Journal of Dental Sciences 20 (2025) 2538–2540

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.e-jds.com

Correspondence

Exploring the framework of professional subspecialties for dental technicians

KEYWORDS
Dental technician;
Subspecialties;
Dental technology;
Clinical specialties;
Prosthodontic

Comprehensive dental care was primarily accomplished through close collaboration between the dentists and the dental technicians to fabricate prostheses and restore oral function for the dental patients.[1] There were many specialized treatments in clinical dentistry. Therefore, professional dental education programs are established to develop a specialty system that enhances the expertise of clinical dentists. In Taiwan, there are 11 dental specialties, including oral and maxillofacial surgery, oral pathology, orthodontics, pediatric dentistry, endodontics, prosthodontics, operative dentistry, periodontics, family dentistry, special needs dentistry, and implant dentistry.[2] A dental specialty not only represents a recognition of professional skills but also signifies acknowledgment of one's expertise in that specific dental field. In Taiwan, as early as 1981, the first dental technology educational institution was established with the aim of cultivating professional practice and research talent related to the dental technology. Moreover, in 2009, Taiwan government legislated the Dental Technicians Act to clearly define the career and education strategies of dental technicians. However, Taiwan had not yet developed a comprehensive specialty training system for the dental technicians. Following the professional framework established for the dentists, the dental technicians should also plan a well-structured specialty system.

This study analyzed the current scope of dental technology in Taiwan and proposed the classification of ten subspecialties for the dental technicians (Table 1). For each subspecialty, corresponding services and specific work content were outlined. Dental technology was initially divided into fixed prosthodontics, removable prosthodontics, and orthodontic appliances based on the Taiwan national dental technician licensing examination.[3] These subspecialties primarily covered the fabrication of most dental prostheses and retention devices. As the healthcare quality became increasingly emphasized, pediatric and implant dentistry required more specialized planning and care. Therefore, pediatric prosthodontics and implant prosthodontics emerged as areas with distinct professional needs. With advancements in digitalization and technology, dental clinical practice provided greater access to medical information and enabled the broad application of artificial intelligence.[4,5] To support the more precise treatment and analysis in esthetics and comprehensive occlusal rehabilitation, additional specialties such as all-on-x prosthodontics, aesthetic prosthodontics, digital dental technology, and full-mouth rehabilitation were also established. Beyond restoring oral function, maxillofacial reconstruction was another specialized domain of dental technicians. Through meticulous observation and optimal use of materials, the dental technicians fabricated facial prostheses for the patients with anatomical defects involving the jaw, eyes, nose, or ears, thereby forming the subspecialty of maxillofacial prosthetics.

The establishment of a specialty system helped the dental technicians develop deeper expertise within their unique professional dental domains. Although this study proposed ten subspecialty fields in dental technology, the structure

https://doi.org/10.1016/j.jds.2025.06.013

Table 1 Proposed subspecialties for dental technicians.

Name of specialty	Services	Specific work content
Fixed prosthodontics	Posts, crowns, temporary crowns, bridges, inlays, onlays, overlays, and veneers	Tooth-supported fixed restorations
Removable prosthodontics	Temporary dentures, individual tray, complete denture, removable partial denture, and metal framework	Removable tissue-supported or tooth-tissue-supported prostheses
Orthodontic appliance	Transparent aligners, retention devices, orthodontic devices, bite splints, orthodontic study models	Fabricated devices used to move teeth or maintain corrected dentition. Additionally, assist clinicians in planning the digital orthodontic process and predict the post-treatment tooth alignment
Pediatric prosthodontics	Space maintainers, pediatric partial dentures, maintainers and interceptive devices	Primarily fabricated pediatric dental restorations and orthodontic devices
Implant prosthodontics	Surgical guide, customized abutment, and implant bar	Implant-supported restorations, abutment design, and the fabrication of related auxiliary devices
All-on-x prosthodontics	All-on-4/6 framework and fixed prosthesis	Comprehensive all-on-4/6 treatment workflow including full-arch planning, surgical guide fabrication, and final prosthesis design
Aesthetic prosthodontics	Digital smile design (DSD), simulation stain, simulation design, and diagnostic model	Focus on coordinating tooth color, shape, and facial esthetics, and mimicking adjacent natural teeth to achieve a harmonious and natural appearance
Digital dental technology	Digital models, digital restoration files, and final restorations	Include digital model creation, digital design of restorations, and fabrication of restorations using 3D printing and computer-aided design/computer-aided manufacturing (CAD/CAM) technologies
Full-mouth rehabilitation	Occlusal plane design, implant surgery planning, full removable dentures, and full fixed restorations	Involve the reconstruction of extensive natural tooth defects, including occlusal relationship restoration, implant surgical planning, and final denture fabrication
Maxillofacial prosthetics	Obturator, ear, nose, eye, and other extraoral prosthetics for maxillofacial rehabilitation	Design and production of prosthetic parts of the skull and face other than the teeth

and focus of such subspecialties could vary across countries and regions, necessitating appropriate adjustments. Moreover, the development of a comprehensive specialty training system including curriculum, qualified instructors, and assessment personnel required significant time and resources. Therefore, the specialty system for the dental technicians still had room for growth. The development of specialty training in dental technology required collaborative efforts from professional associations and societies, bringing together the clinical dental technicians to collectively enhance their dental technical skills. It was hoped that the implementation of a framework of professional subspecialties for the dental technicians would enhance dental technical capabilities and support the healthy development of the dental industry in the future. In addition, further more in-depth discussions about the dental technician specialist system are needed in the near future.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

Acknowledgments

The authors thank the Wan Fang Hospital, Taipei Medical University, Taiwan for financially supporting this research under contract 114TMU-WFH-25 to Wei-Chun Lin.

References

1. Cheng FC, Lin WC, Chiang CP. Current challenges of dental laboratory in Taiwan: the perspectives from a senior certified dental technician in a dental laboratory attached to a teaching hospital. *J Dent Sci* 2025;20:678–82.
2. Cheng FC, Wang LH, Wang YL, Chiang CP. Overview of the dental specialist system in Taiwan. *J Dent Sci* 2023;18:1909–11.
3. Shih YH, Cheng FC, Lin YC, Lin WC, Chiang CP. Overview of the education system for dental technicians in Taiwan. *J Dent Sci* 2025;20:971–9.
4. Liu CM, Lin WC, Lee SY. Evaluation of the efficiency, trueness, and clinical application of novel artificial intelligence design for dental crown prostheses. *Dent Mater* 2024;40:19–27.
5. Shan T, Tay FR, Gu L. Application of artificial intelligence in dentistry. *J Dent Res* 2021;100:232–44.

Ching-Shuen Wang[1]
School of Dentistry, College of Oral Medicine, Taipei Medical University, Taipei, Taiwan

Feng-Chou Cheng[1]
Chia-Te Dental Clinic, New Taipei City, Taiwan
School of Life Science, College of Science, National Taiwan Normal University, Taipei, Taiwan
Science Education Center, National Taiwan Normal University, Taipei, Taiwan

Wei-Chun Lin[**]
School of Dental Technology, College of Oral Medicine, Taipei Medical University, Taipei, Taiwan
Department of Dentistry, Wan Fang Hospital, Taipei Medical University, Taipei, Taiwan

Chun-Pin Chiang[*]
Department of Dentistry, National Taiwan University Hospital, College of Medicine, National Taiwan University, Taipei, Taiwan
Graduate Institute of Oral Biology, School of Dentistry, National Taiwan University, Taipei, Taiwan
Department of Dentistry, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Hualien, Taiwan
Institute of Oral Medicine and Materials, College of Medicine, Tzu Chi University, Hualien, Taiwan

** Corresponding author. School of Dental Technology, College of Oral Medicine, Taipei Medical University, No. 250, Wu-Xing Street, Taipei, 11031, Taiwan.
E-mail address: weichun1253@tmu.edu.tw (W.-C. Lin)

* Corresponding author. Department of Dentistry, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, and Institute of Oral Medicine and Materials, College of Medicine, Tzu Chi University, No. 707, Section 3, Chung-Yang Road, Hualien 970, Taiwan.
E-mail address: cpchiang@ntu.edu.tw (C.-P. Chiang)

Received 9 June 2025
Available online 24 June 2025

[1] These two authors contributed equally to this work.