviewees developed greater autonomy and self-confidence, while 10 participants found the clinical competency assessment exam comprehensive, although half experienced stress.

Conclusion: This study highlights students' perceptions of the sixth-year implementation and identifies areas for improvement, including clearer communication of objectives and enhancements to the intensive internship conditions. These recommendations should be considered to enhance the learning environment and training quality during the sixth year.

Keywords: Dentistry, curriculum, vocational training, clinical skills

INTRODUCTION

In recent years, concerns have been raised by dentists regarding the level of competence of students nearing graduation and the quality of their training, particularly to ensure compliance with oral healthcare standards.[1] To address these challenges, several countries have implemented clinical learning internships, commonly referred as "vocational training".[2] These internships vary widely between countries, taking place in either hospital or private practice environments, and may be mandatory or optional.[3-6]

Students at the Faculty of Dental Medicine in Casablanca, underwent a 5-year training program, with clinical rotations starting in the fourth year. However, students expressed concerns about the adequacy of this training for independent practice. A previous study conducted in 2015 among 115 fifth-year students during the 2014/2015 academic year investigated student perceptions of teaching methods. The study revealed that 50% of students lacked confidence in their ability to practice independently after graduation. Furthermore, half of the students believed that an additional year of clinical training would be beneficial.[7]

As part of a broader reform initiated in 2015, aimed at transforming the educational approach in dental medicine, the faculty introduced a sixth year of clinical training, focusing on holistic, patient-centered dental care. This addition aimed to enhance students' clinical expertise and prepare them for professional practice, ultimately better addressing the evolving needs of oral healthcare in Morocco.[8]

In accordance with Decree n°2176-18 of January 9, 2019,[9] the Ministry of Higher Education, in collaboration with Moroccan dental schools, implemented this clinical learning

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year, comprising two major internships: a multidisciplinary hospital internship and a professional immersion internship in private practice.

Assessing student perceptions on the new clinical sixth year was essential, given their stakeholder role and the absence of prior evaluations in Morocco.

Therefore, the present study aims to assess the satisfaction levels of the first two cohorts of students from the Casablanca Faculty of Dental Medicine affected by the reform in the 2020/2021 and 2021/2022 academic years regarding their internships. The study focuses on the attainment of educational objectives, the quality of supervision, and the evaluation methods. By examining the strengths and weaknesses of this new clinical sixth year, this study seeks to inform future refinements to the curriculum and enhance the overall quality of dental education in Morocco.

METHODS

The study was carried out with the permission of the Hassan II University Ethics Committee (Date: 30.05.2025, Decision No: FMDC-pr2c/72-73-2023). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

To meet our objectives, we used a mixed-methods approach, combining qualitative semi-structured interviews (conducted at participant-chosen locations) with a quantitative questionnaire-based study. Data collection and analysis took place over nine months.

The study population for the quantitative study consisted of all sixth-year students enrolled at the Casablanca Faculty of Dental Medicine during the 2021-2022 academic year, with the exception of those repeating their year. The first cohort of 2020/2021 was excluded from the quantitative study due to the disruption caused by the COVID-19 pandemic, which resulted in reduced clinical activities and a delayed start of nearly two and a half months.

Participants were required to have completed both internship periods and their clinical skills examinations (CSE). For the qualitative study, a sample of 20 participants was randomly selected, consisting of 10 graduates from the 2020-2021 cohort and 10 students from the 2021-2022 cohort.

Informed consent was obtained from each participant via written consent forms that clearly outlined the purpose of the study and the participants' rights. Following permission from the faculty's administrative department to access the complete lists, an online questionnaire was distributed using Google Forms through the WhatsApp platform. The questionnaire contained 34 questions, including 27 closed-ended and 7 open-ended questions, organized into four sections relating to participant identification, perceptions of the multidisciplinary clinical internship (the skills being evaluated align with those outlined for the European dentist by the DentEd Network[10]), perceptions of the professional immersion internship and perceptions of evaluation procedures. Data entry was performed using SPSS software

For the qualitative study, an interview guide was used. The questions were structured according to the hourglass technique, progressing from more general to more specific inquiries. Before starting the interview, participants signed a consent form regarding the audio recording of the interview. Individual interviews were conducted face-to-face, and recordings were made using the « voice memo » application on the investigator's smartphone. Respect for anonymity and confidentiality was communicated from the outset.

The interviews were semi-structured, allowing participants to freely express their views on specific pre-prepared questions while enabling interviewers to encourage deeper exploration of the topics. The first pilot interview and three others were excluded due to insufficiently relevant data. Each interview lasted between 20 minutes and 1 hour.

Statistical Analysis

Data analysis was conducted using MAXQDA software (Berlin, Germany).[11] The interviews were transcribed verbatim, then segmented to identify key themes.[12] After verbatim transcription, the data were segmented to identify key themes, coded, and synthesized into a thematic grid based on the initial interview guide. The results were given as percentages.

RESULTS

Of the 99 students invited to participate, 91 responded to the online questionnaire, resulting in a response rate of 92%. The respondent sample consisted of 62.6% female students, with a mean age of 24 years (SD=1 year). For the qualitative study, initially, a random sample of 20 participants was selected. The pilot interview was excluded from the analysis, and three additional interviews were excluded due to insufficient relevance of the collected data. Therefore, 20 out of 24 conducted interviews were deemed suitable for analysis and were included in our study.

Students' Perceptions of the Multidisciplinary Clinical Internship Experience in the University-Hospital Dental Center

Overall, 67.1% of respondents expressed moderate to very high satisfaction with their internship experience. The qualitative study revealed that both cohorts held a overwhelmingly positive view of the introduction of the sixth year, with participants commenting, "we learned a great deal" and "the sixth year was a valuable addition for us."

Students generally reported acquiring competencies in various areas, including planning multidisciplinary treatment projects, performing surgical extractions, managing pediatric patients, and creating supragingival prostheses. **Table 1** summarizes students' self-assessed competencies. Notably, participants expressed limited confidence in their ability to perform immediate removable prostheses (57.1%), conduct simple periodontal surgical interventions (51.6%), manage medically compromised pediatric patients (38,5%) and manage periodontal emergencies (37.4%).

Further development is needed in competencies such as managing endodontic complications (36%) and addressing endodontic failures (33%) and developing skills like communication, organization, and ergonomics (10%). The qualitative study revealed that students perceived gaps in their training, particularly in fixed prosthodontics (13 respondents), cone beam computed tomography interpretation (10), oral surgery (10 respondents) and molar endodontics.[8]

Opinions on the Functional Rehabilitation of Dental Arches (RFA) module, a new internship combining restorative and

Table 1 . Competencies perceived as acquired during the multidisciplinary internship

According to you, what competencies do you believe you have acquired during the multidisciplinary internship	Acquired	Moderately acquired	Not acquired	I don't know
Plan a multidisciplinary treatment project for a partially edentulous patient	60 (65.9%)	31 (34.1%)	-	-
Deduce and prioritize therapeutic goals for a functional rehabilitation of the arches	55 (60.4%)	35 (38.5%)	1 (1.1%)	-
Be autonomous during a prosthetic rehabilitation with a composite prosthesis	32 (35.2%)	42 (46.2%)	15 (16.5%)	2 (2.2%)
Perform an immediate removable prosthesis	12 (13.2%)	24 (26.4%)	52 (57.1%)	3 (3.3%)
Perform a supragingival prosthesis	37 (40.7%)	31 (34.1%)	19 (20.9%)	4 (4.4%)
Be capable of performing complex acts in endodontics (stratification, endodontic retreatment)	35 (38.5%)	44 (48.4%)	11 (12.1%)	1 (1.1%)
Be capable of managing endodontic complications	18 (19.8%)	39 (42.9%)	33 (36.3%)	1 (1.1%)
Manage at-risk children	24 (26.4%)	30 (33%)	35 (38.5%)	2 (2.2%)
Manage children with early childhood caries	49 (53.8%)	27 (29.7%)	15 (16.5%)	-
Follow up on dental trauma in pediatric dentistry	27 (29.7%)	39 (42.9%)	23 (25.3%)	2 (2.2%)
Manage difficult child behavior	27 (2.7%)	54 (59.3%)	9 (9.9%)	1 (1.1%)
Perform simple surgical interventions in periodontology	17 (18.7%)	23 (25.3%)	47 (51.6%)	4 (4.4%)
Performing surgical extractions	51 (56%)	32 (35.2%)	8 (8.8%)	-
Being autonomous during the care of at-risk patients	50 (54.9%)	33 (36.3%)	6 (6.6%)	2 (2.2%)
Managing complications during dental extraction	34 (37.4%)	39 (42.9%)	15 (16.5%)	3 (3.3%)
Being capable of managing dental emergencies	36 (39.6%)	45 (49.5%)	8 (8.8%)	2 (2.2%)
Being capable of managing periodontal emergencies:	13 (14.3%)	41 (45.1%)	34 (37.4%)	3 (3.3%)
Managing a traumatized patient	17 (18.7%)	49 (53.8%)	23 (25.3%)	2 (2.2%)
Proposing an orthodontic treatment plan and its multidisciplinary implications	19 (20.9%)	44 (48.4%)	22 (2.2%)	6 (6.6%)
Performing preventive and interceptive treatment considering multidisciplinary approaches	32 (35.2%)	39 (42.9%)	18 (19.8%)	2 (2.2%)
Interpreting a panoramic radiograph	72 (79.1%)	16 (17.6%)	2 (2.2%)	1 (1.1%)
Interpreting a cone-beam	17 (18.7%)	50 (54.9%)	22 (2.2%)	2 (2.2%)
Mastering practical radiation protection rules	40 (44%)	28 (30.8%)	22 (24.2%)	1 (1.1%)

endodontic dentistry, fixed and removable prosthodontics, were mixed. While the cohorts appreciated its introduction, citing comprehensive patient care and personal fulfillment, patient recruitment posed a significant challenge (87.9%), primarily due to financial constraints (65.9%).

Regarding the clinical supervision provided by instructors, our students reported receiving constructive and supportive feedback from instructors, particularly in the departments of surgical dentistry (72.5%), conservative dentistry (52.7%), and orthodontics and dentofacial orthopedics (50.5%).

The qualitative study revealed mixed opinions. However, half of the participants reported a positive experience with a significant improvement compared to their experiences in the 4th and 5th years. They felt that this enhanced supervision promoted autonomy and confidence in delivering dental care. "We're given more freedom and treated as colleagues without authority" (2021-2022 cohort).

Students' Perceptions of the Immersion Internship in Private Dental Practices

Overall, 86.8% of students reported feeling well-treated and respected during their training. In the qualitative study, 16 participants described a positive working relationship with their internship supervisor, citing effective communication and discussions about clinical cases.

Table 2 summarizes students' perceptions of the competencies acquired during the immersion internship. Additional skills identified by respondents included developing strategies to enhance clinical practice, familiarizing themselves with new materials and equipment, gaining exposure to complex surgical procedures, improving patient-practitioner relationship management, and gaining insights into dental practice management and teamwork. The importance of developing autonomy, efficiency, and speed was also emphasized.

Perception of Assessment Methods

71.4% of students felt that the assessment methods accurately reflected their performance.

In terms of clinical case presentations, 47.3% of students rated the organization as good, while 45.1% considered it average.

Table 3 summarizes the key aspects of students' perceptions of the assessment methods.

8 out of 19 students expressed strong opposition to the quota-based validation system, citing concerns over heightened

Table 2. Competencies perceived as acquired during the immersion internship

Variables	Strongly agree, n (%)	Moderately agree, n (%)	Disagree, n (%)	I don't know, n (%)
Relationship management with the healthcare team	52 (57.1%)	30 (33.0%)	9 (9.9%)	-
Relationship management with the patient	56 (61.5%)	29 (31.9%)	5 (5.5%)	1 (1.1%)
Financial management of the practice	17 (18.7%)	34 (37.4%)	39 (42.9%)	1 (1.1%)
Hygiene and asepsis	61(67%)	20 (22%)	9 (9.9%)	1(1.1%)

Table 3. Perception of assessment methods by students

Variables	Yes, n (%)	No, n (%)
In your opinion, do the assessment methods used for each service reflect your actual level of performance?	65 (71.4%)	26 (28.6%)
Was the management of the multidisciplinary case completed?	56 (61.5%)	35 (38.5%)
Does the clinical examination for competency assessment reliably evaluate synthesis and clinical analysis skills?	49 (53.8%)	42 (46.2%)

stress levels, compromised patient care quality, and hindered clinical learning. Typical comments included: "I didn't expect to have a quota system in my 6th year" and "Quota are a bad idea... It stress me out and undermine my learning experience."

Both cohorts of students reported experiencing delays in communication about assessment methods for each service, except for functional rehabilitation of arches. Twelve interviewees praised the format of the clinical examination for competency assessment, citing its thorough review, opportunities for direct interaction with jury members, promotion of reflective practice, and confidence-building effects. However, some respondents expressed concerns that the examination was overly influenced by jury preferences and that preparation was hindered by the absence of a syllabus and review courses.

DISCUSSION

Our study is part of a quality improvement initiative and provides the first evidence of the effectiveness of the dental education reform implemented in Morocco in 2015. This research represents the first of its kind conducted at a dental school in Casablanca, aiming to comprehensively examine various aspects of clinical internships and their evaluation methods.

We used a mixed-methods design, known as a convergent research design, which integrates qualitative and quantitative approaches. In this design, qualitative and quantitative data are collected and analyzed separately before being compared.[11] This method provides a more comprehensive understanding of the phenomenon under study, as the strengths of one approach can offset the limitations of the other.

The results are representative of the studied population, with 92% of sixth-year students from the 2021/2022 cohort responding to the questionnaire. Sixty-seven percent of students expressed moderate to satisfactory satisfaction levels regarding the addition of the sixth year, which is reflected in the qualitative study. Furthermore, 92% of students felt better prepared for independent practice. This finding aligns with a study conducted at the dental school in Nancy, where 78% of students who completed their final internship felt adequately prepared to enter their professional lives under favorable conditions.[4]

In contrast, a survey conducted at the dental school in Monastir (Tunisia) in 2021 indicated that over half of the sixth-year interns (54.6%) believed that their prior clinical training did not adequately prepare them for independent practice, with suggestions including the addition of a seventh year dedicated exclusively to clinical learning.[5]

Half of the students from the 2021/2022 cohort believed that the 20-week duration was adequate to achieve the internship objectives, provided that patient recruitment started early. This was especially important for functional rehabilitation of arches, which requires multidisciplinary care across three different services.

Regarding clinical supervision, half of the students in the same cohort felt that it offered constructive and supportive feedback in all services. This perspective was confirmed in interviews, where students expressed that this supervision granted them more freedom and autonomy, ultimately boosting their confidence in delivering dental care. According to Harley, the level of support from a supervisor should be inversely proportional to the students' experience; as students develop their skills, the supervisor's interventions should diminish.[6] To further enrich students' clinical learning, encouraging self-reflection and providing regular constructive feedback are recommended.[13,14]

The implementation of the functional rehabilitation of arches internship was positively received by the entire 2020-2021 cohort. However, the program faced challenges, particularly in patient recruitment. In fact, 88% of students reported difficulties in locating patients who needed multidisciplinary care. These findings are consistent with a study conducted in the United States, where students similarly expressed concerns about laboratory issues and administrative paperwork complicating patient recruitment.[15]

All respondents indicated that they had acquired the fundamental aspects of clinical practice (simple procedures), with varying levels of mastery. Skills such as planning a multidisciplinary project, managing early childhood caries, and performing surgical extractions were among those perceived as acquired. However, 13 out of 20 respondents felt they still had gaps in fixed prosthodontics, while 8 out of 20 identified deficiencies in endodontics. which is concerning given the community's significant need for root canal treatments on molars and fixed prostheses.

Despite basic training and internships, several studies have highlighted persistent gaps in dental students' skills, particularly in areas such as molar endodontics, fixed prosthodontics, and orthodontics. For instance, a study conducted at three dental institutions in Pakistan found that while 134 students felt adequately prepared for clinical procedures like fillings and tooth extractions, they reported low preparedness for more complex tasks, including intraoral radiographs, treatment planning, and multirooted endodontics.[16] Similarly, a study among final-year dental students and interns at three Saudi dental institutions revealed that participants lacked confidence in performing procedures like multirooted endodontics, removable dentures fabrication and orthodontic assessments.[17]

Youngson et al.[18] reported that a significant number of dental schools do not expect their students to have completed a substantial number of cases involving bridges or endodontic procedures, suggesting that poorly acquired skills can be addressed later through field experience.

Macluskey et al.[19] attributed the lack of confidence in performing procedures to limited experience and insufficient supervision highlighting the need for adequate training and guidance to develop these skills.

Although students have developed skills, they reported average satisfaction with the implementation and relevance of services, citing limitations such as restricted patient accessibility, stringent validation criteria, and outdated infrastructure and technology compared to private dental clinics. In response to the growing number of students, the Faculty of Dental Medicine of Casablanca has expanded its teaching team to ensure adequate supervision during multidisciplinary clinical internships, providing hands-on experience with real patients. In contrast, several dental institutions have struggled to provide sufficient clinical experience due to rising enrollment and a shortage of available patients. As a result, these institutions have increasingly adopted educational approaches that rely on digital dentistry and simulators, as seen in UK and Ireland dental schools. While supervisors are satisfied with trainees' preparation in areas like health promotion and basic clinical procedures, they express concerns about proficiency in critical areas such as treatment planning, removable prosthetics, and endodontics (multi-rooted cases), surgical extractions, and the placement of crowns and bridges.[20]

It is important to note that competence and the perception of competence (confidence) are distinct concepts. A student may either overestimate their abilities or, conversely, lack confidence in their capacity to perform specific procedures.[5] Therefore, it is crucial to approach data regarding students' perceptions of their acquired competencies with caution, as they may be unwilling to admit a lack of confidence in skills deemed essential for independent practice, or the opposite may be true.

The implementation of the active professional immersion internship aligns with the institution's objectives and the students' desire to reinforce their knowledge and address identified gaps. This initiative fosters an awareness of independent practice demands and enables controlled autonomy in patient care.[21,22] As students possess sufficient maturity, they can appreciate the care provided and focus on office management, regulations, sterilization, accounting and various paraclinical aspects.

The faculty of dental medicine has established a list of approved dentists to supervise internships, based on a specific agreement with the National Order of Dentists. Internship validation relies on a standardized evaluation grid, completed by the supervisor, and a student self-assessment grid, both stored in a student-held notebook. Although widely adopted, this approach poses a risk of fraud due to student possession of the notebook.[23]

Our study showed high student satisfaction with their internship experience, with 64% very satisfied and 70% finding the 10-week duration adequate. This is consistent with a University of Bordeaux study, where 95% of students rated their internship highly (average score: 7.8/10).[24] Through their private healthcare internship, students acquired skills in patient management, technical platform discovery, complex surgery initiation, financial management, accounting, and treatment planning.

Several European countries, including France, Germany, Switzerland, Denmark, Poland, Finland, the UK, and Ireland, have incorporated vocational training into their educational curricula. The literature unanimously agrees on its beneficial effects but reports significant heterogeneity in the organization of these internships across Europe. The duration of these internships varies by country, ranging from one year in the UK, Denmark, and Poland, to two years in Germany. In the UK, this internship is an integral part of the curriculum, organized at the end of studies, after graduation, and before registration with the General Dental Council.[25] In Germany, the internship takes place after graduation, and students must complete a two-year full-time practical internship to obtain authorization from social security organizations to treat private sector patients.[26]

With regard to assessment methods, half of the respondents were opposed to validation based on a quota system, citing concerns that it could generate stress and compromise patient care quality. These findings are consistent with a 2017 study on evaluation methods among 4th and 5th year students of the Faculty of Dental medicine of Casablanca, which reported a primary focus on procedure-based evaluation.[27] A New Zealand study recommended abolishing the quota-based validation system, advocating instead for a focus on the quality of task execution.[28]

At the end of the multidisciplinary deepening internship, students are expected to present a 10-minute overview of their functional rehabilitation of the arches therapeutic project, during which they are evaluated on the relevance of their diagnostic and therapeutic approach. Nineteen respondents appreciated this process, stating that it validated their overall work while simultaneously assessing their theoretical knowledge and its application in clinical cases. According to a study conducted at Harvard Dental School, students valued the opportunity to engage in constructive discussions about their strengths and weaknesses during presentations involving multidisciplinary care.[29]

Recommendations

To optimize clinical learning in the 6th year and improve the effectiveness of student's internships, we recommend the following measures;

Multidisciplinary deepening internship:

- Increase the duration of the internship.
- Adjust scheduling slots for better organization.
- Improve the clinical environment and modernize the technical equipment at the Dental Consultation and Treatment Center of Casablanca.
- Clearly communicate and adhere to the previously announced internship objectives.
- Schedule regular staff meetings to discuss clinical cases.

Professional immersion internship:

- Clearly communicate the objectives to supervisors to enable them to effectively support the students.
- Provide supervisors with training that includes a pedagogical component.
- Establish a structured timeline for the internship that includes an initial observation phase, followed by a semi-autonomous patient care phase, and concluding with a fully autonomous practice phase.

- Consider introducing a mandatory observation internship at the end of the fifth year to reduce the duration of the observation phase during the professional immersion internship.

Evaluation methods:

- Reassess validation criteria to eliminate the quota-based system and instead emphasize the recognition of individual effort.
- Enhance preparation for the habilitation exam by scheduling revision sessions in advance and providing a list of courses to review, thereby reducing stress.
- Allocate additional reflection time during the arch's functional rehabilitation exam.

Limitations

Although the results of this study are relevant, they are based solely on self-reported data and may lack generalizability to other contexts. A multi-center study conducted in collaboration with the Rabat Dental Public Faculty, with which we share similarities in characteristics of enrolled students, curriculum and teaching methods and other private dental schools would be highly beneficial. To enhance objectivity in this initial impact study, comparing students' perceptions with those of teachers and supervisors would be insightful. Furthermore, a correlation study examining the relationship between perceived skills acquisition and clinical placement results, assessments, and grades would be relevant.

CONCLUSION

This study reveals that sixth-year students exhibit high overall satisfaction with their progress, driven primarily by comprehensive patient care experiences, acquisition of novel skills across various disciplines, and reinforcement of existing competencies. These key elements collectively foster enhanced self-esteem and autonomy, empowering students to transition confidently into professional practice.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of the Hassan II University Ethics Committee (Date: 30.05.2025, Decision No: FMDC-pr2c/72-73-2023).

Informed Consent

Informed consent was obtained from each participant via written consent forms that clearly outlined the purpose of the study and the participants' rights.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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