

Structural and Relational Determinants of Interdisciplinary Dynamics in Health Professions Education: A Qualitative Analysis of Dentistry and Dental Prosthesis Technology Students

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Abstract

Background

Interprofessional collaboration is essential to effective oral healthcare, yet collaborative relationships are shaped not only by communication and role boundaries but also by the organizational conditions of training. In dental education, the experiences of dentistry and dental prosthesis technology students may be shaped by communication problems, role ambiguity, workload, resource sharing, and patient or unit allocation within clinical and laboratory training environments. This study aimed to explore how dentistry and dental prosthesis technology students perceive and experience their interprofessional relationships, communication, and role boundaries within clinical and laboratory education.

Methods

A phenomenologically informed interpretivist qualitative design was used. Data were collected through semi-structured interviews with 12 students from dentistry and dental prosthesis technology programs and analysed using an inductive thematic approach supported by NVivo qualitative data analysis software. The study was reported in accordance with the Standards for Reporting Qualitative Research (SRQR).

Results

Four main themes were identified: Conflict Areas, Role Ambiguity, Stress and Anxiety, and Career Impact. Conflict areas included communication breakdowns, workload and time management challenges, equipment and material sharing, and unit/patient allocation. Participants described these themes in relation to the organizational conditions of clinical and laboratory training. Role ambiguity reflected unclear boundaries of responsibility, while stress/anxiety and career-related reflections were described alongside both relational and structural experiences.

Conclusions

Interprofessional and organizational dynamics in dental education were characterized by the interaction of communication patterns, role clarity, and structural training conditions. The findings identify role clarification, structured clinic-laboratory communication, and transparent approaches to workload and resource allocation as potential targets for future educational development and evaluation.

Background

Oral diseases remain among the most common noncommunicable conditions worldwide and place a substantial burden on health systems and societies [1, 2]. Effective oral healthcare delivery therefore

depends not only on clinical competence but also on the capacity of oral health services to function efficiently, safely, and consistently through coordinated team-based work [3, 4]. Contemporary global oral health agendas explicitly emphasize system strengthening, including attention to human resources for oral health and how workforce structures support sustainable care delivery [5, 6].

Collaboration in oral healthcare is especially consequential because key components of diagnosis, treatment planning, and rehabilitation often unfold across clinical and laboratory domains [7–9]. Interprofessional education (IPE)—defined as learning “about, from, and with” other professions to enable effective collaboration—has been promoted by major policy and educational frameworks as a pathway to improve teamwork, clarify roles, and strengthen collaborative practice readiness [10, 11]. Evidence syntheses suggest that IPE can improve aspects of professional practice and, in some contexts, patient- and process-related outcomes, although effects vary by design and setting. Within competency-based approaches to interprofessional collaboration, domains such as roles and responsibilities, interprofessional communication, and teamwork are repeatedly highlighted as foundational [12].

In dentistry, the dentist–dental technician interface provides a particularly clear illustration of why role clarity and communication matter. Prosthodontic workflows require accurate transmission of clinical intent—design decisions, prescriptions, and constraints—into laboratory fabrication processes; shortcomings in this communication have been documented in multiple settings and are often associated with incomplete or unclear instructions and the need for repeated clarification. Studies examining dentist–technician communication across fixed and removable prosthodontic workflows report that inadequate prescriptions and inconsistent information exchange remain common, indicating an enduring practice–communication gap that can influence quality and efficiency [13–15].

Educational environments are where many of these collaborative habits, expectations, and boundaries are first formed. Yet interprofessional dynamics during training can be complicated by differing educational tracks, hierarchical perceptions, and uncertain boundaries of responsibility—particularly when students from interdependent programs share clinical resources, time pressures, and performance expectations [16, 17]. In many dental training settings, **quota-driven clinical requirements** and **constraints in shared resources** (e.g., materials/equipment, units, and patient access) may intensify competition and magnify the impact of routine coordination problems, turning minor misunderstandings into recurring sources of conflict. Role theory has long described role ambiguity and role conflict as organizational conditions with dysfunctional consequences for individuals and systems. When transferred to learning settings, unclear role boundaries and contested responsibilities can plausibly fuel interpersonal tension and reduce the likelihood that collaboration is experienced as constructive, predictable, and educationally supportive [18–19].

The psychosocial dimension of these dynamics is also critical. Dental education is widely described as demanding, with stressors related to examinations, clinical requirements, and supervision processes frequently reported. In such contexts, unresolved conflicts and ambiguity in collaborative work can

reasonably compound stress and anxiety by adding relational strain to already high-stakes learning conditions. Understanding how students experience and interpret these stressors is therefore relevant not only for educational quality but also for student well-being and the sustainability of future professional practice [20, 21].

Moreover, early interprofessional experiences can shape professional identity formation (PIF) and longer-term career perspectives. Contemporary scholarship frames PIF as a developmental process influenced by socialization, role modeling, and the learning environment, with the intended outcome that learners come to “think, act, and feel” as members of a profession. Across health professions education, scholarship suggests that educational context and relational experiences can influence how learners understand their role, competence, and professional self-concept. Because workforce planning increasingly recognizes the importance of skill mix and sustainable career pathways within oral health systems, interprofessional experiences during training may carry downstream implications that extend beyond immediate educational satisfaction [22, 23].

Although interprofessional education has expanded across health professions, dental IPE research has often centered on collaborations with medicine, nursing, and pharmacy programs, and less frequently on the lived realities of collaboration between dentistry and dental technology learners in authentic clinical–laboratory training contexts. However, limited qualitative research has examined how **structural training pressures**—such as workload expectations, patient/unit allocation processes, and access to shared materials—interact with **role ambiguity** and **communication practices** to shape students’ well-being and career thinking. A clearer, student-centered understanding of where collaboration breaks down (e.g., communication, resource sharing, workload distribution), how role ambiguity is experienced, and how these dynamics affect stress and career thinking can inform practical educational interventions focused on role clarification and structured communication [24, 25].

Understanding these dynamics is particularly important because educational settings are formative contexts in which professional expectations and collaborative habits develop. To address this gap, the present study explores interprofessional and organizational dynamics within clinical-laboratory dental education by examining dentistry and dental prosthesis technology students’ experiences of professional relationships and training-system conditions. By focusing on collaboration, communication, role distribution, workload, resource sharing, and patient/unit allocation, the study aims to generate student-centered insights into how relational and structural features of training intersect with stress, professional identity, and career thinking.

Methods

Study design and setting

A phenomenologically informed interpretivist qualitative design was adopted to explore how students experienced interprofessional and organizational dynamics within clinical-laboratory dental education.

The research phenomenon was defined as the experiences, perceptions, and interactions through which dentistry and dental prosthesis technology students encountered collaboration, communication, role distribution, workload and time pressures, resource sharing, and patient/unit allocation during training. The study was conducted at the University of Health Sciences Türkiye in Ankara, involving the Faculty of Dentistry and the Dental Prosthesis Technology Program at Gülhane Vocational School of Health. The study was reported in accordance with the Standards for Reporting Qualitative Research (SRQR) [26].

Participants and sampling

In qualitative research, the number of participants is not predetermined by strict rules; instead, it is shaped by the study's focus, the guiding theoretical framework, and the nature of the data required. For this study, the sample size was determined according to the principle of data saturation, defined as the point at which no new insights or themes were generated during the ongoing collection and analysis of data.

Accordingly, a total of 12 students participated in semi-structured interviews regarding the research phenomenon. A criterion-based purposive sampling strategy was employed to identify participants, ensuring variation in both program type and academic year. The inclusion criteria were as follows:

- Enrollment in either the dentistry program (4th or 5th year) or the dental prosthesis technology program (2nd year);
- Completion of at least one semester of practical training in a clinical or laboratory setting;
- Willingness to voluntarily participate in the study.

Interview guide

This study employed semi-structured interviews as the primary tool for data collection. The semi-structured format allowed participants to openly articulate their experiences while ensuring that the interviews remained focused on the research phenomenon. The interview guide was developed after reviewing the relevant literature and aligning it with the study objectives. It included both sociodemographic questions and open-ended items exploring professional interactions, role clarity, communication, and career-related reflections.

Semi-structured interview questions:

1. Gender
2. Age
3. Year and program of study
4. Prior clinical or laboratory experience

5. What are your experiences of working in a clinical or laboratory environment with other professional groups?
6. Have you encountered any conflicts or disagreements with other students, technicians, or staff during practice? Could you explain?
7. How do you perceive role distribution and boundaries between dentistry students and dental prosthesis technology students?
8. What types of communication problems, if any, have you experienced with peers, technicians, or faculty?
9. How does workload, patient quota, or time pressure affect your learning and collaboration?
10. How do you cope with stress and challenges in clinical or laboratory practice?
11. In what ways have these professional experiences influenced your career preferences or specialization decisions?
12. What are your suggestions for improving collaboration and interprofessional relations in dental education?

Data collection

After receiving ethical approval from the Ethics Committee for Science, Mathematics and Social Sciences of Çankırı Karatekin University (Meeting No. 54; decision date: 21 July 2025), participants were contacted by telephone and email. They were informed about the study purpose, procedures, voluntary nature of participation, confidentiality, and their right to withdraw at any time without consequences.

At the beginning of each session, the interviewer introduced herself, explained the study scope, and answered participants' questions. Written and verbal informed consent was obtained before data collection, and interviews were audio-recorded with participant permission. Semi-structured interviews were conducted by PÇK and lasted approximately 30 to 60 minutes. In total, 12 in-depth interviews were conducted after ethical approval in late July 2025, focusing on interprofessional and organizational experiences within dentistry and dental prosthesis technology training.

Data analysis

Data collection and analysis proceeded in parallel until no new insights were identified and the research team considered the dataset sufficiently informative for the study aims. Interviews were transcribed verbatim using Microsoft Office 365 dictation software and transferred to Word documents. A member of the research team prepared the transcripts, and a second researcher checked them against the audio recordings for accuracy.

The verified transcripts were returned to participants for transcript checking. After confirmation, the documents were imported into NVivo 10 software. The analytic process retained the inductive and descriptive/content-analytic orientation specified in the study protocol, while Braun and Clarke's thematic analysis framework guided the organization and interpretation of codes into themes [27]. Researchers

repeatedly read the transcripts, generated initial codes, compared and refined codes, developed candidate themes and subthemes, and reviewed them against the dataset before finalizing the thematic structure.

To strengthen trustworthiness, the coding structure and thematic framework were independently reviewed by a researcher who was not involved in data collection. Descriptive coding counts were used only to characterize coding distribution and were not treated as measures of thematic importance. The analysis and reporting were informed by qualitative methodological guidance [28, 29].

Trustworthiness

To support rigor, the research team used reflexive bracketing to identify and critically consider prior professional assumptions during data collection and analysis. Transcript accuracy checking, participant transcript validation, repeated engagement with the data, and independent review of the coding and thematic framework were used to enhance credibility, dependability, and transparency.

Researcher reflexivity and positionality

The interviews were conducted by PÇK, a dentist with doctoral training in prosthodontics and teaching experience in the Dental Prosthesis Technology Program. Her professional familiarity with the clinical-laboratory training environment and its potential influence on participant responses were considered during reflexive interpretation. A second researcher checked transcript accuracy, and an independent researcher who was not involved in data collection reviewed the coding structure and emerging themes.

AI-assisted manuscript preparation

During manuscript preparation, ChatGPT (OpenAI) was used to support translation, English-language and structural editing, reference-formatting checks, and refinement of Fig. 1. It was not used to generate or analyse the interview data, code transcripts, determine themes, or draw study conclusions. All AI-assisted outputs were reviewed by the authors, who take responsibility for the final content.

Results

The findings are presented according to themes developed from the interview data and reflect participants' perspectives on both interprofessional relationships and organizational features of clinical-laboratory training.

Table 1
Distribution of coding nodes and references across participants

Characteristics	Nodes	References
Dentistry student (5th year)_3	9	53
Dental prosthesis technology student (2nd year)_3	8	31
Dentistry student (5th year)_1	9	22
Dentistry student (5th year)_4	8	22
Dental prosthesis technology student (2nd year)_1	6	21
Dentistry student (4th year)_1	8	18
Dentistry student (5th year)_2	6	18
Dental prosthesis technology student (2nd year)_4	7	17
Dental prosthesis technology student (2nd year)_6	5	14
Dentistry student (4th year)_2	5	13
Dental prosthesis technology student (2nd year)_2	6	13
Dental prosthesis technology student (2nd year)_5	6	13

A total of 12 students participated in this study. Half of the participants (n = 6; 50%) were dentistry students and half (n = 6; 50%) were dental prosthesis technology students. Among the dentistry students, two were in the fourth year and four were in the fifth year; all dental prosthesis technology students were in the second year. Participant-level node and reference counts are presented descriptively in Table 1 and were not interpreted as measures of thematic importance.

Table 2

Themes and subthemes of interprofessional and organizational dynamics in dental education

Themes	Sources (n)	References (n)
Interprofessional and Organizational Dynamics in Clinical-Laboratory Dental Education	12	91
• Conflict Areas	12	51
✓ Communication Issues	11	31
✓ Workload and Time Management	7	13
✓ Equipment and Material Sharing	6	10
✓ Unit and Patient Allocation	5	7
• Role Ambiguity	11	21
• Stress and Anxiety	10	19
• Career Impact	6	10

Four main themes were identified within the broader framework of interprofessional and organizational dynamics in clinical-laboratory dental education (Table 2): Conflict Areas (12/12), Role Ambiguity (11/12), Stress and Anxiety (10/12), and Career Impact (6/12). The following sections present these themes and their subthemes. Source and reference counts are shown descriptively to indicate coding distribution and were not used to rank thematic importance.

Theme I: Conflict Areas

The theme of Conflict Areas was identified by 12 out of 12 participants (12/12) with 51 references. The analysis revealed four sub-themes under this theme: Communication Issues (11/12), with 31 references; Workload and Time Management (7/12), with 13 references; Equipment and Material Sharing (6/12), with 10 references; and Unit and Patient Allocation (5/12), with 7 references.

Sub-theme I: Communication Issues

The sub-theme of Communication Issues was identified by 11 participants (11/12) with 31 references. This sub-theme highlights the ways in which ineffective communication, unclear instructions, and inconsistent attitudes among different professional groups contribute to conflict in both clinical and laboratory settings.

Several participants emphasized that communication difficulties were closely tied to how students were perceived in clinical settings. As previously noted under the theme of Role Ambiguity, some students felt undervalued due to their status, which negatively affected their interactions with other professionals (Dentistry student, 4th year_1).

Others described the challenges of acting as intermediaries between patients and technicians. One student explained,

"Because we are the ones in direct contact with the patient, we have to communicate their expectations to the technician. Sometimes the work is done incorrectly or incompletely, and this creates problems... the stress we experience sometimes affects our interactions with patients." (Dentistry student, 4th year_2).

Communication with patients was also reported as a source of stress, particularly when expectations were not met.

"When the patient's expectations did not match what I could provide, dissatisfaction occurred, and this created stress." (Dentistry student, 5th year_1).

Tensions further extended to peer collaboration and administrative staff. For instance,

"In the prosthodontics internship, two groups merged, and because we were unfamiliar with each other's working styles, tensions arose." (Dentistry student, 5th year_3).

Another participant noted,

"Secretaries' attitudes are very inconsistent. They may either ignore students or belittle them and refuse to assist with their requests." (Dentistry student, 5th year_4).

Others stressed that empathy was a necessary element for overcoming such problems:

"Empathy is essential. Everyone has responsibilities, but ultimately, the priority is patient satisfaction. Processes should be carried out with empathy." (Dental prosthesis technology student, 2nd year_1).

Laboratory–clinic coordination issues were also reported.

"We often have communication problems with the external laboratory. They do something, we make a mistake, and this sometimes leads to disagreements." (Dental prosthesis technology student, 2nd year_2).

Similarly, uncertainties regarding timing were highlighted:

"Conflicts often arise from communication problems. It may be unclear when the work will arrive or be delivered. If communication is improved and tasks are clarified, these issues can be avoided." (Dental prosthesis technology student, 2nd year_3).

Communication problems were also attributed to inconsistent or contradictory feedback from instructors and assistants. As one participant explained,

"One assistant says, 'this is correct,' while another says, 'this is wrong,' about the same task. Such contradictions also occur in student–student relations." (Dental prosthesis technology student, 2nd year_6).

Sub-theme II: Workload and Time Management

The sub-theme of Workload and Time Management was identified by 7 participants (7/12) with 13 references. This sub-theme reflects the stress caused by meeting clinical requirements, balancing patient care with academic tasks, and coping with time pressure in both educational and practical settings. A central issue highlighted by participants was the pressure to complete patient quotas, which was described as one of the most significant sources of anxiety throughout their training.

Students frequently pointed to quotas and clinical requirements as the most stressful aspects of their training. One participant stated,

"The most stressful factor for me was primarily the oral exams at the end of internships, followed by the pressure of completing quotas." (Dentistry student, 4th year_1). Similarly, another noted,

"What stressed me most was again completing our quotas in practice." (Dentistry student, 5th year_3).

Patient management responsibilities further compounded the time pressure. As one student explained,

"The greatest stress came from trying to manage patients during the prosthodontics internship." (Dentistry student, 5th year_1). Another added,

"Clinical workload, finding patients, and completing them on time were significant challenges. In some departments, the workload was very high, and time pressure was overwhelming." (Dentistry student, 5th year_2).

Difficulties in coordination within student groups also emerged as a source of tension. As one participant observed,

"Especially because the number of students was high, there were problems among friends related to the distribution of tasks." (Dentistry student, 5th year_2).

The same challenge was echoed by others who described the pressure of keeping up with peers:

"When we were working, their simultaneous work created a sense of being rushed." (Dentistry student, 5th year_3).

The stress of early schedules, commuting, and preparation requirements added further strain. As one student described, "

whether I would be able to complete my quota? I had to go early, prepare the unit, and because I lived far away, commuting caused me a lot of stress." (Dentistry student, 5th year_3).

Others described how quota-related demands were closely tied to time management problems. As one student explained,

"The most stressful part was the thought of not completing our quotas, the communication problems with patients, and the anxiety of whether I would be able to enter the oral exams." (Dentistry student, 5th year_4).

Dental prosthesis students also described similar struggles with workload and time management. One participant noted,

"There may be unfairness in equipment use or disagreements about task distribution, especially in clinical and laboratory settings." (Dental prosthesis technology student, 2nd year_3).

Another emphasized the impact of working under time constraints:

"Especially performing technical procedures under time pressure increased my anxiety about making mistakes. The need to deliver technical work within specific timeframes was the greatest source of stress throughout my student life." (Dental prosthesis technology student, 2nd year_5).

Sub-theme III: Equipment and Material Sharing

The sub-theme of Equipment and Material Sharing was identified by 6 out of 12 participants (6/12) with 10 references. This sub-theme highlights how limited resources, unequal access, and the lack of clear protocols for equipment use created conflicts among students and between students and support staff.

Several dentistry students reported that conflicts often arose around accessing or sharing materials during clinical practice. One participant stated,

"We mostly experience problems related to equipment sharing. Conflicts can occur with classmates or staff (for example, sterilization or secretarial staff) when obtaining materials." (Dentistry student, 5th year_1).

Another explained how unauthorized use of personal equipment was a significant source of frustration:

"For example, while I was treating a patient, my classmates sometimes took my materials without permission, saying the instructor asked for them. This was very stressful because I try to prepare everything in advance and ensure nothing is missing. When my work was disrupted because of this, it made me very angry." (Dentistry student, 5th year_3).

Dental prosthesis students also noted challenges related to the use of equipment. Some described experiences of inequity and reluctance to share:

"There may be unfairness in equipment use or disagreements about task distribution, especially in clinical and laboratory settings." (Dental prosthesis technology student, 2nd year_3).

Others highlighted cases of material withholding:

"Sometimes classmates did not share materials even when they did not need them, which created stress. Because I cannot work without those materials, I usually preferred to work alone." (Dental prosthesis technology student, 2nd year_4).

Not all participants, however, reported negative experiences. Some emphasized moments of cooperation, indicating that conflicts were not universal:

"It may happen, but personally, I have not experienced it. On the contrary, there were times during the year when we helped each other, especially when there was a lack of materials." (Dental prosthesis technology student, 2nd year_1).

Similarly, another noted,

"There were those who willingly shared materials and those who did not, but overall, it was fine." (Dental prosthesis technology student, 2nd year_2).

Sub-theme IV: Unit and Patient Allocation

The sub-theme of Unit and Patient Allocation was identified by 5 participants (5/12) with 7 references. This sub-theme highlights the conflicts that emerged when students competed for clinical units and patients, particularly in relation to overlapping schedules, patient reliability, and the pressure of fulfilling clinical quotas.

Several participants described unit allocation as a direct source of stress. One student reported,

"Unit sharing was stressful. Appointments overlapped, and this led to patient dissatisfaction." (Dentistry student, 4th year_1).

Similarly, another explained,

"Perhaps unit sharing and patient sharing in other internships... Patient sharing was a very stressful issue for me. Because the quota was very high, discussions like 'I already added this patient to the group' or 'I called first' were very stressful." (Dentistry student, 5th year_3).

Patient recruitment and retention were also identified as major challenges. As one student noted,

"The first issue is finding patients, because we struggle to recruit them. The second is the risk of patients discontinuing treatment later. For example, edentulous patients may decide not to continue because they can manage with their old dentures." (Dentistry student, 4th year_2).

Another participant echoed this concern:

"This was especially a problem during the prosthodontics internship. We had to find patients, and it was a general challenge for everyone." (Dentistry student, 5th year_4).

While quota pressure and oral exam stress were mentioned here, these aspects were more extensively discussed under the theme of Workload and Time Management, where they were identified as major contributors to student anxiety (Dentistry students, 4th and 5th year).

Theme II: Role Ambiguity

The theme of Role Ambiguity was identified by 11 out of 12 participants (11/12) with 21 references. This theme reflects the uncertainty and tension that arise when professional duties, responsibilities, and

boundaries are not clearly defined within dental education and practice. Overlapping in roles and insufficiently articulated expectations created difficulties in both clinical and laboratory settings. Participants described how these ambiguities frequently led to communication breakdowns between students, dentists, technicians, and support staff, resulting in misunderstandings, conflicts, and inconsistencies in authority. A recurring issue raised by students was the perception of being undervalued or treated as outsiders due to their student status. One participant explained:

"Yes. Since we are students, they do not see us as doctors and may shout at us." (Dentistry student, 4th year_1).

In addition to hierarchical tensions, some participants pointed to situations in which technicians' experience contributed to role confusion. For example,

"In terms of role ambiguity, especially in the 4th year, there may be uncertainty in mutual guidance with dental technicians... dentists may not always possess sufficient technical knowledge, and experienced technicians can sometimes be more knowledgeable and guide the dentist. This may lead to conflict." (Dentistry student, 5th year_1).

Communication failures across different occupational groups also emerged as a central factor in role ambiguity. As one student reflected: "

There were problems related to communication, such as secretaries and sterilization staff not being present at their stations." (Dentistry student, 5th year_2).

Similarly, laboratory students emphasized the impact of unclear instructions:

"The biggest problem was communication. Sometimes dentists do not fill in the patient file completely. When it is not clearly stated what should be done, laboratory staff may misunderstand, which makes cooperation difficult." (Dental prosthesis technology student, 2nd year_1).

Other students also reported difficulties linked to unclear task allocation:

"Because we also go to the clinic now, sometimes they do not tell us to do the work or explain what exactly we should do. We are unaware of the tasks, further highlighting communication problems." (Dental prosthesis technology student, 2nd year_2).

Finally, some participants underlined that these problems were often the result of misunderstandings and the lack of well-defined professional boundaries rather than direct conflict:

"In general, rather than saying that there was a direct conflict between dentistry and dental prosthesis students, it would be more accurate to say that there were occasional misunderstandings or communication problems caused by the lack of clearly defined professional boundaries." (Dental prosthesis technology student, 2nd year_5).

Theme III: Stress and Anxiety

The theme of Stress and Anxiety was identified by 10 out of 12 participants (10/12) with 19 references. This theme reflects the psychological and emotional challenges faced by students as they navigate clinical responsibilities, academic demands, and interpersonal conflicts. Participants described a range of strategies to cope with stress, including effective time management, seeking social support, and maintaining a separation between academic pressures and personal life.

Several students reported difficulties in coping with clinical and academic pressures. One explained,

"It was very difficult. I tried to manage by dividing my day between four hours at school and four hours for myself." (Dentistry student, 4th year_1).

Another described relying on library study and self-regulation: *"I go to the libraries I can easily access, try to stay calm by limiting my conversations with patients, and spread my studying over more time." (Dentistry student, 4th year_2).*

Some participants emphasized acceptance and resilience as part of their coping process. As one student reflected,

"I just think we live stressful lives and we have to accept it. Maybe a bit of psychological support or reading could help." (Dentistry student, 4th year_2).

Another noted, *"I tried to leave these issues at school and not carry them into my private life." (Dentistry student, 5th year_1).*

Practical strategies were also highlighted. One student explained,

"Learning to drive and commuting by car really relieved me, especially during the endodontics internship when I had to arrive very early to prepare the unit." (Dentistry student, 5th year_3).

The same participant added,

"I started keeping a planner. Organizing everything in a planned way and seeing it week by week made me feel much more comfortable." (Dentistry student, 5th year_3).

Similarly, another reported,

"I made weekly schedules to avoid missing deadlines and not leaving procedures until the last moment. Working step by step reduced my stress and increased my efficiency." (Dental prosthesis technology student, 2nd year_5).

The role of social and emotional support was also emphasized. One student shared,

"It was very stressful, I even experienced physical and mental problems. There were times when I sought support. Talking with close friends, sometimes crying, and receiving strong support from my family—especially my mother—helped me a lot." (Dentistry student, 5th year_4).

Some participants, however, considered stress to be an inevitable part of the learning process and focused instead on effective communication and collaboration as protective factors. For example,

"These are things that can happen. The important part is being able to cope with the stress and manage the process both internally and through communication." (Dental prosthesis technology student, 2nd year_1).

Another highlighted,

"Continuous communication with classmates was very helpful." (Dental prosthesis technology student, 2nd year_5).

Several participants emphasized the importance of interprofessional understanding in reducing anxiety. As one student put it,

"Such conflicts can be prevented through effective communication, mutual understanding, and developing a sense of teamwork. Both sides need to appreciate the value of working together toward a common goal." (Dental prosthesis technology student, 2nd year_5).

Theme IV: Career Impact

The theme of Career Impact was identified by 6 participants (6/12) with 10 references. This theme demonstrates how students' clinical and educational experiences shaped their preferences for future specialties and influenced their career planning. Participants emphasized the desire to pursue fields perceived as less stressful, with fewer complications, and where communication with patients was considered more manageable.

Several dentistry students indicated that stress and fear of complications directly influenced their career choices. One explained,

"I am considering choosing less stressful departments with fewer complications. I want to focus on fields where communication with patients is easier, such as pedodontics or orthodontics." (Dentistry student, 5th year_1).

Similarly, another noted,

"Yes, it affected me. I became clearer about which departments I will not choose. I am thinking about orthodontics." (Dentistry student, 5th year_2).

Other participants emphasized their preference for specialties that would minimize the risk of patient harm. As one student stated,

"Yes, it influenced me. I plan to choose departments where complications are minimal, because the fear of harming patients causes me great anxiety. I want to work in a field where I can feel more at ease." (Dentistry student, 5th year_3).

The same participant added,

"There may not be a department completely free of complications, but I really enjoy restorative dentistry, and perhaps I can pursue a career in that area... Prosthodontics also seems less invasive compared to other fields." (Dentistry student, 5th year_3).

Another confirmed this process of reorientation:

"It definitely influenced me. I progressed through my internships without knowing what I wanted to do, but by experiencing them, I realized that prosthodontics is not for me." (Dentistry student, 5th year_4).

Dental prosthesis students also reflected on how their training shaped career plans. One explained,

"It influenced me. Personally, I do not think I am very good at orthodontics, so I will never consider pursuing it." (Dental prosthesis technology student, 2nd year_2).

Another highlighted how technological change in the sector affected career planning:

"During my education, I realized that what is taught at school is fundamental, but the sector is rapidly digitalizing. I worried about the gap between what I learned and the digital practices in laboratories. However, this did not discourage me; instead, I worked to improve myself and shaped my career planning accordingly." (Dental prosthesis technology student, 2nd year_3).

While stress and anxiety were presented as a distinct theme, participants' career-related accounts were interpreted here as reflections on how training experiences, perceived complication risk, workload, and technological change informed specialty preferences and professional orientation.

Interrelations between relational and structural themes

Participants described close interrelationships between conflict areas, role ambiguity, and experiences of stress and anxiety. Communication problems, workload, competition for resources, and unit/patient allocation were often narrated within the same accounts of daily pressure and frustration.

For some dentistry students, fear of complications, patient-communication challenges, and quota pressure were also described alongside preferences for specialties perceived as less stressful or less invasive. These accounts are presented as participant perceptions rather than evidence of a causal pathway.

Discussion

This phenomenologically informed interpretivist qualitative study explored interprofessional and organizational dynamics within clinical-laboratory dental education through the experiences of dentistry and dental prosthesis technology students. Four interrelated themes were identified—Conflict Areas, Role Ambiguity, Stress and Anxiety, and Career Impact. The accounts suggest that students’ day-to-day experiences are shaped by both relational processes and structural features of training, including quotas, shared resources, and scheduling.

Overall, the findings suggest that students’ day-to-day collaboration is shaped not only by interpersonal communication, but also by structural characteristics of training (e.g., quotas, shared resources, and scheduling), which can amplify routine coordination problems into persistent stressors.

Communication breakdowns at the clinic–laboratory interface

Communication issues emerged as the most prominent conflict sub-theme, spanning interactions between dentistry students, dental prosthesis technology students, staff, and (indirectly) patients.

Students described problems such as incomplete information transfer (e.g., unclear patient files or instructions) and uncertainty about timelines for receiving/delivering work—issues that echo the broader dentist–technician communication gap emphasized in the background literature [13–15].

Importantly, several accounts positioned dentistry students as “intermediaries” between patient expectations and technical production, where miscommunication or mismatched expectations could escalate tensions and even “reflect on the patient” as stress.

These findings suggest that communication training in dental education may need to extend beyond generic “teamwork” messaging and include structured, task-specific communication routines (e.g., standardized prescriptions, checklists, and feedback loops) that reflect real clinical–laboratory workflows.

Role ambiguity and hierarchical perceptions in conflict experiences

Role Ambiguity was nearly universal and closely linked to conflict.

Participants described unclear boundaries of responsibility, uncertainty in “mutual guidance,” and experiences of being undervalued because of student status—dynamics consistent with role theory’s emphasis on role ambiguity/role conflict as antecedents of interpersonal strain and reduced performance in complex organizations [18].

These perceptions also align with the idea that professional cultures and status hierarchies can function as barriers to effective interprofessional collaboration [17].

Notably, some participants framed tensions not as direct intergroup “conflict” but as misunderstandings driven by poorly defined professional boundaries—an important nuance for designing interventions that prioritize clarification and shared expectations rather than blame.

Structural training pressures and routine coordination problems

A key contribution of this study is the way it links interprofessional difficulties to structural pressures typical of clinical training, including quota completion, time constraints, and competition for units/patients.

Participants consistently described quota pressure and limited time as major stressors, which is coherent with prior research identifying dental education as a high-demand environment where examinations, clinical requirements, and supervision processes are perceived sources of stress [20, 21].

In this dataset, however, stress did not appear to stem from workload alone; rather, it was intensified when workload and resource constraints interacted with unclear roles and inconsistent communication, producing uncertainty, frustration, and perceived unfairness in daily practice.

Stress, coping, and the learning environment

Most participants reported stress and anxiety and described coping strategies such as planning, time management, seeking social support, and attempting to separate academic pressures from personal life.

While these strategies reflect individual coping efforts, several accounts also located stress within the learning environment, particularly in experiences of hierarchy, inconsistent staff behavior, and contradictory instructor feedback. These observations suggest that educational responses should consider environmental consistency alongside student-level coping skills.

From an educational perspective, this indicates that interventions should not only train student skills, but also address environmental consistency (e.g., clearer supervision norms, aligned instructor messaging, and psychologically safe communication practices).

Career impact and professional identity formation

Although Career Impact was less frequent than conflict and role ambiguity, it is educationally consequential: students reported that anxiety, fear of complications, and patient communication challenges shaped their preferences toward “less stressful” fields.

These reflections align with the manuscript’s framing that early interprofessional experiences can influence professional identity formation (PIF) and longer-term career thinking [22, 23].

In addition, dental prosthesis technology students highlighted concerns about the digitalization of laboratory practice and the perceived gap between foundational training and sectoral change, suggesting that “career impact” may also involve readiness for evolving interprofessional workflows and technologies.

Implications for interprofessional education in dentistry

The findings support IPE frameworks emphasizing roles/responsibilities and communication as core competencies [10–12], but they also suggest that dental IPE should be anchored in authentic clinic–laboratory tasks rather than generic teamwork sessions.

Practical implications include: (i) **early role-clarification activities** jointly delivered to dentistry and dental prosthesis technology cohorts; (ii) **structured communication tools** (e.g., standardized prescriptions, mandatory fields in patient/lab forms, explicit turnaround-time agreements); (iii) **simulation-based or gamified teamwork learning** that reflects real workflow dependencies (e.g., escape-game style teamwork interventions) [8]; and (iv) **system-level adjustments** to reduce avoidable competition (transparent unit/patient allocation processes, clear material-sharing protocols, and aligned instructor feedback).

These approaches are consistent with the manuscript’s rationale that educational settings are formative for collaborative habits and that structural pressures can intensify conflict if not managed.

Strengths, limitations, and future directions

A strength of this study is its focus on the lived experiences of two interdependent training tracks within authentic clinical–laboratory contexts, addressing a gap noted in the introduction.

The use of SRQR guidance, bracketing, participant transcript validation, and independent review of the coding framework strengthens trustworthiness.

The purposive sample was drawn from a single institution, which may limit transferability, and the different academic stages of the two groups (dentistry 4th–5th year vs dental prosthesis technology 2nd year) may have influenced perceptions of responsibility and hierarchy. In addition, the interviewer’s professional familiarity with the training environment and the exclusive focus on student perspectives may have introduced social-desirability effects and limited the range of organizational viewpoints represented.

Future studies could incorporate faculty, technicians, and administrative staff perspectives; use multi-site sampling; and longitudinally examine whether structured role clarification and communication tools reduce conflict and stress and improve collaborative practice readiness.

Conclusions

This study indicates that interprofessional and organizational dynamics within clinical-laboratory dental education are characterized by the interaction of communication quality, role clarity, and structural training pressures.

Conflict

areas—particularly communication problems—were reported by most participants and were described alongside role ambiguity in both clinical and laboratory contexts.

Stress and anxiety, and for some students career-related reflections, were described in relation to these broader relational and structural training experiences.

From an educational perspective, the findings identify explicit role definitions, structured clinic-laboratory communication routines, and transparent approaches to workload, unit/patient allocation, and material sharing as practical targets for future development and evaluation.

Interprofessional readiness may therefore be strengthened by addressing both interpersonal collaboration and the organizational design of clinical training.

Abbreviations

IPE

interprofessional education

PIF

professional identity formation

SRQR

Standards for Reporting Qualitative Research.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the Declaration of Helsinki. The research protocol was submitted to and approved by the Ethics Committee for Science, Mathematics and Social Sciences of Çankırı Karatekin University (Meeting No. 54; decision date: 21 July 2025). In the ethics application, the responsible investigator and all co-researchers were listed as affiliated with the University of Health Sciences Türkiye. The application also identified the Faculty of Dentistry and Gülhane Vocational School of Health at the University of Health Sciences Türkiye, Ankara, as the research sites.

Consent to participate

Written and verbal informed consent was obtained from all participants before data collection. Participation was voluntary, and participants were informed of their right to withdraw from the study at

any time without consequences.

Consent for publication

Not Applicable.

Clinical trial number

Not applicable.

Availability of data and materials

Due to the qualitative nature of the dataset and the potential risk of participant identification, full interview transcripts are not publicly available. De-identified data excerpts and the coding framework may be available from the corresponding author on reasonable request, subject to ethical approval conditions and data-protection considerations.

Competing interests

The authors declare that they have **no competing interests**.

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Authors' contributions

PÇK: Conceptualization, methodology, investigation, data collection, development of the interview questions, participant recruitment, conducting interviews, writing—original draft, and writing—review and editing. FS: Conceptualization, methodology, ethics approval, writing—original draft, and writing—review and editing. MA: Writing—original draft and writing—review and editing. GS: Investigation, data collection support, and writing—review and editing. FO: Writing—original draft and writing—review and editing. All authors read and approved the final manuscript.

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Figures

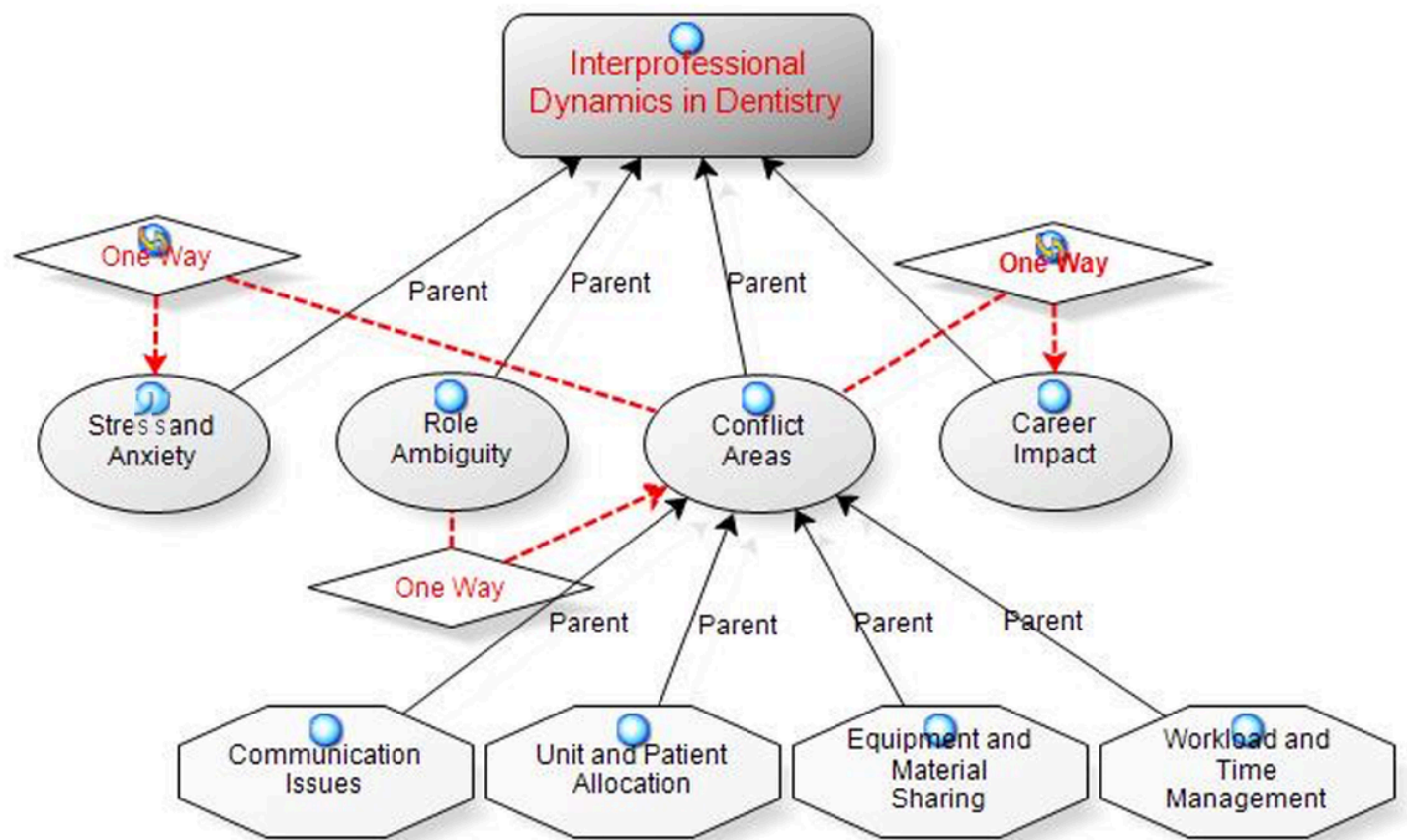


Figure 1

Themes and subthemes of interprofessional and organizational dynamics in dental education