

EDITORIAL

Educational goals for Prosthodontic training - The need of the hour

Ponsekar Abraham A ^a

Prosthodontic training, unlike other branches in Dentistry, is unique in that the replacement should be a precise replication of lost structures and also should dwell in harmony with the remaining tissues. The replication should satisfy anatomically in morphometrics, physiologically in function, and aesthetically in its functional state of dynamism or kinesthetics. The novice is therefore expected to have a broad understanding of applied physiology to restore or replace such anatomical units, using the appropriate material combinations that would best suit to reproduce the necessary details with the latest technology available.

Over the years, evolution of dental curriculum has addressed the changing trend in the approaches to patient needs and demands. An effective teaching-learning method, with active student engagement needs to be developed alongside to address the evolving concepts and learning styles. Simulation Based Training plays an indispensable role in skill based field like dentistry without risking or compromising the health status of patients since 18th century.¹ Simulation is of two types, namely high-fidelity simulations (HFS) that is realistic and simulates the actual clinical scenario and low-fidelity simulation (LFS), that imitates an actual situation but with simplified variables. The purpose of LFS is to turn learned knowledge into technical skills. LFSs can be both hands-on and computer or written-based scenarios. By removing some of the factors that can be present in real-life situation, students in an LFS can better understand and practice more discrete concepts. High-fidelity simulations (HFSs) are usually done after LFSs are mastered and they strive to make the simulation as realistic as possible. A HFS may merge multiple LFS's with several other factors that could be present in a real-life scenario. The purpose of an HFS is to test students with a more realistic and complex scenario.

Virtual, Robotic, Haptic Based Simulations have enhanced the fidelity close to operating on live patients. Such HFS can be used in an effective

manner in teaching and learning methodologies to provide effective feedback and improvise learning among trainees. Formative Assessment can also be carried out in an objective manner with simulation tasks. High Fidelity Simulation Training approach provides students with unique opportunities to practice learned skills in situations like medical emergencies and high risk situations where actual training with supervision becomes impractical, dangerous and unethical.² Simulation Based Training should be complemented with effective clinical scenarios so that the trainees understand the situation, plan the treatment and perform the correct procedural steps. The instructor can monitor the participant's decision-making ability and assess the specific action taken, thus glean information about skills that need further practice to mastering them can be assessed. Having this information establishes a future safety net for those involved by not putting unprepared students and patients in risky situations outside of simulations.³

Preclinical simulation techniques with course propaedeutics of prosthetic dentistry on phantom head and mannequin will serve as an introduction and preliminary instruction prior to clinical exposure. A conventional dentist is expected to have the utmost dexterity, creativity and artistic skills necessary for planning, designing and fabrication of prosthesis. In the past few decades with the invasion of digital technology, apart from the aforementioned skills, the dentist is expected to possess the knowledge and skills essential to carry out computer aided design and machining of various prostheses. Hence, the curriculum should be modified to include digital dentistry as an exclusive component to prepare the trainees in dentistry for the future. Such training should be incorporated right from the preclinical years of training.

Today 3D software with virtual reality images for preclinical training in crown preparations with high fidelity feedback is made possible. Haptic technology incorporates tactile perceptions of forces, vibrations, motions and control of pressure

applied thereby improves manual dexterity.⁴ Virtual images generated by a computer appear to surround the person looking at them and give almost real effect. These technologies create virtual objects and enable their control and enhance remote control of machines and devices.⁵

The regulatory bodies have put forth ethical protocols for clinical practices to minimise incidence of failure of treatment due to iatrogenic errors caused by amateur dental operators. Likewise, patients who are participating during dental clinical examinations are at risk and may be an issue of ethical concern. With rising consumer awareness and ethical concerns, examinations need to be conducted with simulation and virtual platforms. Workplace based assessment on live patients should be done only as a formative tool, under closed or distant/remote supervision in training. Hence, it is expected of the institutions and the teaching faculty to be equipped in terms of infrastructure and necessary knowledge and skill to impart training and carry out summative assessments using digital simulation platforms.⁶

CONFLICT OF INTEREST

There is no conflict of interest

REFERENCES

1. Maslovskiy O, Breslavets N, Kulish S, Horiushko V, Pohorila A. Future development of simulation methods of training in prosthodontics.
2. Vaits S, Vaits T, Daurova F, Kodzaeva Z. The use of a simulator as a systematic scenario for students to learn the skill of tooth preparation. InSHS Web of Conferences 2018 (Vol. 55, p. 03017). EDP Sciences.
3. <https://www.usa.edu/blog/simulation-in-education/>
4. San Diego JP, Newton TJ, Sagoo AK, Aston TA, Banerjee A, Quinn BFA, Cox MJ. Learning Clinical Skills Using Haptic vs. Phantom Head Dental Chair Simulators in Removal of Artificial Caries: Cluster-Randomized Trials with Two Cohorts' Cavity Preparation. Dent J (Basel). 2022 Oct 24;10(11):198.
5. Imran E, Adanir N, Khurshid Z. Significance of haptic and virtual reality simulation (VRS) in the dental education: a review of literature. Applied Sciences. 2021 Oct 30;11(21):10196.
6. İlgüy M, İlgüy D, Oktay İ. Ethical decision making in dental education: a preliminary study. BMC medical ethics. 2015 Dec;16(1):1-6.

Corresponding Author: Dr. Ponselkar Abraham A, Professor & Head, Department of Prosthodontics, Thai moogambigai dental college and hospital, Dr. M.G.R. Educational & Research Institute, Chennai -600107
E-mail: drponabe@gmail.com, Ph.No.: +919444200720
Copyright by the Editorial board for The Journal of Clinical Prosthodontics and Implantology

How to cite this article: Ponselkar Abraham A, Educational goals for prosthodontic training - The need of the hour. *J Clin Prosth Impl* 2022;4(2):v-vi. <https://doi.org/10.55995/j-cpi.2022e2>